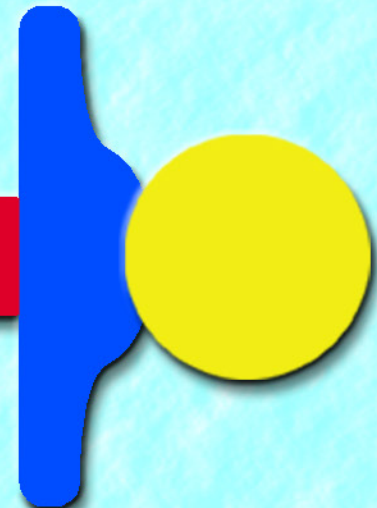
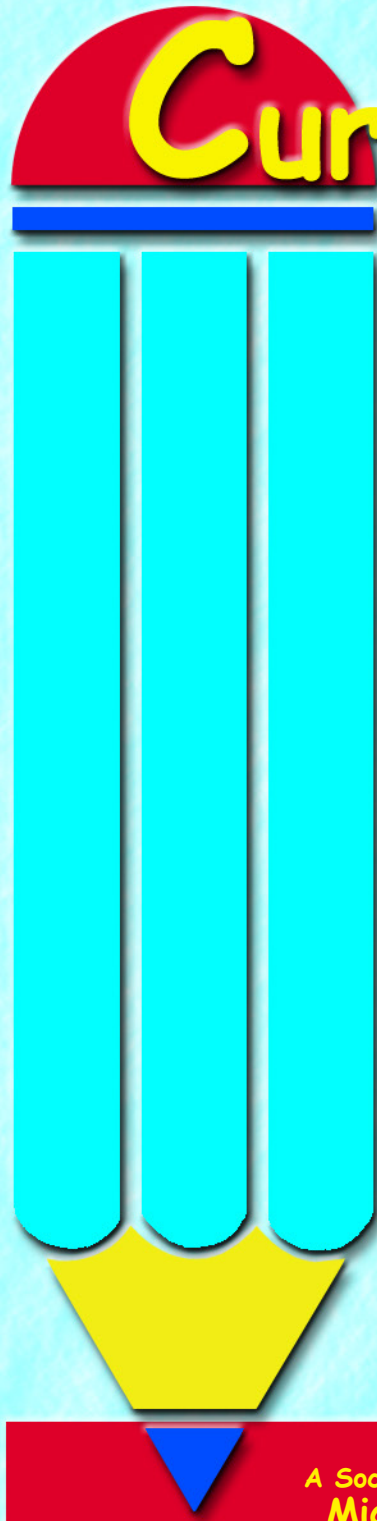


Curriculum Guide

K-5th



AIA Michigan
A Society of the American Institute of Architects
Michigan Architectural Foundation

Welcome To "Architecture - It's Elementary!"



Welcome to the American Institute of Architects ("AIA") Michigan/Michigan Architecture Foundation ("MAF") Curriculum Guide for the elementary grades.

We invite you to participate in "Architecture: It's Elementary!" Supported by local architects and through a multidisciplinary architectural curriculum, children will gain appreciation of their built environment and the buildings, towns and cities that make it up.

This Web-based guidebook for teachers includes ten lesson plans for each elementary school year, from kindergarten through grade five. The curriculum introduces children to the study of architecture and the built environment, encompassing art, social studies, language arts, history, science and math. Since the guidebook was first published, the program has been updated to reflect the incorporation of sustainability principles, in an effort to make children more aware and conscious of their impact on the built and unbuilt environments.

These lessons engage children's bodies, minds, and imaginations to explore how buildings and cities are designed and built. Lessons appeal to the various learning styles of children as they look, explore, think and design. In considering how to create functional, safe and appealing environments, children develop skills of observation, reasoning and critical thinking. These tools will develop within them an appreciation and respect for the built environment.

The lessons combine individual and group activities. Within each lesson, Michigan core curriculum standards are noted, and a vocabulary and illustrations are provided. References to basic architectural principles are listed. Lessons can be adapted to your school's needs and interests, and your input and insights are encouraged to refine and improve the curriculum guide.

AIA Michigan architects are here to support you, answer your questions and provide personal assistance as needed. Local architects from your community have volunteered to be of help.

If you need assistance, please call AIA Michigan at (313) 965-4100 and ask for the name and phone number for the current statewide elementary curriculum liaison. Thank you for your participation and your interest!



License Granted to User Groups



"Architecture: Its Elementary" is provided by the Michigan Architectural Foundation to educational and other public and private user groups, for the purpose of establishing an elementary curriculum throughout the State of Michigan, to heighten student appreciation of the built environment, and to enhance public awareness of architecture and design.

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Student Design Awareness Subcommittee 2006

R. Rocco Romano, AIA Chairman
Lonny S. Zimmerman, AIA Vice Chairman
Adriaan Van Velden, Associate AIA Member
Leslie D. Tinknell, FAIA Member
Terri Havers, Art Teacher (Clawson Schools) Member
Kathy Burek Member

Contributors

Bruce Adams, Sharon Anton, Eric Geiser, Angela Jeruzal, Douglas LaFerle, Virginia Mantela, Andrea Marshall, Dick Mitchell, Barry Nebhut, Howard Parsons, Patti Pell and Chad Richart

Illustrations

Richard Borelli
Adriaan VanVelden

Graphic Design

Ellen Hochberg

Copy Editor

Gail Zimmerman

Web Site Coordinator

Mike Mosely

Sustainability Update Committee 2011

R. Rocco Romano, AIA
Lonny Zimmerman, AIA
Al Vegter, AIA

Peggy Matta, AIA, LEED AP BD+C
Donna Voronovich, AIA
Angela Jeruzal

Technical Consultant

Bryan Hochberg

Publishers

American Institute of Architects (AIA) Michigan
Michigan Architectural Foundation

Implementation Subcommittee

R. Rocco Romano, AIA Chairman
James I. Aubuchon, AIA Vice Chairman
Markku R. Allison, AIA Member
Heather Graham Lewis, AIA Member
Nancy Kryger, Principal, Holy Trinity School, Comstock Park, MI Member

Content Update 2015

Randy Case, AIA MAF K5 Committee Chair
Lonny Zimmerman, AIA Member





Additional Contributors

AIA Michigan, a Society of the
American Institute of Architects
Michigan Architectural Foundation
Albert Kahn Associates
American Architectural Foundation
American Institute of Architects -
Detroit Chapter
Associated General Contractors
of Michigan
The Detroit Free Press
Robert and Rae Dumke
French Associates
John Gallagher, Hon. AIA
Gensler
Graham Foundation for Advanced
Studies in the Fine Arts
HarleyEllis

Herman Miller
Eric J. Hill, FAIA
John Tagle Associates, Inc.
Balthazar Korab, Hon. AIA
Professional Concepts Insurance
Progressive AE
Project Planning and Management, Inc.
Rossetti Architects
Silveri Architects
Smithgroup
Stevens Architects
Swanson Meads Architects, LLC
The Taubman Company
Leslie & Marion Tincknell,
Children and Grandchildren
TMP Associates Inc.



Introduction



Our Mission

The mission of AIA Michigan/MAF:

"In partnership with the educational community, to develop and implement an elementary educational curriculum throughout the state to heighten awareness of the built environment."

Everyone experiences architecture and interfaces with it daily in one form or another. The ability to recognize the qualities of good design empowers people to value the difference between a mere building and a well-designed piece of architecture.

In an effort to address this need, AIA Michigan, a Society of the American Institute of Architects (AIA), and the Michigan Architectural Foundation (MAF) initiated the Public Awareness Campaign. The main initiative of the campaign is to enhance the general public's understanding of the value of good design in the creation of a high-quality built environment for everyone.

The Public Awareness Campaign is subdivided into three components:

1. Media Relations - topical matters, press releases and published articles;
2. Public Awards Program - the public becomes the judge in determining what constitutes good architecture;
3. Student Design Awareness Program.

The Student Design Awareness Subcommittee was charged with bringing this third component into the classroom. The goal is for children to become sensitive and aware of their built environment. Children should be able to respond to a well-designed building or space - to enjoy a special place.





Dr. Anne Taylor, Ph.D., a professor in the School of Architecture and Planning at the University of New Mexico, is an expert in the field of architecture and children. She sums it up this way:

"By studying architecture and design, through surroundings that touch each of us daily, students learn that they can make a significant difference in enhancing their lives and their environment. This kind of integrated learning which prompts visual thinking, data collection, problem solving, cooperative learning and the making of critical judgements will foster a generation of mature people better able to make decisions about building cities, [planning] roads and the quality of the built environment."

— From "Architecture and Children: Discovery through Design, A Phantasmagoria for Children," June 12-16, 1989, sponsored by the University of New Mexico and New Mexico State Department of Education

The objective is not to create a generation of architects but rather to introduce some understanding and appreciation of the principles of good design at a fundamental level and in conjunction with the students' general curriculum and education.

To undertake this task, the Student Design Awareness Program expanded its committee to include professionals in education as well as in architecture.

The committee decided an elementary school-level curriculum guide for teachers containing grade-appropriate lessons would be the best source for creating experiences that would make a lasting impression on students. There is much material available on architecture and the built environment that previously has been produced for both elementary- and secondary-grade levels. However, the Student Design Awareness Subcommittee's goal was to produce a full schedule of coursework for all of the elementary grades, providing the opportunity to revisit the design awareness program every year, building on the year before.





The Curriculum Guide

While the basic elementary core curriculum teaches the fundamentals of social studies, history, math, science, arts and language, the architectural curriculum is intended to augment the teaching of those fundamentals in an integrated fashion.

Teachers have different levels of knowledge and skills in presenting the built environment, and student knowledge of the subject varies greatly in the early grades. Since the proposed curriculum is application based, the Student Design Awareness Subcommittee opted for the format of a curriculum guide for teachers, allowing them the flexibility to determine how the material in each lesson plan is presented.

This curriculum guide consists of lesson plans, with approximately ten lessons per grade, for kindergarten through grade five, and is offered in a thematic study program.

Much of the curriculum is based on a cooperative hands-on learning approach. During many of the activities, children have the opportunity to work together while having fun. Some of the lessons will provide ideal opportunities for involvement and assistance by members of the architectural profession. This curriculum guide encourages teachers to contact local professionals through AIA Michigan. In an effort to involve family and community, each year's course is structured to culminate in a group or class project, which may form the basis for a night during which parents are invited into the classroom.

The coursework for the "Architecture - It's Elementary!" curriculum is available as a direct download off the Internet at www.michiganarchitecturalfoundation.org. Click K-12 Education then click Architecture It's Elementary: Curriculum. For information on how to access the material, contact The Michigan Architectural Foundation at (313) 965-4100.





Users Guide

Lesson Plan Format and Curriculum

The curriculum is divided into six sections, one for each year from kindergarten through grade five. Each section comprises at least ten lesson plans.

Following this users guide is a "Scope and Sequence" chart containing a complete schedule of lesson plans, by grade level, for the entire curriculum.

All the lesson plans share the same format, as indicated below:

Principles of Architecture (for a complete list, see pages 17-18)

Vocabulary

Materials

Teachers' aids include:

- Sketches/photographs/charts
- Letters to parents
- Recommended instructional materials

Activities

Teacher's Evaluation



Scope and Sequence - Lesson Plans



Grade

Theme		1	2	3	4	5	6	7	8	9	10			
K	Funda-mental Principles	Geometric Shapes	Street-scapes	Neighborhood Walks 3A Parks and Play-grounds	Building Block Town	Acting Out Structures	Human Proportions	Draw Your Room From Memory 7A What Is Your Favorite Place?	Picture Your Own Home – Part 1	Picture Your Own Home – Part 2	Picture Your Own Home – Part 3			
	1	Funda-mental Principles	Sensory Exploration	Visuali-zation Skills	Color, Light and Your Classroom Environ-ment	Structures	Draw Your Home From Memory	Earth Friendly	Street-scapes	Propor-tions and Scale – Two Di-mensional	Propor-tions and Scale – Three Di-mensional (Part I)	Propor-tions and Scale – Three Di-mensional (Part II)		
		2	General Application of Funda-mental Principles	Animal Houses	Man-Made Structures	Structural Concepts	Measuring	Measuring and Draw-ing Your Classroom	Sensory Aspects of Your Class-room	Building Types	Recipe for a City – Part 1	Recipe for a City – Part 2	Recipe for a City – Part 3	
			3	House	Metric System	Anthropo-morphic Buildings	Different Kinds of Homes	House Materials	House Linkages	How We Use Our Home	Draw Your Home	Design Your Own Home – Part 1	Design Your Own Home – Part 2	Design Your Own Home – Part 3
				4	Neighborhood	What Is a Neighborhood?	Guided Neighborhood Walk	Building Types	Building Types and Aesthetics	Neighborhood Land-marks	Neighborhood Activities	Ecology and the Built Environ-ment	Design A Community Neighborhood – Part 1	Design A Community Neighborhood – Part 2
5					City	History of Cities	Politics and Economics of a City	City Plan-ning	Infra-structure	Preser-vation	Building Materials	Our Envi-ronment	Design a City – Part 1	Design a City – Part 2



Principles of Architecture

The Student Design Awareness Subcommittee has developed the following list to establish some fundamental precepts basic to understanding architecture. While the committee has attempted to make the list comprehensive, there are no doubt other principles that could be included. While each lesson emphasizes certain principles, there may be aspects of all of the principles in each of the lessons.



Principles of Architecture



- A. **Design** is accomplished by composing the physical characteristics of size, shape, texture, proportion, scale, mass and color.
- B. **Order** is the arrangement and organization of elements to help solve visual and functional problems.
- C. **Visual** relationships are determined by light, shadow, edges and contrast.
- D. **Balance** is the creation of visual harmony through the use of color and the manipulation of form.
- E. **Form follows function** is a design approach where the form of the building is determined by the function of its spaces and its parts.
- F. **Nature is a model** for architectural forms and shapes.
- G. Mass creates form, which occupies space and brings into being a **spatial articulation**.
- H. **Symbolism** is an important means of visual communication for architecture.
- I. **Visual thinking** is a key to awareness of the built environment.
- J. **Sustainable design** of the built environment protects the natural environment.
- K. **Social structure, culture and the built environment** have a direct influence on one another.
- L. Design is experienced through **human sensory perception**.
- M. **The creative process** is basic to design.
- N. **Aesthetics** is the artistic component of architecture.
- O. **Climate and the natural environment** influence design decisions.
- P. Architecture satisfies **emotional** and **spiritual** needs in addition to **physical needs**.
- Q. Past, current and future **technologies** influence design decisions.



Curriculum Guide



Kindergarten

Kindergarten ♦ Lesson One



**KINDERGARTEN
LESSON NO. 1**

GEOMETRIC SHAPES

LENGTH OF LESSON:

30 Minutes

ARCHITECTURAL PRINCIPLES:

Design is composed of manipulating the physical characteristics of size, shape, texture, proportion, scale, mass and color.

Visual relationships are determined by light, shadow, edges and contrast.

Visual thinking is a key to awareness of the built environment.

MATERIALS

1. Tape, scissors, tracing paper and markers
2. Pictures of shapes (handout included) to compare to similar shapes in the classroom; photocopy this handout for students
3. Several photos of buildings (included) that show clear examples of shapes

VOCABULARY (See Glossary for definitions)

1. Circle
2. Semi-circle (half circle)
3. Rectangle
4. Shape
5. Square
6. Trace
7. Triangle



Kindergarten ♦ Lesson One



ACTIVITY

A. Introduce the basic two-dimensional shapes and their names:



Circle



Semi-Circle



Rectangle



Square



Triangle

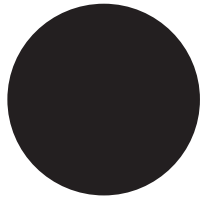
- B. Have the students find examples of these shapes in objects around the classroom. Label the shapes they find.
- C. Have students discuss the shapes.
1. Repeat the names of the shapes.
 2. Identify similarities and differences in the shapes.
- D. Have students cut out shapes from handout.
- E. Show slides, if available, and/or pictures (included) of various buildings. Have students identify examples of the shapes found on the buildings. (Teacher may want to make extra copies of photographs for students).
1. Have students place cut-out shapes over similar shapes on buildings.
 2. Put tracing paper over pictures of buildings (or slides projected on a wall) and ask students to trace the shapes they see.

TEACHER'S EVALUATION

- A. Observe the students and their ability to find shapes within the classroom.
- B. Review shapes traced over photos. Students should be able to accurately draw, recognize and identify shapes according to their tracings.



Kindergarten ♦ Lesson One



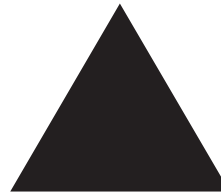
Circle



Square



Semi-Circle



Triangle



Rectangle



Kindergarten ♦ Lesson One



Circle



Kindergarten ♦ Lesson One



Circle



Kindergarten ♦ Lesson One



Square



Kindergarten ♦ Lesson One



Semi-Circle



Kindergarten ♦ Lesson One



Semi-Circle



Kindergarten ♦ Lesson One



Rectangle



Kindergarten ♦ Lesson One



Triangle



Kindergarten ♦ Lesson Two



**KINDERGARTEN
LESSON NO. 2**

STREETSCAPES

LENGTH OF LESSON:

30 Minutes

ARCHITECTURAL PRINCIPLES:

Design is accomplished by composing the physical characteristics of size, shape, texture, proportion, scale, mass and color.

Order is the arrangement and organization of elements to help solve visual and functional problems.

Visual relationships are determined by light, shadow, edges and contrast.

Form follows function is a design approach whereby the form of the building is determined by the function of its spaces and its parts.

MATERIALS

1. Construction paper of various colors; glue; scissors and crayon
2. Large photograph of actual streetscape (included)
 - a. Clear overlay of the streetscape for projection
 - b. Markers for the clear overlay
3. Pages of shape outlines in various sizes (copy onto paper in various colors for student use)
4. Sets of geometric shapes pre-cut from black construction paper (provide each student with a set)

VOCABULARY (See glossary for definitions)

- | | |
|----------------|-------------|
| 1. Circle | 5. Shape |
| 2. Rectangle | 6. Square |
| 3. Scale | 7. Trace |
| 4. Semi-circle | 8. Triangle |



Kindergarten ♦ Lesson Two



ACTIVITY

A. Identify shapes in a streetscape.

1. Project a clear overlay of an actual streetscape photograph onto a screen or classroom wall, large enough for students to work on. Give each child a set of the black geometric shape cutouts. Have each student select a shape and find the shape in the actual streetscape.

B. Create a streetscape.

1. Give each child a set of the shape outline worksheets featuring various sizes of triangles, circles, semi-circles, squares and rectangles.
2. Have each student cut out the shapes from construction paper of various colors and use them to create his/her own streetscape on an 11 x 17-inch piece of paper.

C. Have the students discuss the shapes.

1. Repeat the names of the shapes and identify which shapes were used for the parts of the buildings.
2. Point out different sizes of the same shape (scale).
3. Introduce the concept of smaller shapes, such as doors, windows, etc., into the 11 x 17-inch streetscape.
 - a. Have the students draw these shapes on their streetscape with crayon.

TEACHER'S EVALUATION

A. Observe the students and their ability to find shapes within the streetscape photo.

B. Review student art. Students should be able to correctly fit shapes together and begin to use smaller shapes to draw details like doors, windows, etc., to create their own streetscapes.



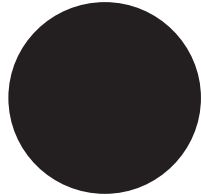
Kindergarten ♦ Lesson Two



Streetscape



Kindergarten ♦ Lesson Two



Circle



Square



Semi-Circle



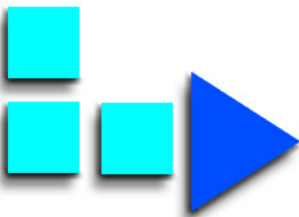
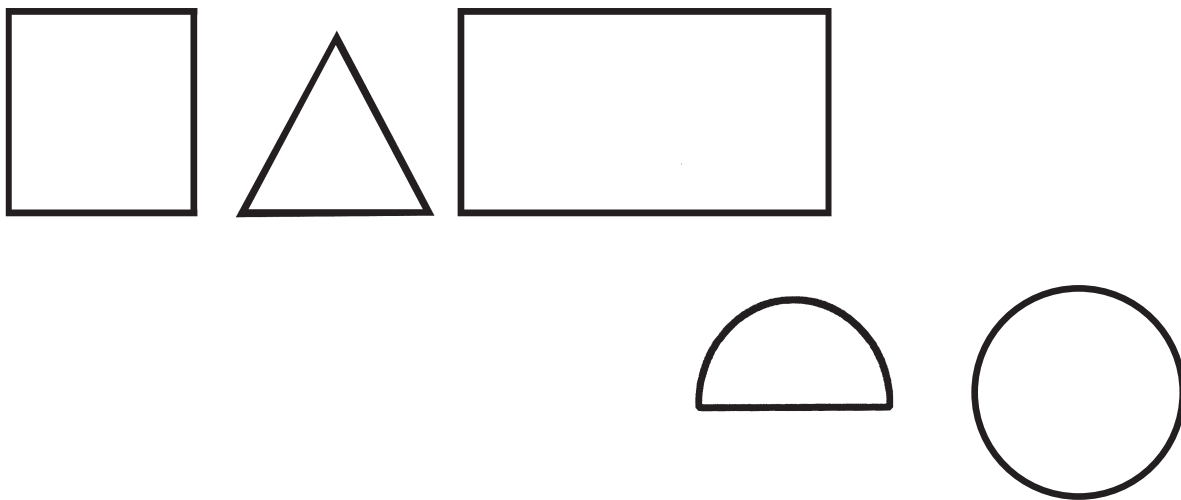
Triangle



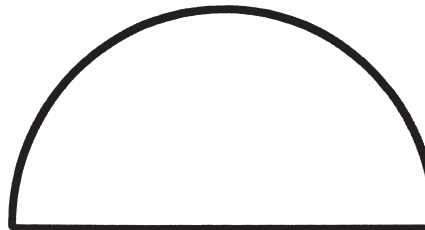
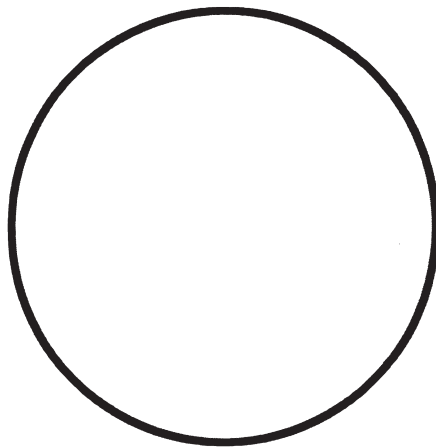
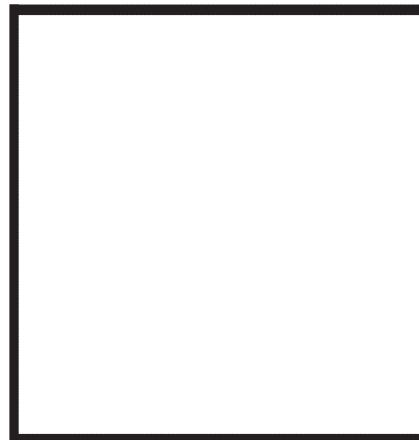
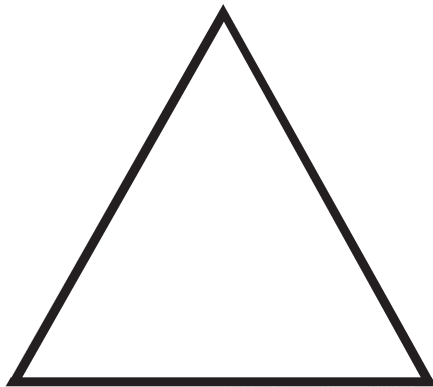
Rectangle



Kindergarten ♦ Lesson Two



Kindergarten ♦ Lesson Two



Kindergarten ♦ Lesson Three



**KINDERGARTEN
LESSON NO. 3**

NEIGHBORHOOD WALKS

LENGTH OF LESSON:

30 to 60 Minutes

ARCHITECTURAL PRINCIPLES:

Design is accomplished by composing the physical characteristics of size, shape, texture, proportion, scale, mass and color.

Order is the arrangement and organization of elements to help solve visual and functional problems.

Balance is the creation of visual harmony through the use of color and the manipulation of form.

Design is experienced through human sensory perception.

Social structure, culture and the built environment have a direct influence on one another.

Architecture satisfies emotional and spiritual needs in addition to physical needs.

Past, current and future technologies influence design decisions.

MATERIALS

1. Sheet containing black geometric shapes (included in Lesson No. 2); make a copy for each student
2. "Worksheet of Vocabulary Items"
3. Photographs with pictures of vocabulary items
4. Pencils or markers



Kindergarten ♦ Lesson Three



VOCABULARY (See glossary for definitions)

- | | | | |
|------------|-------------|----------------|------------------|
| 1. Bench | 6. Driveway | 11. Hedge | 16. Roof |
| 2. Chimney | 7. Fence | 12. Park | 17. Steps |
| 3. Column | 8. Gable | 13. Path | 18. Traffic Sign |
| 4. Door | 9. Garage | 14. Playground | 19. Trees |
| 5. Dormer | 10. Gate | 15. Porch | 20. Window |

ACTIVITY

- A. Evaluate the students' progress in learning geometric shapes and review any weak areas.
- B. Teacher: Take a preliminary walk before the time of the actual class walk to observe which elements can be identified in the specific neighborhood. Prepare a master copy of neighborhood elements (from vocabulary list) covered during the walk.
- C. Prepare the objectives to be accomplished during the walk. Remind students of Lessons No. 1 and 2 regarding geometric shapes and their application in the built environment. Show pictures of the various parts of a neighborhood (use accompanying photos).
 1. What shapes are present?
 2. Is there a driveway?
 3. Is there a porch?
 4. Does the porch have a roof?
- D. Prior to the walk, identify and discuss various elements of the neighborhood with the students.



Kindergarten ♦ Lesson Three



- E. Take the class for a neighborhood walk close to the school. It should provide a variety of workplace buildings and/or homes. The length of time involved may require limiting the objectives or may require more than one walk.
1. Elements can be found in the vocabulary list for this lesson plan.
 2. Students should take the vocabulary worksheet on the walk and circle the items they see.
 3. Students should take the sheet identifying geometric shapes on the walk to find those shapes in the built environment.

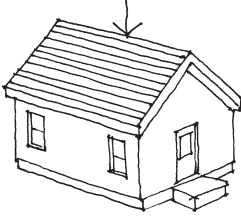

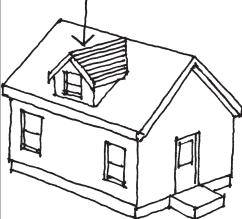
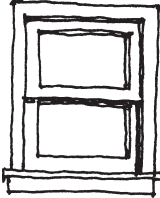
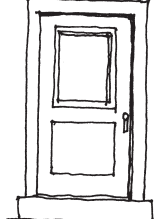
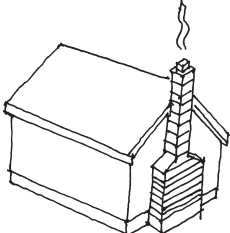
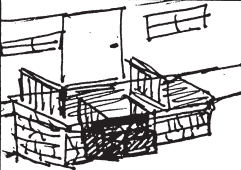
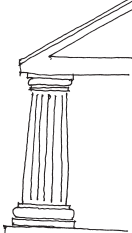
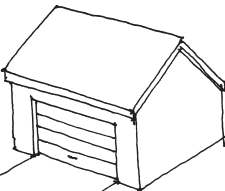
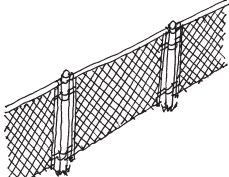

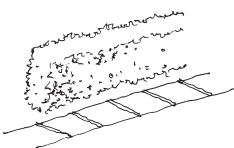
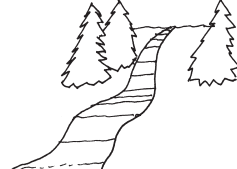
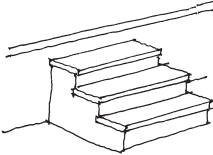
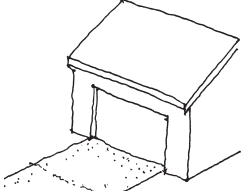
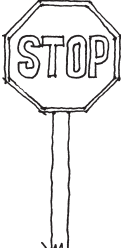
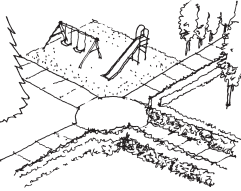
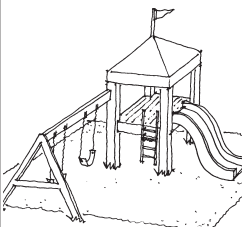
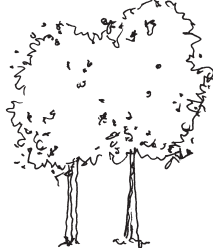
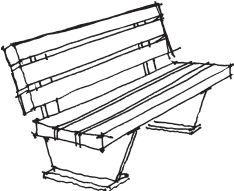
TEACHER'S EVALUATION

- A. Evaluate the students' learning experiences from Lessons No. 1 and 2. During discussions, observe the students' understanding of shapes and patterns relating to the built environment in their community.
- B. Review students' worksheets used during the walk. Use a master copy of neighborhood elements (from vocabulary list) covered during the walk. Compare items marked off on the students' papers to the items marked on the master copy.



Kindergarten ♦ Lesson Three



 <p>Roof</p>	 <p>Gable</p>	 <p>Dormer</p>	 <p>Window</p>	 <p>Door</p>
 <p>Chimney</p>	 <p>Porch</p>	 <p>Column</p>	 <p>Garage</p>	 <p>Fence</p>
 <p>Gate</p>	 <p>Hedge</p>	 <p>Path</p>	 <p>Steps</p>	 <p>Driveway</p>
 <p>Traffic Sign</p>	 <p>Park</p>	 <p>Playground</p>	 <p>Trees</p>	 <p>Bench</p>

Worksheet of Vocabulary Items



Kindergarten ♦ Lesson Three



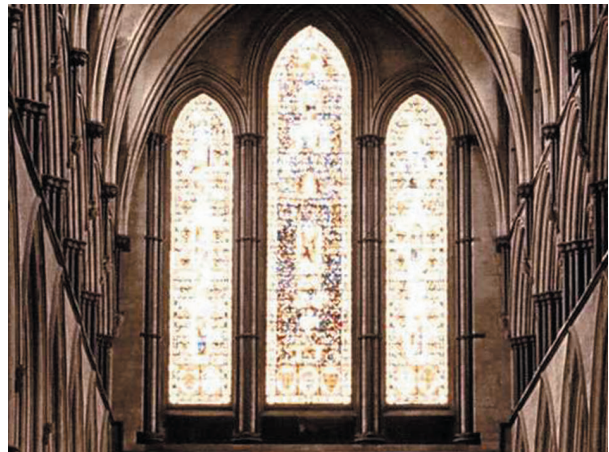
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Gable



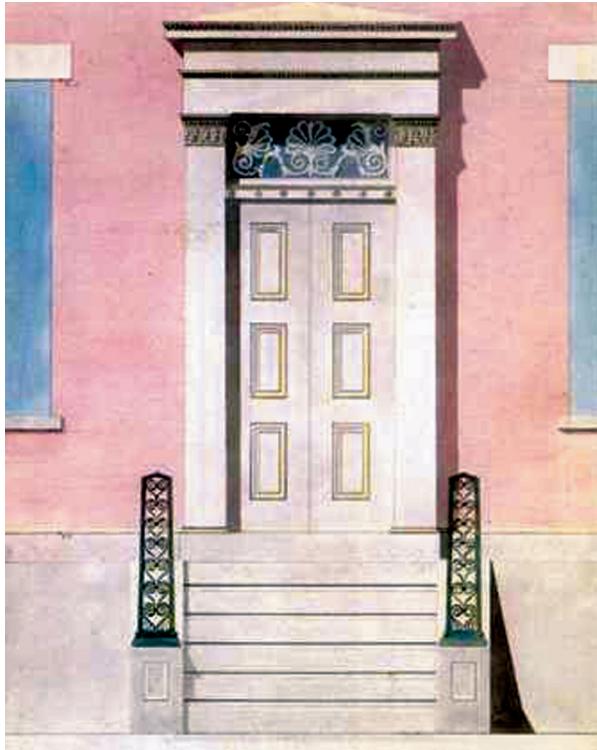
Dormer



Window



Kindergarten ♦ Lesson Three



Door



Porch



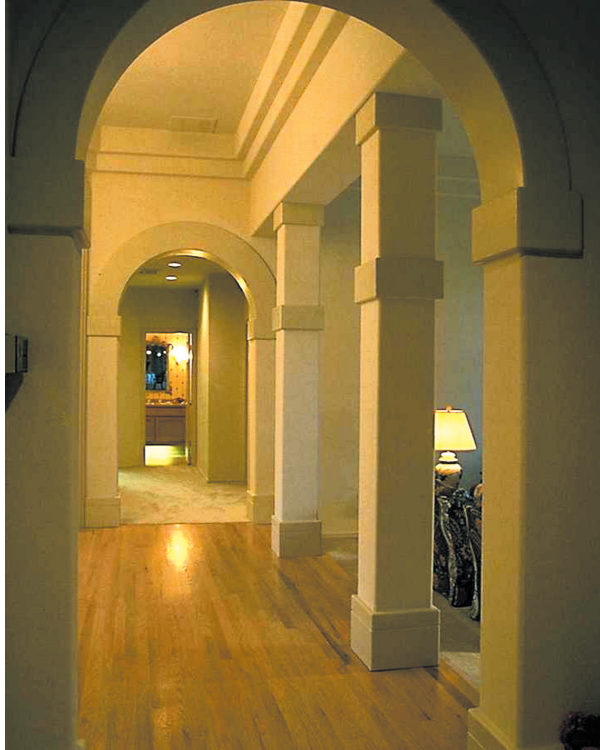
Chimney



Garage



Kindergarten ♦ Lesson Three



Column



Fence



Gate



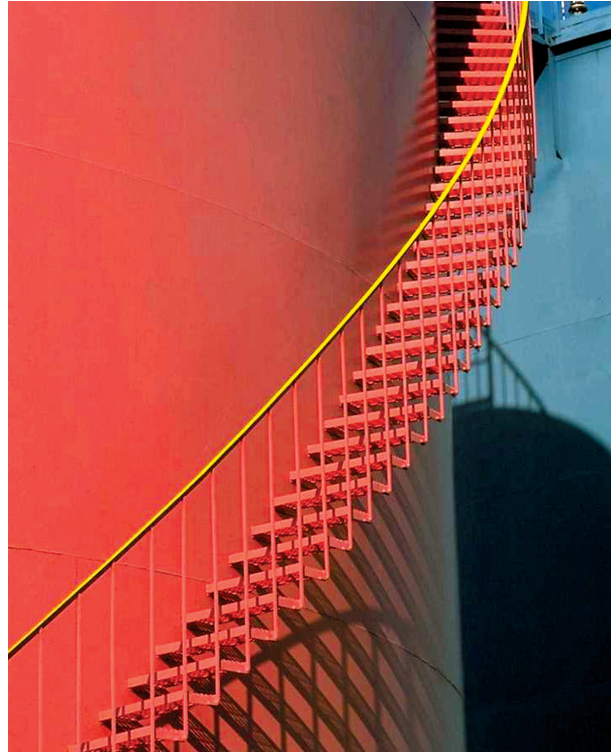
Path



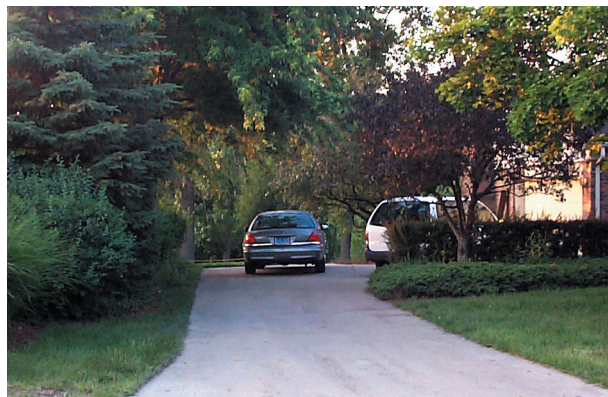
Kindergarten ♦ Lesson Three



Hedge



Steps



Driveway



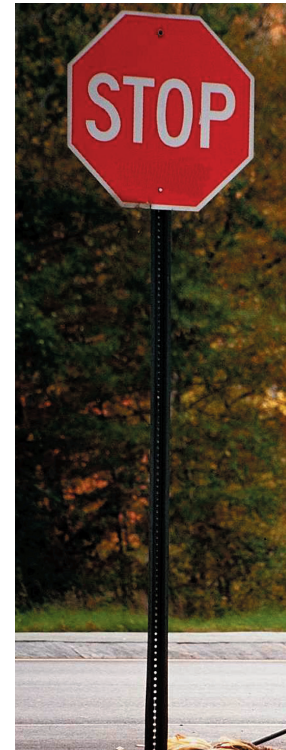
Playground



Kindergarten ♦ Lesson Three



Park



Traffic Sign



Trees



Bench



Kindergarten ♦ Lesson Three A



KINDERGARTEN
LESSON NO. 3a

PARKS AND PLAYGROUNDS

LENGTH OF LESSON:

30 to 60 Minutes

ARCHITECTURAL PRINCIPLES:

Nature is a model for architectural forms and shapes.

Sustainable design of the built environment protects the natural environment.

Form follows function is a design approach whereby the form of the building is determined by the function of its spaces and its parts.

Climate and the natural environment influence design decisions.

Architecture satisfies emotional and spiritual needs in addition to physical needs.

Sustainable Design of the built environment protects the natural environment.

MATERIALS

1. Worksheet of vocabulary items
2. Pencils or markers



Kindergarten ♦ Lesson Three A



VOCABULARY (See glossary for definitions)

- | | | |
|---------------------|----------------|---------------------------|
| 1. Baseball Field | 11. Flowers | 21. Slide |
| 2. Basketball Court | 12. Fountain | 22. Soccer/Football Field |
| 3. Bench | 13. Garden | 23. Stop Sign |
| 4. Crosswalk | 14. Lawn | 24. Street |
| 5. Curb | 15. Park | 25. Streetlight |
| 6. Driveway | 16. Pavement | 26. Sustainability |
| 7. Electric Wires | 17. Playground | 27. Swings |
| 8. Environment | 18. Road | 28. Traffic Light |
| 9. Fence | 19. Rules | 29. Trees |
| 10. Fire Hydrant | 20. Sidewalk | 30. Yard |

ACTIVITY

- A. Discuss with the students the need for neighborhood parks and playgrounds. Use vocabulary listed above for reference.
- B. Take the class for a walk in a neighborhood close to the school that has a park or a playground. Prepare a list of questions specific to your park or playground walk as follows:
1. How do we identify it as a park or playground?
 2. What activities take place in a park or playground?
 3. What elements are built into these environments to facilitate and encourage these activities?
 4. Which items are made by people and which items are natural?
 5. Whom are parks and playgrounds for?
 6. What are the rules in parks and playgrounds?
 7. What could be added to this park for community use?
 8. What can we do to help care for our parks and playgrounds?
- C. Have students take the worksheet with pictures of vocabulary items on the walk to the park/playground. Have them circle what they see on their walk.

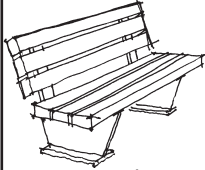
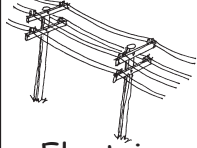
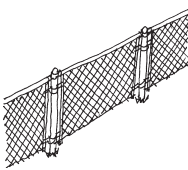

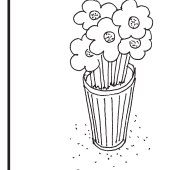
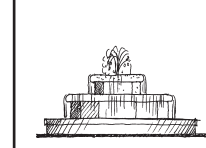
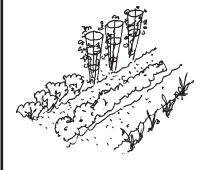


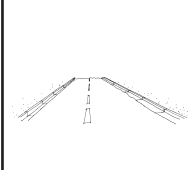

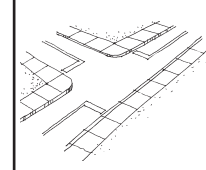
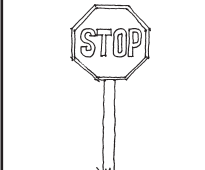
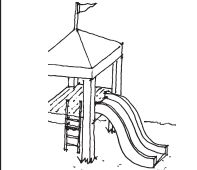
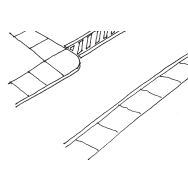
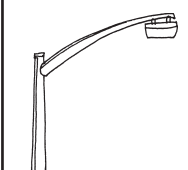
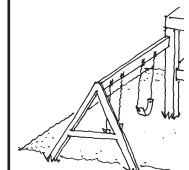
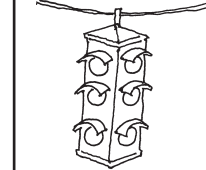
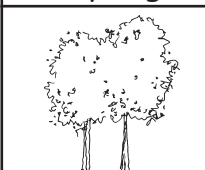
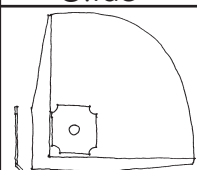
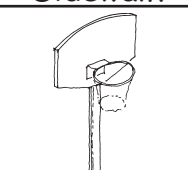
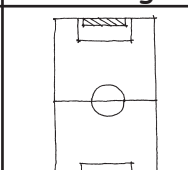
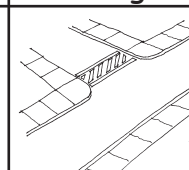
TEACHER'S EVALUATION

- A. Using a master copy of the vocabulary worksheet, review the students' worksheets for accuracy.



Kindergarten ♦ Lesson Three A



					
Bench	Electric Wires	Fence	Fire Hydrant	Flowers	Fountain
					
Garden	Lawn	Playground	Road	Rules	Street
					
Stop Sign	Slide	Sidewalk	Streetlight	Swings	Traffic Light
					
Trees	Baseball	Basketball	Soccer	Crosswalk	

Worksheet of Vocabulary Items



Kindergarten ♦ Lesson Four



**KINDERGARTEN
LESSON NO. 4**

BUILDING BLOCK TOWN

LENGTH OF LESSON:

30 Minutes

ARCHITECTURAL PRINCIPLES:

Design is accomplished by composing the physical characteristics of size, shape, texture, proportion, scale, mass and color.

Order is the arrangement and organization of elements to help solve visual and functional problems.

Form follows function is a design approach whereby the form of a building is determined by the function of its spaces and its parts.

Mass creates form, which occupies space and brings into being a spatial articulation.

The creative process is basic to design.

Aesthetics is the artistic component of architecture.

MATERIALS

1. "Simplified Map" (included) for the teacher to enlarge (may project the map on a wall and use tracing paper to create an appropriately sized drawing)
2. "Worksheet of Vocabulary Items" (make copies and cut out the labeled squares)
3. Variety of shapes and sizes of wood or cardboard building blocks (to represent buildings)
4. Toy cars
5. Glue



Kindergarten ♦ Lesson Four



VOCABULARY (See glossary for definitions)

- | | |
|----------------------|---------------------|
| 1. Built environment | 6. Library |
| 2. Community | 7. Police station |
| 3. Fire station | 8. Roads |
| 4. Hospital | 9. School |
| 5. Houses | 10. Shopping Center |

ACTIVITY

- A. Place enlarged road map in an accessible location for students.
- B. Hand out labeled squares of the nine items listed below:

1. Shopping Center	6. Hospital
2. School	7. Police Station
3. Houses	8. Hotel
4. Fire Station	9. Park
5. Library	
- C. Have the students paste the labeled squares on top of the three-dimensional blocks that represent the buildings.
- D. Talk to students as they build their own town.
 1. A community is where people live, work and play.
 2. Do they have roads that lead to the buildings listed above?
 3. Have the students identify various paths of travel, e.g., school to library.
 4. Use dialogue to ask if their arrangement needs to be changed. Does the school need to be closer to the houses for children to be able to walk to school? Are there roads to connect the police and fire stations to all areas of the community?
- E. Have the students add toy cars and draw trees, sidewalks, etc., to complete their town.



Kindergarten ♦ Lesson Four



TEACHER'S EVALUATION

- A. Observe students' ability to follow a path from houses to school, from the fire station to a house, etc.

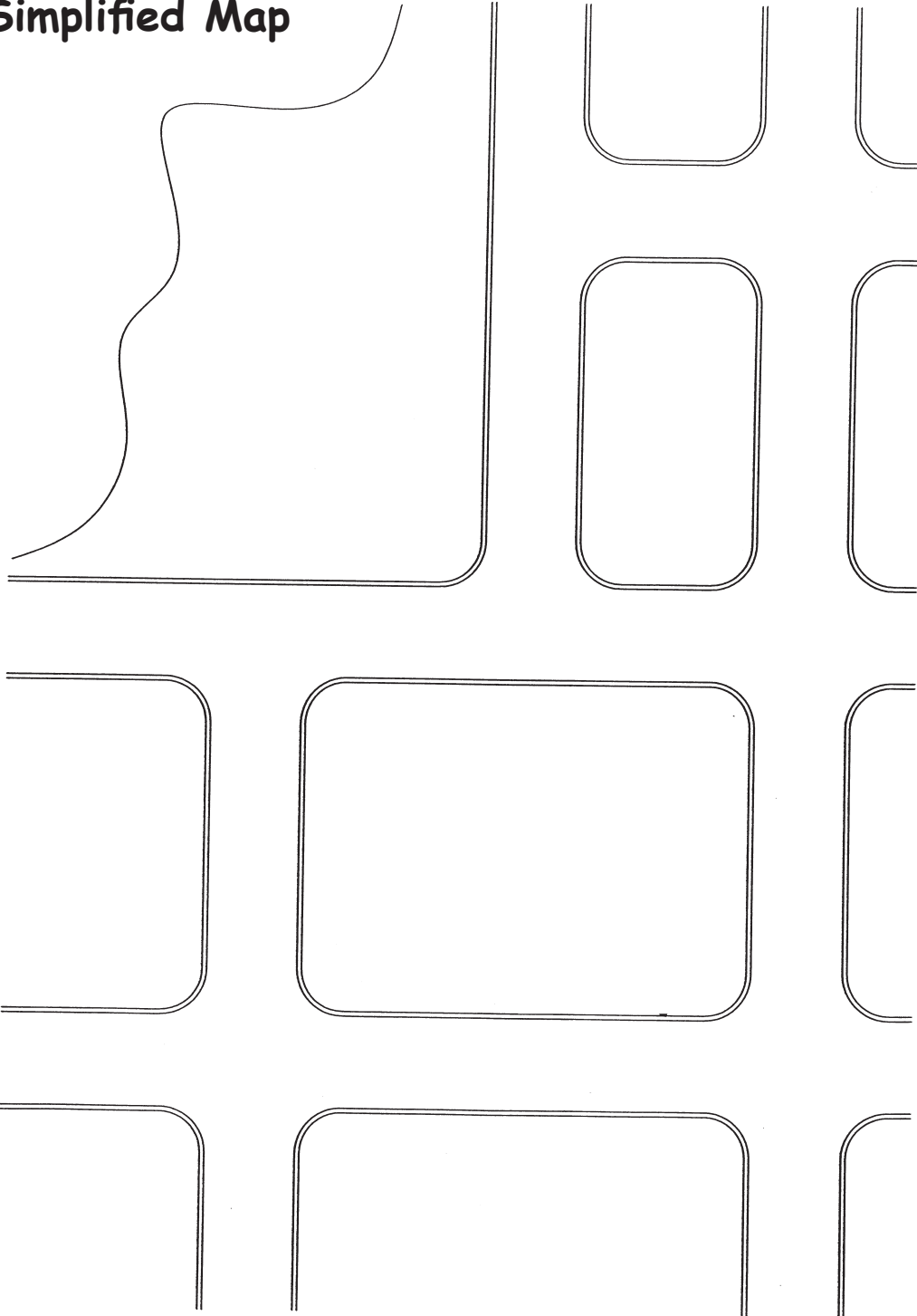
- B. Determine students' understanding of how the built environment relates to their community by evaluating their understanding of the relationship between buildings, roads and sidewalks in the community they create.



Kindergarten ♦ Lesson Four


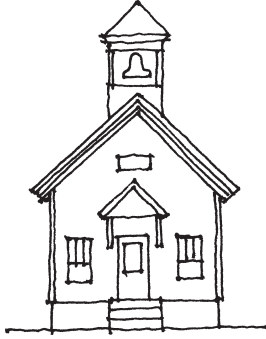
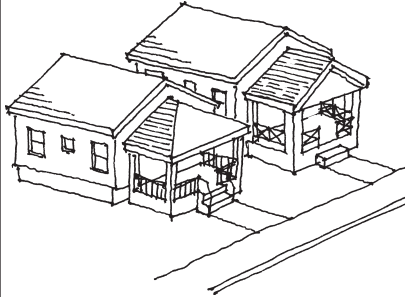
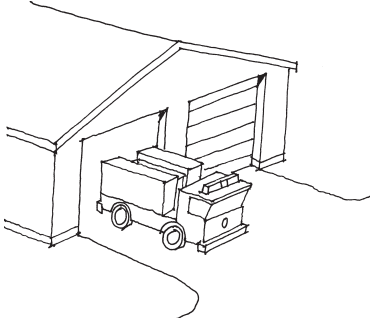
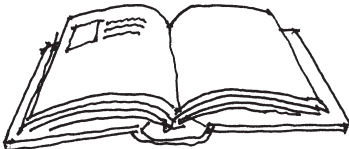
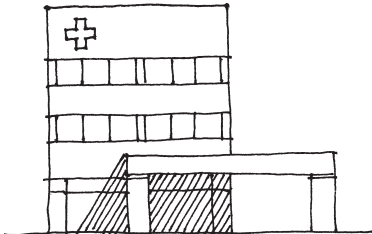

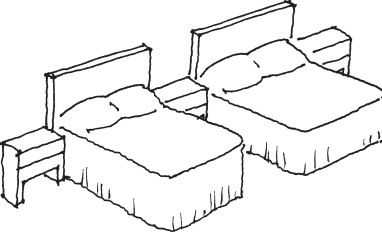
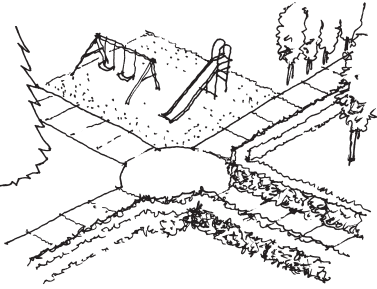


Simplified Map



Kindergarten ♦ Lesson Four



		
Shopping Center	School	Houses
		
Fire Station	Library	Hospital
		
Police Station	Hotel	Park

Worksheet of Vocabulary Items



Kindergarten ♦ Lesson Five



**KINDERGARTEN
LESSON NO. 5**

ACTING OUT STRUCTURES

LENGTH OF LESSON: 30 Minutes

ARCHITECTURAL PRINCIPLES:

Visual thinking is a key to awareness of the built environment.

Form follows function is a design approach whereby the form of a building is determined by the function of its spaces and its parts.

Nature is a model for architectural forms and shapes.

Past, current and future technologies influence design decisions.

MATERIALS

1. Examples of different structural types (included)
2. "Acting Out Structures" handout (included)

VOCABULARY (See glossary for definitions)

1. Arch
2. Beam
3. Cantilever
4. Column
5. Compression
6. Dome
7. Flying Buttress
8. Forces
9. Gravity
10. Tension
11. Vault



Kindergarten ♦ Lesson Five



ACTIVITY

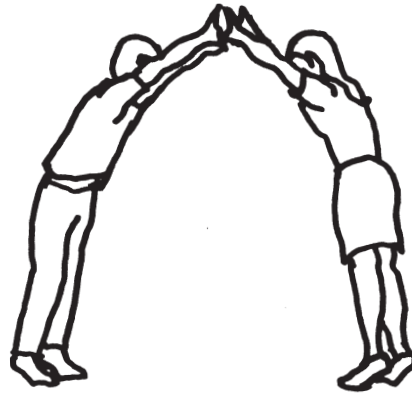
- A. Display pictures of buildings showing different types of structural systems (column, beam, vault, dome, etc.) and discuss the basic structural principles present in each example. Ask the class to think of other more familiar structures that demonstrate the same principles; for example, the column and beam structure of playground equipment, the vault shape of a tunnel, the cantilever of a streetlight.
- B. Give students a copy of the Acting Out Structures handout. Have the class "act out" different structural systems, calling attention to concepts such as the following:
 1. Some structures, such as a column, can function independently.
 2. Other structures, such as an arch, require cooperative effort or "opposing forces."
 3. Notice how tension and compression forces can be used to oppose the force of gravity. Demonstrate tension using string or rubber band, and compression by pushing hands together.

TEACHER'S EVALUATION

- A. Through observation, the teacher should assess students' comprehension by their ability to act out structures, use vocabulary and understand math objectives.



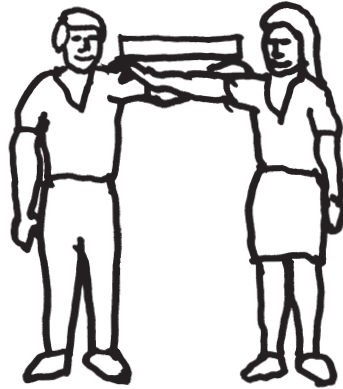
Kindergarten ♦ Lesson Five



Arch



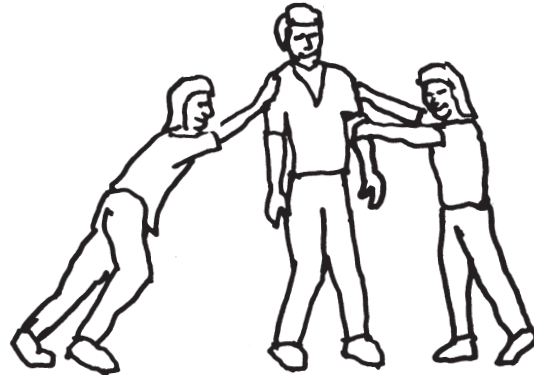
Kindergarten ♦ Lesson Five



Column & Beam



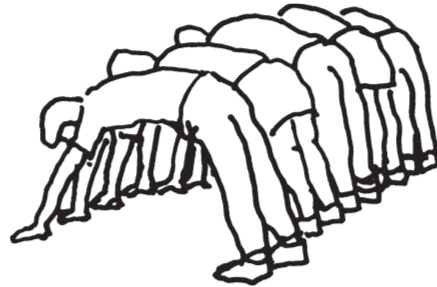
Kindergarten ♦ Lesson Five



Flying Buttress



Kindergarten ♦ Lesson Five



Vault / Tunnel



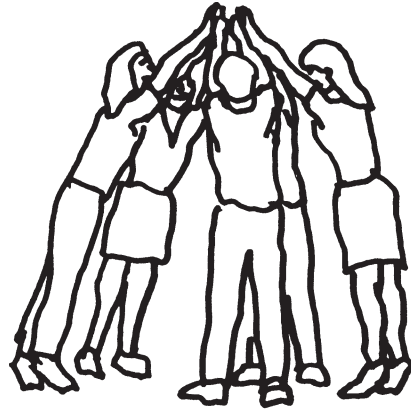
Kindergarten ♦ Lesson Five



Column



Kindergarten ♦ Lesson Five



Dome



Kindergarten ♦ Lesson Five



Acting Out Structures



COLUMN



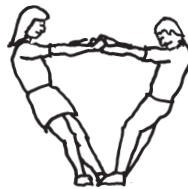
ARCH



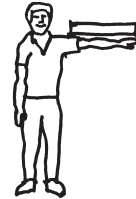
COLUMN AND BEAM



DOME



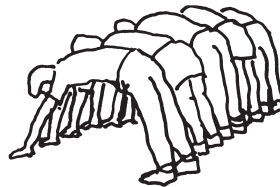
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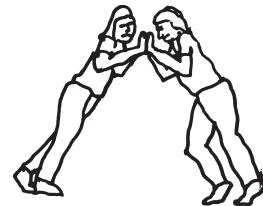
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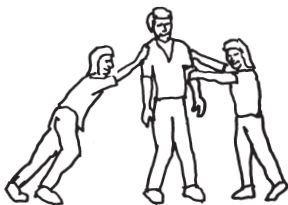
LOAD AND SUPPORT



VAULT / TUNNEL



COMPRESSION



FLYING BUTTRESSES



Kindergarten ♦ Lesson Six



**KINDERGARTEN
LESSON NO. 6**

HUMAN PROPORTIONS

LENGTH OF LESSON:

30 Minutes

ARCHITECTURAL PRINCIPLES:

Design is accomplished by composing the physical characteristics of size, shape, texture, proportion, scale, mass and color.

Visual thinking is a key to awareness of the built environment.

MATERIALS

1. Ruler and yardstick (to compare body measurements) for each student.

VOCABULARY (See glossary for definitions)

1. Foot
2. Inch
3. Measurement
4. Proportion
5. Size
6. Yard



Kindergarten ♦ Lesson Six



ACTIVITY

- A. Introduce the students to the concept of measurement. Ask students how ancient man might have measured things using his body (outstretched arms, paces, hand, cubit) since he did not have rulers or tape measures.
- B. Compare the students' units of body measurement to standard units (how many "finger widths" in an inch, how many "feet" in a yard, etc.).
- C. Ask students what might be the appropriate units of "body" measurement for various things: the width of a classroom, the height of a desk, the length of a pencil.
- D. Have students estimate length of objects before measuring. Measure objects in the classroom. Let students take turns measuring while the class observes.
- E. Introduce the concept of scale by discussing the appropriate size for objects or openings designed for children vs. adults. An example could be the size of a chair, as in "Goldilocks and the Three Bears" (too big, too little, just right). Pull out a child's chair and have a child and the teacher stand next to the chair. Ask if the chair is meant for a child or an adult. Other children vs. adult examples could be the height of a bed or the height of a counter/shelves, etc. Compare the height of a sink in a classroom (designed for kids) to the height of a sink at home (designed for adults).

TEACHER'S EVALUATION

- A. Observe each student as he/she estimates and measures objects. When a student lacks understanding, further explanation and selection of another object to measure may be necessary.



Kindergarten ♦ Lesson Seven



**KINDERGARTEN
LESSON NO. 7**

DRAW YOUR ROOM FROM MEMORY

LENGTH OF LESSON:

30 Minutes

ARCHITECTURAL PRINCIPLES:

Design is accomplished by composing the physical characteristics of size, shape, texture, proportion, scale, mass and color.

Visual thinking is a key to awareness of the built environment.

Design is experienced through human sensory perception.

Architecture satisfies emotional and spiritual needs in addition to physical needs.

MATERIALS

1. 12 X 18-inch paper divided into four equal sections
2. Crayons or drawing tools of choice
3. Example of a bedroom with detail for reference (included)

VOCABULARY (See glossary for definitions)

1. Ceiling
2. Door
3. Outlets
4. Room
5. Switch
6. Window



Kindergarten ♦ Lesson Seven



ACTIVITY

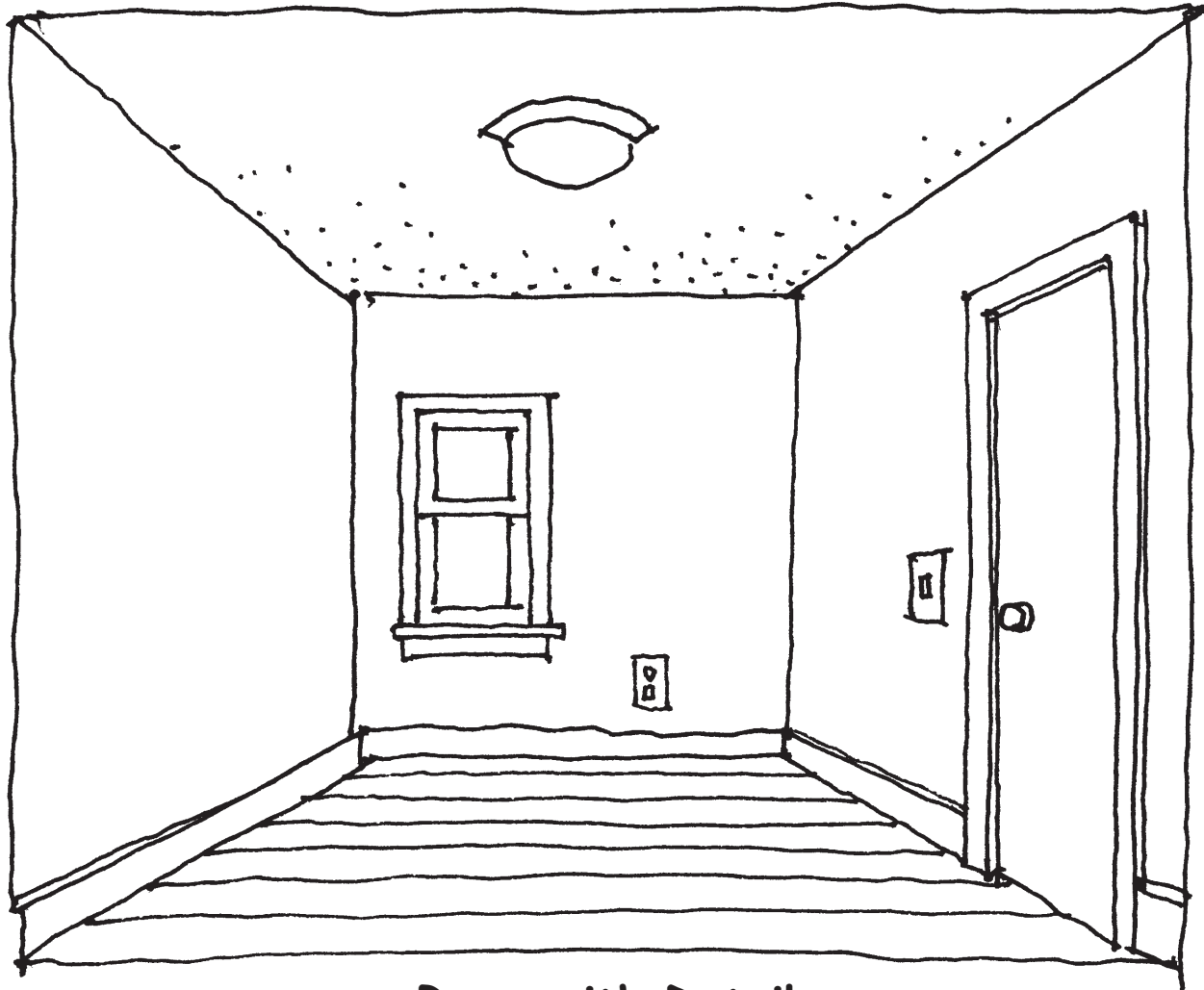
- A. Discuss a room with the students, using the classroom as an example. Point out walls, floor, doors, windows, ceiling, lights, electrical outlets, switches and furniture. Discuss one wall at a time. You may want to do a drawing of one of the walls as an example.
- B. Describe the classroom to the students using shapes, color, sizes and texture of the room.
- C. Show the picture of the sample bedroom to the students. Tell the students to close their eyes and to imagine their bedrooms at home.
- D. The teacher demonstrates how to divide a 12 x 18-inch piece of paper into four walls by folding it into four parts and then draws an example of a bedroom wall for the students.
- E. Students then draw their bedrooms by drawing a picture of each of the four walls of the room, one picture for each part of the paper in D above, indicating details such as doors, mirrors, colors, etc.
- F. After their drawings are completed, each student describes the room to the class and the teacher, pointing out shapes, colors, size comparisons and textures. The students then display their drawings in the classroom.

TEACHER'S EVALUATION

- A. Observe students' ability to speak of their environment and use vocabulary words, classify and identify objects and explain reasons for their location.
- B. Evaluate students' drawings. Drawings should include completed four walls, evidence of understanding of spatial relationships and objects classified according to color, size, shape, etc.



Kindergarten ♦ Lesson Seven



Room with Detail



Kindergarten ♦ Lesson Seven A



**KINDERGARTEN
LESSON NO. 7a**

WHAT IS YOUR FAVORITE PLACE?

LENGTH OF LESSON:

30 Minutes

ARCHITECTURAL PRINCIPLES:

Design is accomplished by composing the physical characteristics of size, shape, texture, proportion, scale, mass and color.

Visual thinking is a key to awareness of the built environment.

Design is experienced through human sensory perception.

Symbolism is an important visual means of communication for architecture.

Aesthetics is the artistic component of architecture.

Architecture satisfies emotional and spiritual needs in addition to physical needs.

MATERIALS

1. White paper
2. Crayons or drawing tools of choice

VOCABULARY (See glossary for definitions)

1. Hear
2. See
3. Smell
4. Taste
5. Touch



Kindergarten ♦ Lesson Seven A



ACTIVITY

- A. Explain to the students that we experience our surroundings through our five senses (sight, hearing, smell, taste and touch), pointing out the part of our body that has the sense (eyes, ears, etc.). Ask students to describe their surroundings according to their five senses.
- B. Turn off the lights, get students comfortable and play soft music.
- C. Tell students to close their eyes and to think about their favorite places - inside or outside. Give them examples, such as their bedroom, their grandparents' house, a special playground, etc.
- D. Tell the students to think about their most favorite place and ask them to think about their senses:
 1. What do they see there? (colors, light vs. dark)
 2. What do they hear there? (types of sounds or quiet)
 3. Are there any special smells? (food)
 4. Do they taste any special foods there?
 5. Are there any special things they touch?
- E. Give the students paper and crayons to draw their most favorite place, and, when they are done, have the students display and describe their places using their five senses. The teacher should ask the students the questions listed in (D) above to help them describe the picture.

TEACHER'S EVALUATION

- A. Observe students during discussion. Do students recognize and communicate an understanding of their five senses?
- B. Analyze student artwork for translation of the visual thought process, drawing skill and color use.



Kindergarten ♦ Lesson Eight



KINDERGARTEN
LESSON NO. 8

PICTURE YOUR OWN HOME - PART 1
GENERAL SHAPES

LENGTH OF LESSON: 30 Minutes

ARCHITECTURAL PRINCIPLES:

Design is accomplished by composing the physical characteristics of size, shape, texture, proportion, scale, mass and color.

Order is the arrangement and organization of elements to help solve visual and functional problems.

Visual thinking is a key to awareness of the built environment.

Design is experienced through human sensory perception.

Form follows function is a design approach whereby the form of the building is determined by function of building spaces and parts.

Architecture satisfies emotional and spiritual needs in addition to physical needs.

Materials

1. A page of basic shapes in outline form, useful for assembling a house (included); teacher should copy onto sheets of construction paper in various colors and pre-cut shapes
2. "Worksheet of Vocabulary Items" (included)
3. 12 x 18-inch paper to use for background
4. Glue
5. Letter to parents (included)



Kindergarten ♦ Lesson Eight



VOCABULARY (see glossary for definitions and included pictures)

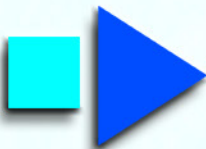
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|-------------|----------------|------------------|
| 1. Bench | 8. Gable | 15. Porch |
| 2. Chimney | 9. Garage | 16. Roof |
| 3. Column | 10. Gate | 17. Steps |
| 4. Door | 11. Hedge | 18. Traffic Sign |
| 5. Dormer | 12. Park | 19. Trees |
| 6. Driveway | 13. Path | 20. Window |
| 7. Fence | 14. Playground | |

ACTIVITY

- Review worksheet of vocabulary items with students (originally presented in Lesson No. 3).
- Ask students to imagine a view of their house. Ask what they see. What shape is the roof? Is it triangular, square or rectangular? What are the colors? Does the house have a porch and/or a garage? The teacher should review Lessons No. 1 and 2 on geometric shapes and streetscapes.
- Students should first draw an outline of how they visualize their house to look.
- Next, the students will assemble a picture of their house (elevation) from pre-cut shapes in different colors to match their drawings.
- The students will paste their shapes on a background paper.
- Explain take-home letter to children outlining instructions for Lesson No. 9 and distribute to take home to parents.

TEACHER'S EVALUATION

- Analyze student art work for ability to recognize and use familiar shapes; use of artistic skills - drawing from observation, pasting and constructing forms; and identification of elements in the students' immediate environment.



Kindergarten ♦ Lesson Eight



Dear Parents/Guardians:

Your child's class is learning the basic elements of architecture. Students are learning:

- To recognize familiar shapes in three-dimensional form;
- To develop artistic skills such as drawing, pasting and constructing forms from observing what they see;
- To focus on the what and the why of their environment through communication as they listen and speak in class;
- To identify important elements in their immediate environment and reasons for their form and location.

Today in class, we had each student imagine a view of his/her house (apartment). Students drew an outline sketch of what they visualized their home to be. Then we had them paste together a picture of their house (apartment) from pre-cut shapes on background paper to match their imagined sketch.

We are asking for your help in accomplishing the goals mentioned above by working with your child at home to build on today's lesson. This would include observing with them the actual front view of your house (apartment). Helpful information to share would be the basic shapes (square, rectangle, circle, semi-circle, triangle) and sizes of shapes of which your home (apartment) is composed.

After you and your child have observed the basic shapes of your house (apartment), we are asking you to help him/her create a rough sketch of your home's "front" view. Then, we would like you to help your child add the details of the "front view" of your house (apartment). Examples of detail needed are the doors, windows, chimney, dormers, porch, driveway, etc.

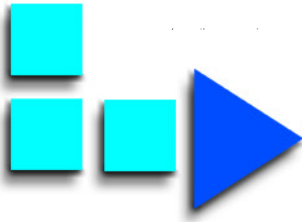
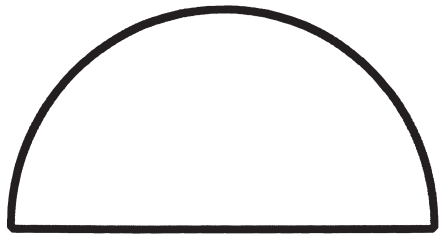
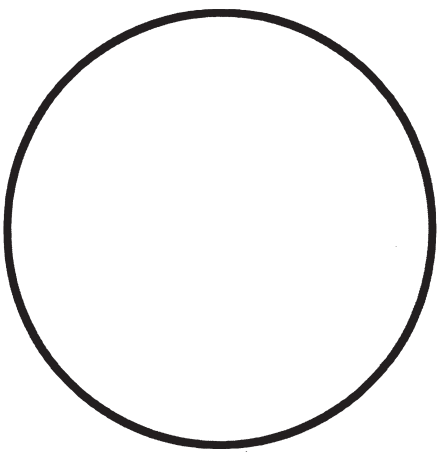
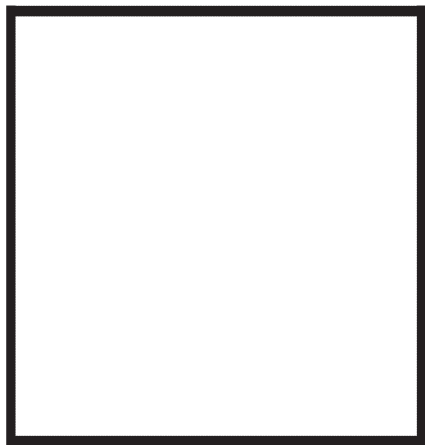
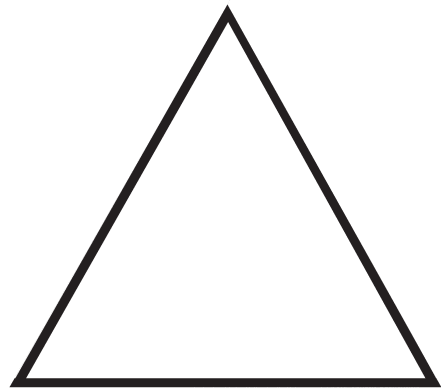
Helping your child compare his/her imagined front view to the actual front view will exercise your child's awareness, memory and focusing abilities. The date for the follow-up lesson to this exercise is _____. We will use the rough sketch you've made with them at home as a guide in the follow-up lesson in class when they construct the actual front view of their home (apartment).

Your help in encouraging your child's awareness of his/her surroundings is greatly appreciated.

Thank you,

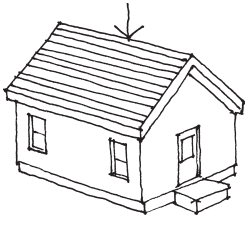

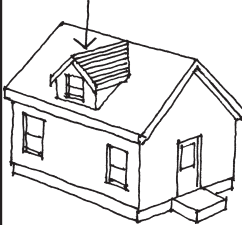
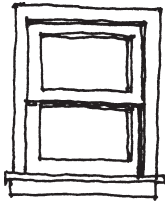
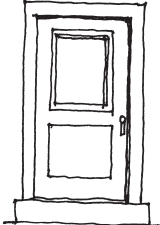
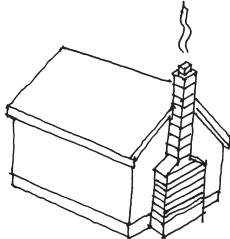
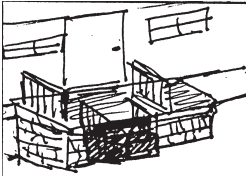
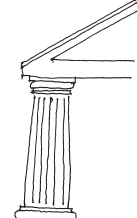
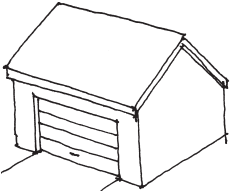
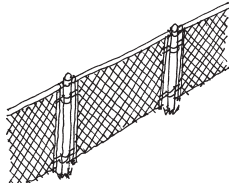

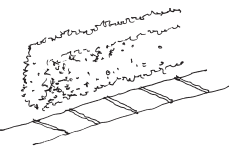
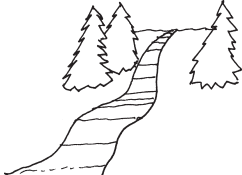
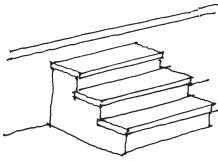
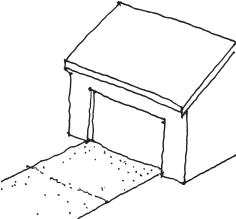
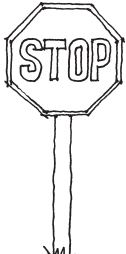
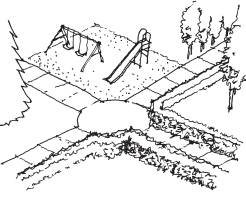
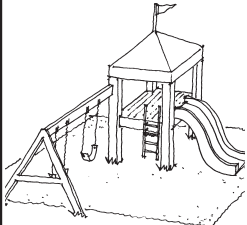
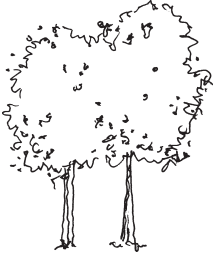
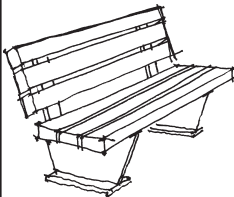


Kindergarten ♦ Lesson Eight



Kindergarten ♦ Lesson Eight



				
Roof	Gable	Dormer	Window	Door
				
Chimney	Porch	Column	Garage	Fence
				
Gate	Hedge	Path	Steps	Driveway
				
Traffic Sign	Park	Playground	Trees	Bench

Worksheet of Vocabulary Items



Kindergarten ♦ Lesson Nine



**KINDERGARTEN
LESSON NO. 9**

**PICTURE YOUR OWN HOME - PART 2
HOUSE DETAILS**

LENGTH OF LESSON: 60 Minutes

ARCHITECTURAL PRINCIPLES:

Design is accomplished by composing the physical characteristics of size, shape, texture, proportion, scale, mass and color.

Order is the arrangement and organization of elements to help solve visual and functional problems.

Visual thinking is a key to awareness of the built environment.

Design is experienced through human sensory perception.

Form follows function is a design approach whereby the form of the building is determined by function of building spaces and parts.

Past, current and future technologies influence design decisions.

MATERIALS

1. Art work from Lesson No. 8. and sketch made at home with parents
2. House shapes pre-cut from construction paper (see Lesson No. 8)
3. Copy of Drawing of House Details for each child (teacher may pre-cut house details from construction paper in various colors or create stencils of windows, doors, chimneys, etc., for student use)
4. Drawing tools (crayons, markers, etc.)
5. 12 x 18-inch paper for background
6. Glue
7. Letter to parents (included) accompanied by "Worksheet of Vocabulary Items" from Lesson No. 8



Kindergarten ♦ Lesson Nine



VOCABULARY (See glossary for definitions)

- | | |
|-------------|-------------------------|
| 1. Bench | 11. Hedge |
| 2. Chimney | 12. Park |
| 3. Column | 13. Path |
| 4. Door | 14. Playground |
| 5. Dormer | 15. Porch |
| 6. Driveway | 16. Roof |
| 7. Fence | 17. Steps |
| 8. Gable | 18. Traffic Sign |
| 9. Garage | 19. Trees |
| 10. Gate | 20. Window (Bay Window) |

ACTIVITY

- Using pre-cut shapes, have students reconstruct the basic front elevation of their house based on the at-home sketch assigned in Lesson No. 8.
- After discussing the items found on the Drawing of House Details, have students add details, such as doors, windows, shutters, chimney, etc., according to their home sketch. They may use details pre-cut by teacher, stencils created by teacher or draw in details freehand using crayons or markers. They can then add more detail to these shapes by drawing in window frames, drapes, door handles, people, etc.
- After pasting house to background paper, have students add details of environment, such as trees, flowers, clouds, sun, etc.
- Explain take-home letter to children outlining instructions for Lesson No. 10 and distribute to take home to parents.

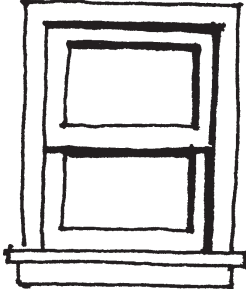
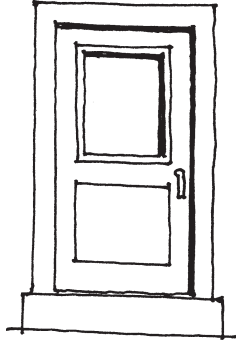
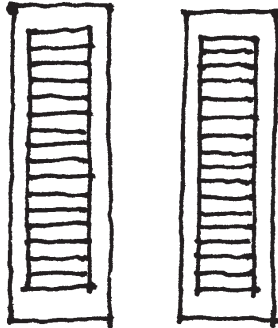
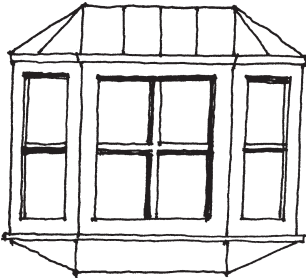
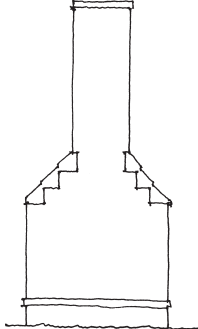
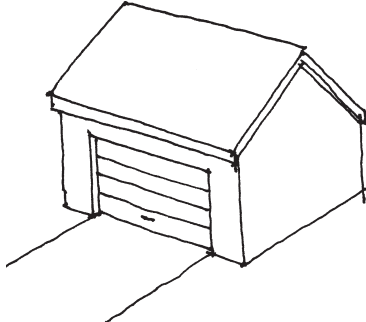
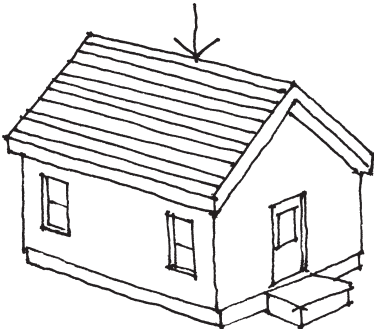

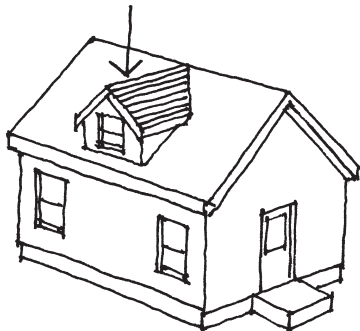
TEACHER'S EVALUATION

- Analyze student art work for ability to recognize and use familiar shapes; use of artistic skills - drawing from observation, pasting and constructing forms; and identification of elements in the students' immediate environment.



Kindergarten ♦ Lesson Nine



		
Window	Door	Shutters
		
Bay Window	Chimney	Garage
		
Roof	Gable	Dormer

Drawing of House Details



Kindergarten ♦ Lesson Nine



Dear Parents/Guardians:

Your child's class is learning the basic elements of architecture.

Today in class, your child constructed the front view (elevation) of your house (apartment). The children incorporated details such as the doors, windows, chimney, porch, etc. Your child's vocabulary also includes the words "column," "dormer," "driveway," "fence," "gable," "garage," "gate," "hedge," etc.

We will be constructing a streetscape using your child's home and his/her observations of your neighborhood. Using the vocabulary list we have sent home with this letter, please observe and discuss with your child your neighborhood houses (apartments), pointing out their similarities and differences. Emphasize to your child that, together, these similarities and differences form your neighborhood.

The date for the follow-up lesson plan to this homework is _____.

We will be presenting our final work during Family Night. We will send more information on Family Night in a separate letter.

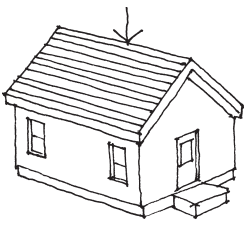

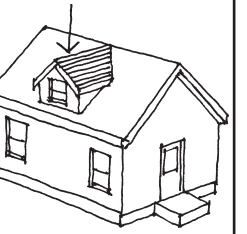
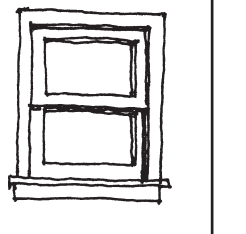

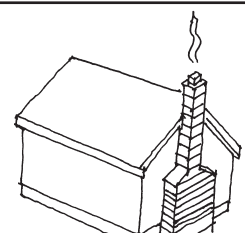
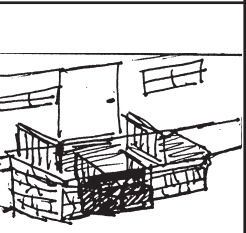
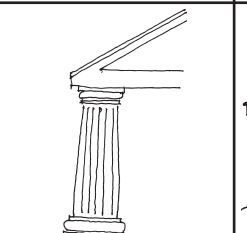
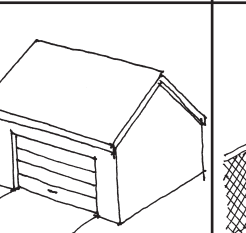
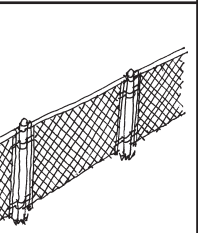
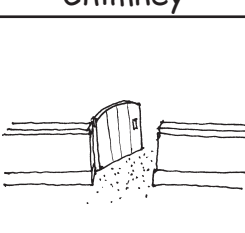
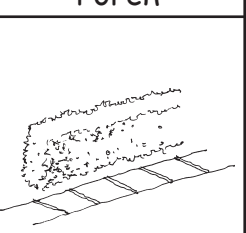
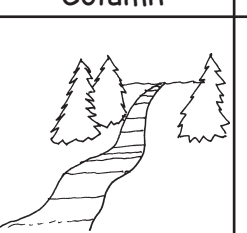
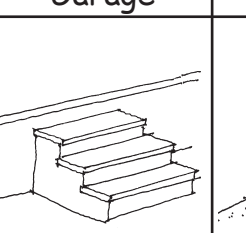
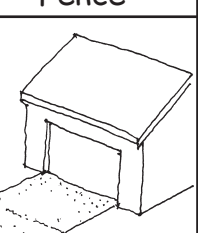
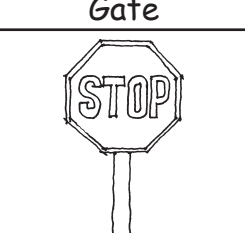
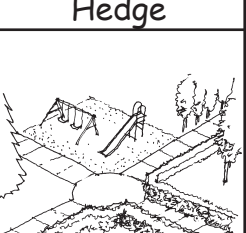
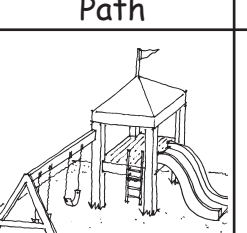
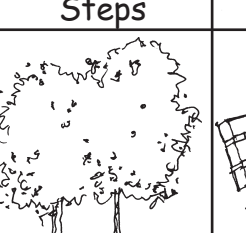

Again, thank you for encouraging your child's awareness of his/her surroundings. We hope this experience was rewarding for you, too.

Thank you,



Kindergarten ♦ Lesson Nine



				
Roof	Gable	Dormer	Window	Door
				
Chimney	Porch	Column	Garage	Fence
				
Gate	Hedge	Path	Steps	Driveway
				
Traffic Sign	Park	Playground	Trees	Bench

Worksheet of Vocabulary Items



Kindergarten ♦ Lesson Ten



**KINDERGARTEN
LESSON NO. 10**

**PICTURE YOUR OWN HOME - PART 3
NEIGHBORHOOD CONTEXT**

LENGTH OF LESSON: 30 Minutes

ARCHITECTURAL PRINCIPLES:

Design is accomplished by composing the physical characteristics of size, shape, texture, proportion, scale, mass and color.

Order is the arrangement and organization of elements to help solve visual and functional problems.

Visual thinking is a key to awareness of the built environment.

Design is experienced through human sensory perception.

Form follows function is a design approach whereby the form of the building is determined by function of its spaces and its parts.

MATERIALS

1. Long sheet of bulletin board paper (mounted on the wall where mural will stay)
2. Student houses from Lesson No. 9
3. Scissors
4. Glue
5. Masking tape
6. Construction paper in various colors
7. Drawing tools
8. "Worksheet of Vocabulary Items" for reference



Kindergarten ♦ Lesson Ten



VOCABULARY (See glossary for definitions)

- | | | |
|-------------|----------------|------------------|
| 1. Bench | 9. Garage | 17. Steps |
| 2. Chimney | 10. Gate | 18. Traffic Sign |
| 3. Column | 11. Hedge | 19. Trees |
| 4. Door | 12. Park | 20. Window |
| 5. Dormer | 13. Path | |
| 6. Driveway | 14. Playground | |
| 7. Fence | 15. Porch | |
| 8. Gable | 16. Roof | |

ACTIVITY

- Students should have their house elevation to work on from Lesson No. 9.
- Have the students recall the neighborhood walk they took with their parents (Letter to Parents in Lesson No. 9).
- Cut out house from Lesson No. 9. Use two-sided or masking tape to attach students' houses to the bulletin board paper to make a mural of a street of houses (masking tape allows repositioning of elements before gluing into place). Draw natural and man-made neighborhood elements on construction paper; cut them out to add to the mural.
- A portion of the project streetscape should be kept open for a neighborhood park or playground. Students should recall Lesson No. 3 and 3a - the neighborhood and park/playground walks - and/or their own home neighborhood park. Some of the elements observed in the park could be added in this space, either drawn in, or from pre-prepared paper cutouts, pasted in position. Examples are benches, water fountains, play structures, people playing ball or walking dogs.
- The class now has a team project suitable for presenting to parents. Present the mural on Family Night. Students should have the opportunity to explain their work but without pressure to do so.



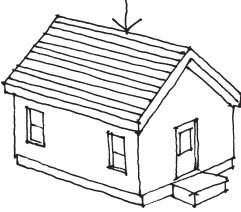

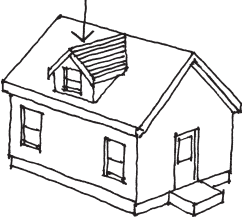
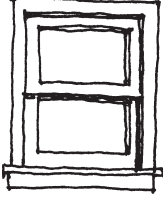
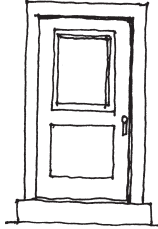
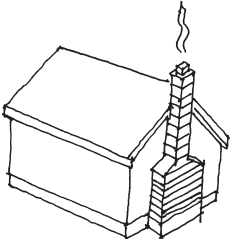
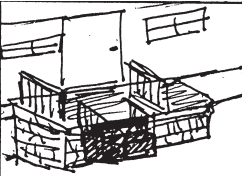
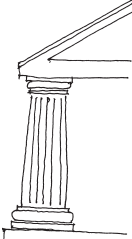
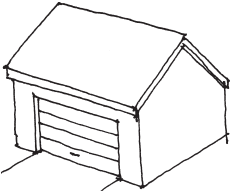
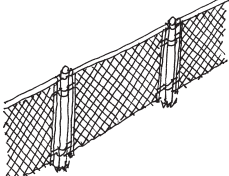

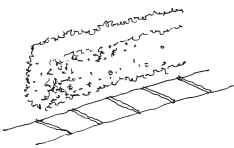
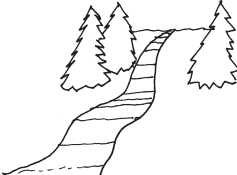
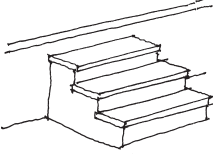
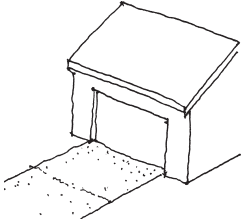
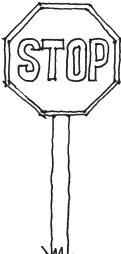
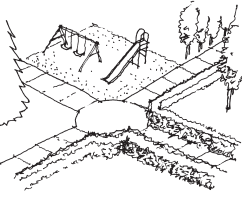
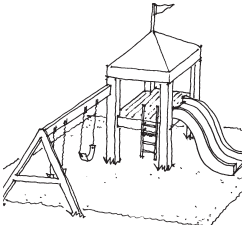
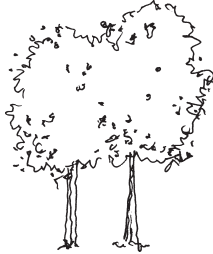
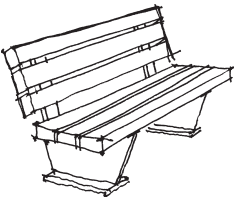
Kindergarten ♦ Lesson Ten



TEACHER'S EVALUATION

- A. Analyze student art work for ability to recognize and use familiar shapes; use of artistic skills - drawing from observation, pasting and constructing forms; and identification and understanding of how elements in the students' immediate environment influence each other.



				
Roof	Gable	Dormer	Window	Door
				
Chimney	Porch	Column	Garage	Fence
				
Gate	Hedge	Path	Steps	Driveway
				
Traffic Sign	Park	Playground	Trees	Bench

Worksheet of Vocabulary Items



Curriculum Guide



First Grade

First Grade ♦ Lesson One



**FIRST GRADE
LESSON NO. 1**

SENSORY EXPLORATION

LENGTH OF LESSON: 30 Minutes

ARCHITECTURAL PRINCIPLES:

Visual relationships are determined by light, shadow, edges and contrast.
Design is experienced with human sensory perception.

Design is accomplished by composing the physical characteristics of size, shape, texture, proportion, scale, mass and color.

Architecture satisfies emotional and spiritual needs in addition to physical needs.

MATERIALS

1. Prepared "wall view" drawing of a typical classroom (copy for each student)
(Note: Teacher may choose to prepare "wall view" drawing of his/her own classroom)
2. Thin paper (newsprint)
3. Crayons or chalk
4. Scissors
5. Glue
6. Construction paper (1 each): red, yellow, green, blue, black, white
7. Letter to parents (included) to be sent home after Lesson No. 1

VOCABULARY (See glossary for definitions)

- | | |
|-----------|-------------|
| 1. Brick | 5. Mortar |
| 2. Carpet | 6. Rubbings |
| 3. Cement | 7. Senses |
| 4. Lumber | 8. Texture |



First Grade ♦ Lesson One



ACTIVITY

- A. Review parts of the body and how they permit us to experience our surroundings: eyes to see, ears to hear, nose to smell, skin to touch, tongue to taste.
- B. Using construction paper of various colors, explain the basic reactions to seeing color, e.g., red - hot, blue - cold, and why we have these reactions. Examples:
 1. Red - hot: fire, color of sunburn on skin;
 2. Yellow - hot: when we see the sun;
 3. Green - spring-like: color of nature, plants, etc.;
 4. Black - mysterious, fear: color of night and darkness;
 5. White - coolness: color of snow; white color reflects light away;
 6. Blue - cold: color of water.
- C. Explain hearing sound in the environment. Outside noises, like cars, buses and people talking, can be heard through walls. Trees and bushes can absorb outside sound.
- D. Explain that smell can be sensed when we walk into our homes and get a whiff of food cooking in the kitchen. The same smell can remind us of home years later when we sense the same aroma in another place.
- E. Explain that smell and taste are closely related. Food smells remind us of how the food tastes.
- F. Pass out a copy of the "wall view" drawing of the classroom. Students should locate five different textures found in their classroom or throughout the school. Examples: brick walls, small tiles, carpet, etc.
 1. Lay newsprint paper over textured areas and rub the side of a crayon or chalk over paper to transfer the pattern of the texture to the paper.
 2. Each rubbing should be labeled with the material and location.
- G. The students can sit back at their desks to create a collage of the classroom. Have them cut and paste textured surfaces from their rubbings onto the appropriate place in the classroom drawing. To finish the drawing, they can color in detail areas that are too small to add texture.
- H. As homework, the students should sit in their homes with an adult, close their eyes and notice the sounds that occur around them. The adult should help record the variety of sounds in a 15-minute time period.



First Grade ♦ Lesson One



TEACHER'S EVALUATION

- A. Analyze student art work for:
1. Ability to recognize texture of familiar objects;
 2. Use of artistic skills - logical use of textures and correct construction of forms in a room;
 3. Identification and understanding of how elements in students' immediate environment influence each other.



First Grade ♦ Lesson One



Dear Parents/Guardians:

Your child's class is learning the basic elements of architecture. They are learning:

- To recognize familiar shapes in three-dimensional form;
- To develop artistic skills such as drawing, pasting and constructing forms from observing what they see;
- To focus on the what and the why of their environment through communication as they listen and speak in class;
- To identify important elements in their immediate environment and reasons for their form and location.

Today in class, we reviewed how our body's senses help us to experience our surroundings. Students focused on color (sight) and texture of surfaces (touch) and incorporated these sensory experiences into a picture collage.

We are asking for your help in accomplishing the goals mentioned above by working with your child at home to build on today's lesson. This would include sitting in a room in your house (apartment) with your child for 15 minutes. Have your child close his/her eyes and listen to the surrounding sounds, e.g., clock ticking, music playing, dishwasher running, floor squeaking, etc. We are asking you to help them record the variety of sounds they hear in that time frame. Have your child bring his/her sheet of recorded information to school.

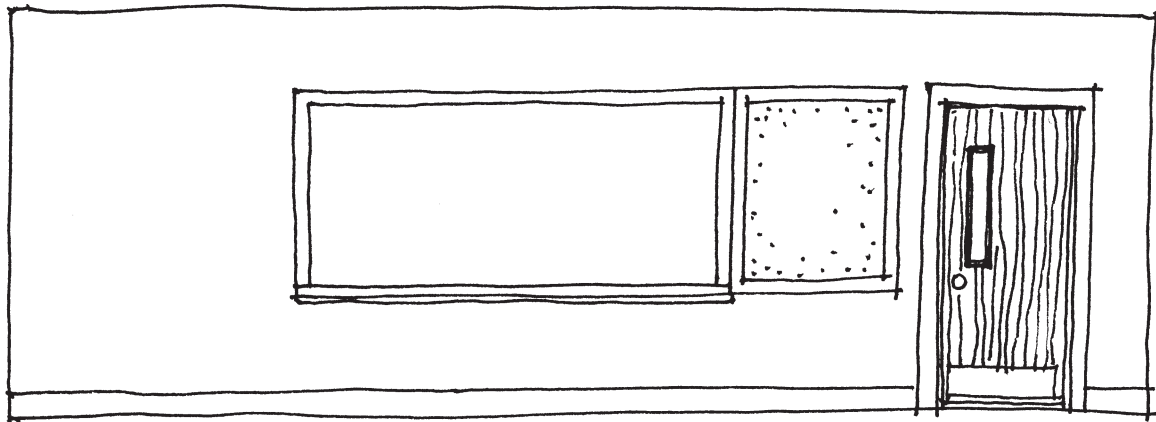
The date for the follow-up lesson to this exercise is _____. We will use this information to help in their next lesson, "Visualization Skills."

Your help in encouraging your child's awareness of his/her surroundings is greatly appreciated.

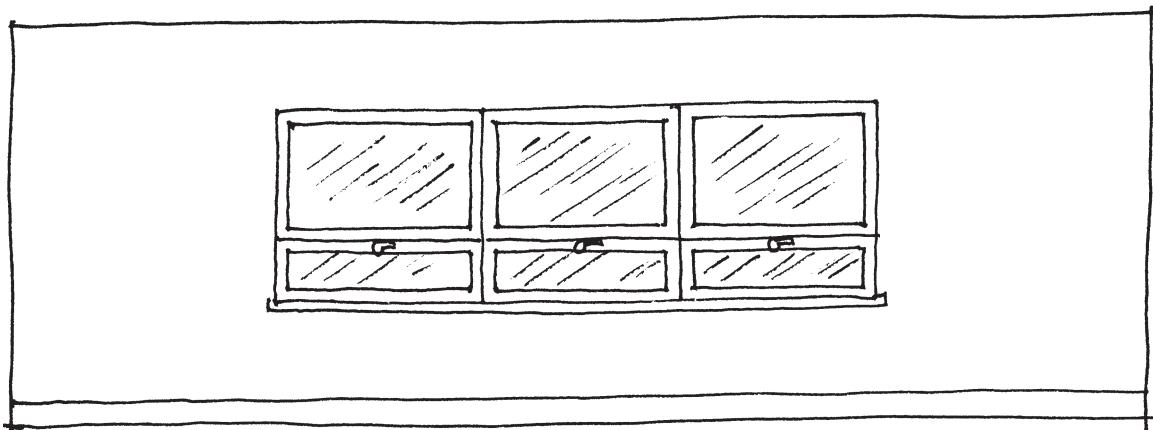
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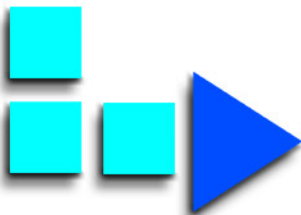
First Grade ♦ Lesson One



Teaching Wall View



Window Wall View



First Grade ♦ Lesson Two



FIRST GRADE
LESSON NO. 2

VISUALIZATION SKILLS

LENGTH OF LESSON:

30 Minutes

ARCHITECTURAL PRINCIPLES:

Design is accomplished by composing the physical characteristics of size, shape, texture, proportion, scale, mass and color.

Social structure, culture and the built environment have a direct influence on one another.

Visual relationships are determined by light, shadow, edges and contrast.

Nature is a model for architectural forms and shapes.

Symbolism is an important means of visual communication for architecture.

Design is experienced with human sensory perception.

MATERIALS

1. Paper and crayons
2. Worksheet of Native American symbols

VOCABULARY (See glossary for definitions)

1. Symbol
2. Visual thinking
3. Visualize



First Grade ♦ Lesson Two



ACTIVITY

- A. In Lesson No. 1, the students worked at home with their parents to identify and record various sensory experiences. Start this activity by having each student share one (or more) of those sensory experiences.
- B. Tell the students to close their eyes and use their imaginations as you describe a place, thing or area that contains elements that may be familiar to the students.
 1. Use descriptions of color, scent, temperature and sounds when describing a local area the children like to frequent.
- C. Show students examples of symbols Native Americans used in their art (included).
- D. With his/her eyes closed, have each student imagine being an Indian who will paint designs on his/her home, which is a teepee. Continuing with their eyes closed, have the students think of symbols of things that are important to them in their own lives. Ask students to open their eyes and draw a teepee with the designs from their imagination.
- E. Have the students think about buildings, castles, boats or some other place they have experienced. Then have them draw a picture of the place from their memories of that time. Have the students include in their interpretation color, light, temperature, etc.
 1. Varying colors can symbolize light, texture, temperature (red - hot, blue - cold, etc.)

TEACHER'S EVALUATION


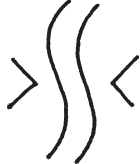



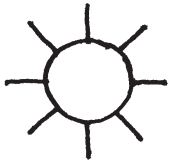

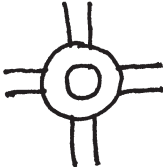




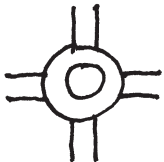





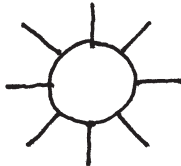

- A. Analyze student art work for:
 1. Ability to recognize and use symbols as a design tool;
 2. Use of artistic skills - aesthetic use of color and drawing from visualization techniques;
 3. Identification and understanding of how elements of students' environment relate to design principles in their art.



First Grade ♦ Lesson Two



Native American Symbols



First Grade ♦ Lesson Three



FIRST GRADE
LESSON NO. 3

COLOR, LIGHT AND YOUR
CLASSROOM ENVIRONMENT

LENGTH OF LESSON:

Two Sessions: 30 Minutes each

ARCHITECTURAL PRINCIPLES:

Visual relationships are determined by light, shadow, edges and contrast.

Design is experienced with human sensory perception.

Design is accomplished by composing the physical characteristics of size, shape, texture, proportion, scale, mass and color.

Architecture satisfies emotional and spiritual needs in addition to physical needs.

Visual thinking is a key to awareness of the built environment.

MATERIALS

1. Prepare handouts: copy of Line Drawings for each student; two drawings of "Cozy Room," copied and/or enlarged for each student; copies for each student and a copy for an overhead projector of Evaluate Your Classroom chart (included)
2. Crayons or markers
3. Prepared examples of decorated rooms
4. Optional: "My Many Colored Days" by Dr. Seuss
5. 12 x 18-inch sheets of paper in various colors



First Grade ♦ Lesson Three



VOCABULARY (See glossary for definitions)

1. Color
2. Design
3. Relationship
4. Sense of light

ACTIVITY

Session 1:

- A. If available, read "My Many Colored Days" by Dr. Seuss. This book supports the emotional effect of color. If the book is not available, hold up sheets of paper in different colors and talk about the feelings each color generates. Ask students to explain their associations with each color. This lesson is intended to build on the previous lesson.
- B. Hand out the sheet with simple line drawings of familiar objects to the students and tell them to use the "wrong" colors to fill in each picture.
- C. Reflect back to each student the emotions they are expressing as they see the wrong color appear.
- D. Hand out two copies of the "Cozy Room" picture. Have students use color to make one room they like and another they dislike.
- E. As they work, reflect back to the students what color elements are common in the "like" room and which are common in the "dislike" room.



First Grade ♦ Lesson Three



Session 2:

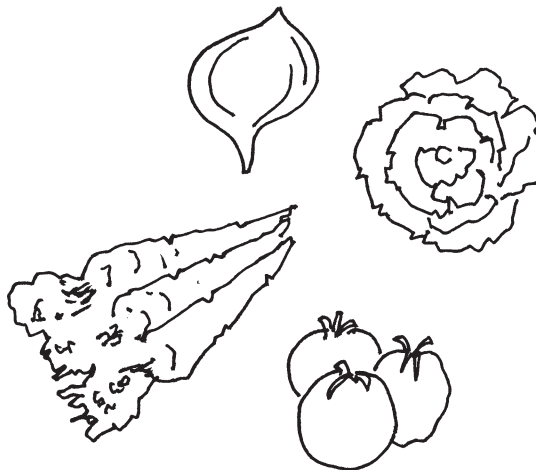
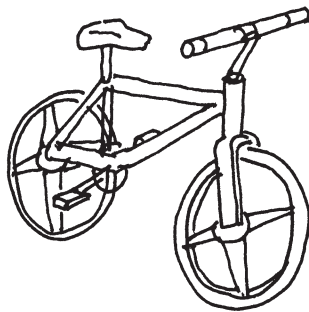
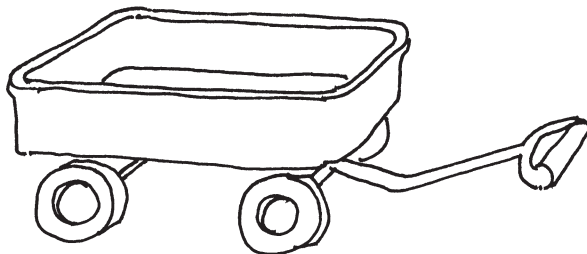
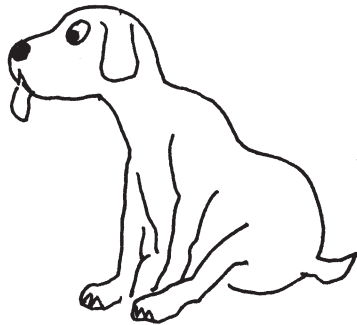
- A. Show the students examples of rooms that indicate a variety of lighting, color and textures. While discussing the examples, use words on the Session 2 Evaluate Your Classroom chart to describe how they might feel or what they see.
 - 1. Examples of pictures and rooms can be found in magazines commonly found in the home.
- B. Copy the Session 2 chart on an overlay to project on a screen. Have the students discuss how they feel about the various characteristics of their classroom. Place a "smiley face" where the students agree each classroom characteristic listed falls. This exercise will be done as a class.
- C. Have each child mark his/her individual evaluation chart with the class rating.

TEACHER'S EVALUATION

- A. Analyze student art work for:
 - 1. Ability to recognize and use color as it affects human perception;
 - 2. Use of artistic skills - aesthetic use of color and drawing from observation techniques;
 - 3. Identification and understanding of how elements of their immediate environment influence each other.
- B. Analyze student class evaluation chart for accuracy.



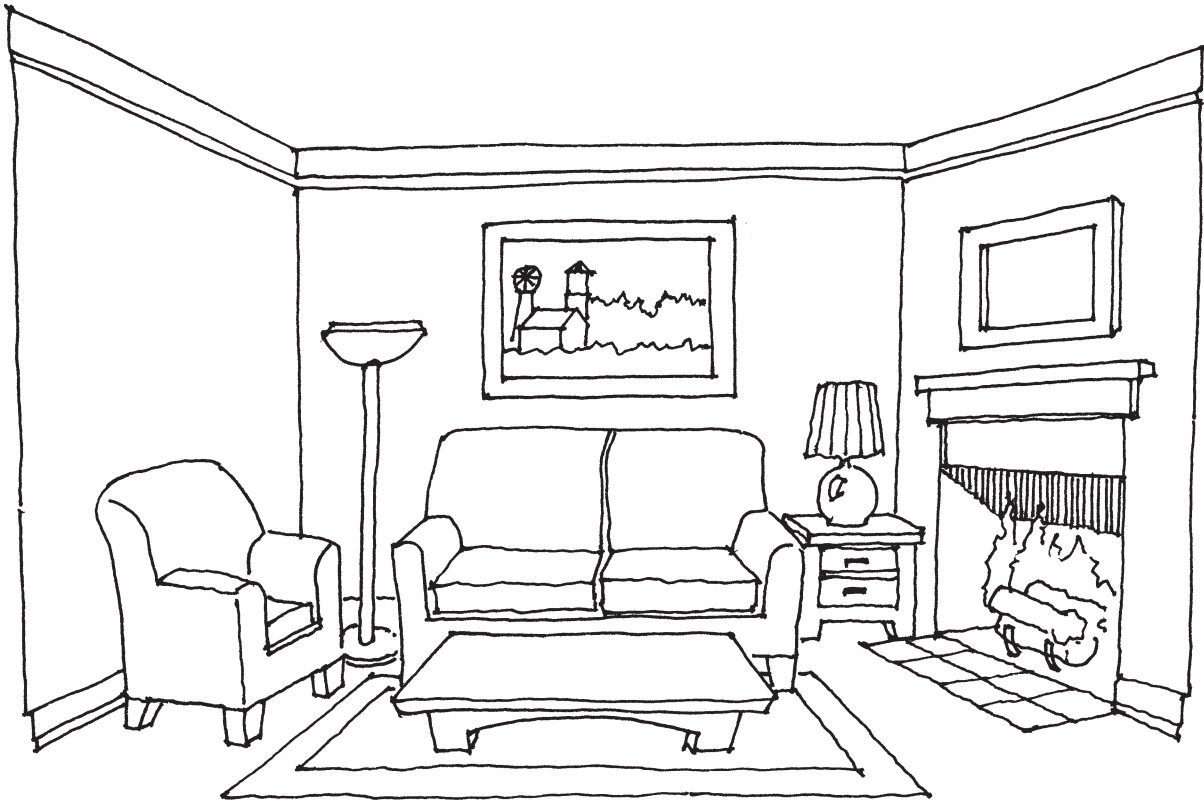
First Grade ♦ Lesson Three



Session 1 - Line Drawings



First Grade ♦ Lesson Three



Session 1 - Cozy Room



First Grade ♦ Lesson Three



	VERY	SOMEWHAT	NEUTRAL	SOMEWHAT	VERY	
LIGHT						DARK
NEW						OLD
NOISY						QUIET
SMALL						LARGE
MULTI-PURPOSE						SINGLE-PURPOSE
BOLD COLORS						SOFT COLORS
OPEN SPACE						CLOSED SPACE
SOFT LIGHTING						HARSH LIGHTING
UNFRIENDLY						FRIENDLY
CITY						COUNTRY
LIKE						DISLIKE
PUBLIC						PRIVATE
ROOMY						CROWDED

Session 2 - Evaluate Your Classroom



First Grade ♦ Lesson Four



FIRST GRADE
LESSON NO. 4

STRUCTURES

LENGTH OF LESSON:

30 to 60 Minutes

ARCHITECTURAL PRINCIPLES:

Design is accomplished by composing the physical characteristics of size, shape, texture, proportion, scale, mass and color.

Social structure, culture and the built environment have a direct influence on one another.

Visual thinking is a key to awareness of the built environment.

Sustainable design of the built environment protects the natural environment.

Nature is a model for architectural forms and shapes.

Climate and the natural environment influence design decisions.

Form follows function is a design approach where the form of the building is determined by the function of its spaces and its parts.

Past, current and future technologies influence design decisions.



First Grade ♦ Lesson Four



MATERIALS

1. Drinking straws
2. Modeling clay
3. Sticks or twigs from the outside
4. Tape
5. Paper or cloth for a teepee covering (see teepee template — provided)
6. Twist tie, string or rubber band (to hold straws together at the top)
7. Markers or crayons
8. Scissors
9. Glue
10. Pictures of different structures (included) - teacher may choose to use additional pictures
11. Construction paper in various colors

VOCABULARY (See glossary for definitions)

- | | |
|--------------|------------|
| 1. Cave | 4. Pyramid |
| 2. Igloo | 5. Teepee |
| 3. Log Cabin | 6. Village |

ACTIVITY

- A. Discuss with students that other people around the world live in dwellings different from the houses and buildings in which they live. The land, weather, available materials and social structures (the gathering of food, the need for protection, social ceremonies, etc.) determine the way people build places to live.
- B. Use examples from other cultures to explain their "built" environment.
Show pictures:
1. Grass Hut - African cultures;
 2. Igloo - Eskimos;
 3. Teepee - Native Americans;
 4. Log cabin - Early U.S. settlers;
 5. Cave - Prehistoric cultures;
 6. Pyramid - Early Egyptians & South American cultures.



First Grade ♦ Lesson Four



- C. Have the students build examples of some structures they have seen in pictures.
 1. Clay can be used to build igloos, caves and pyramids;
 2. Drinking straws can be used as a framework for teepees, with paper or cloth used as a covering;
 3. Sticks can be used to make a log cabin.

- D. This project can be expanded by grouping a number of the same types of structures together to make a village. Build the village on a colored paper base.

TEACHER'S EVALUATION

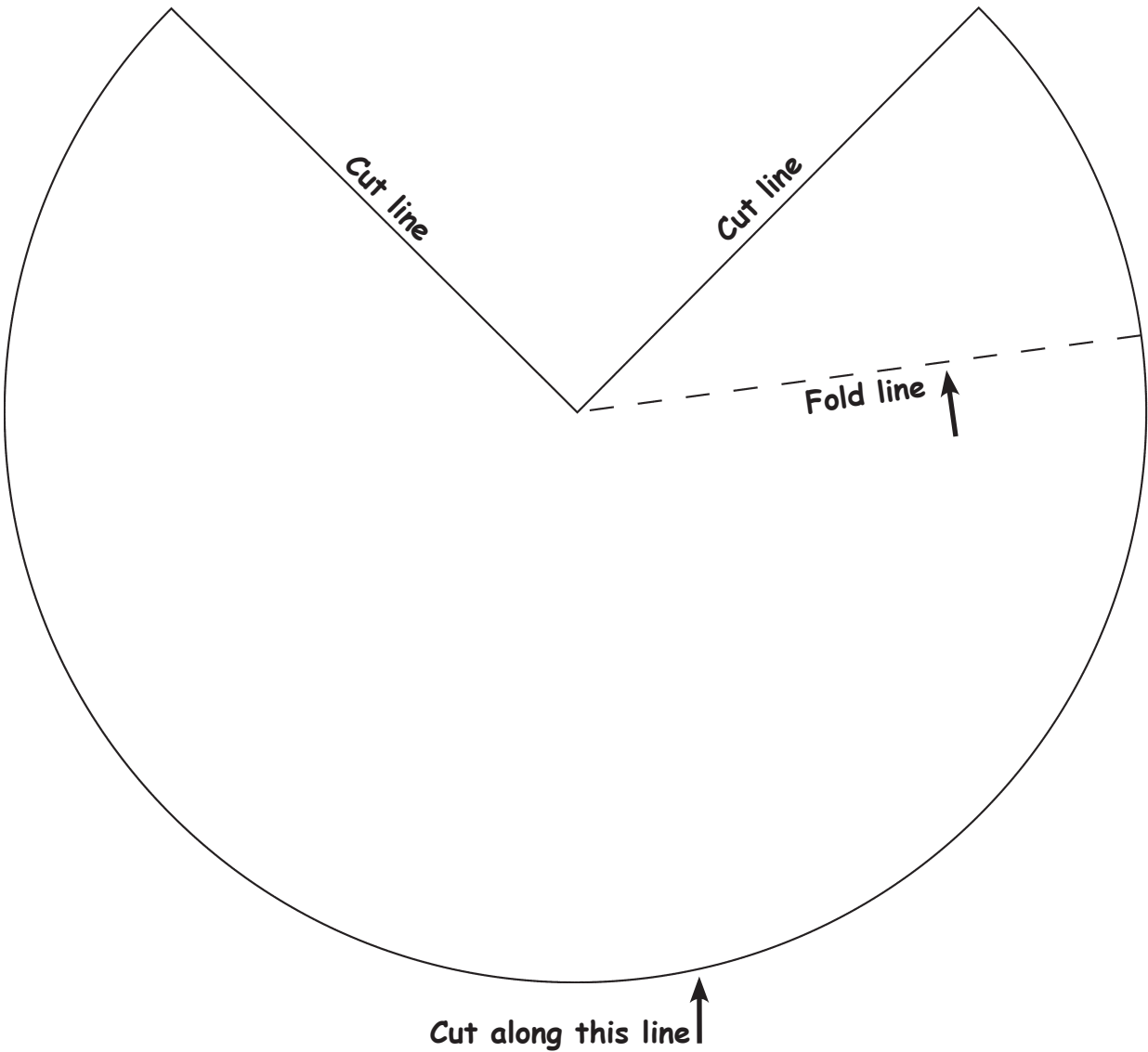
- A. Analyze student artwork for:
 1. Craftsmanship - neat assemblage of items to create teepees, igloos, etc.;
 2. Use of artistic skills - aesthetic use of color and drawing from visualization techniques;
 3. Identification and understanding of how elements of the environment relate to building a group's model home.



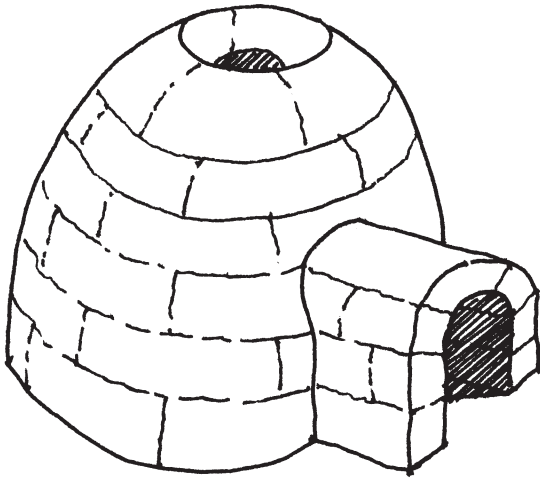
First Grade ♦ Lesson Four



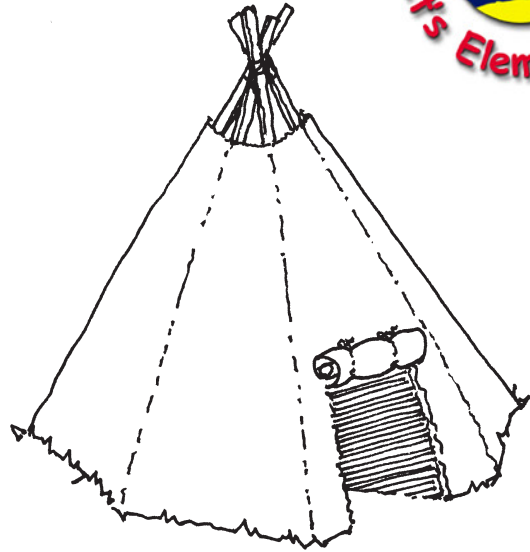
Teepee Template



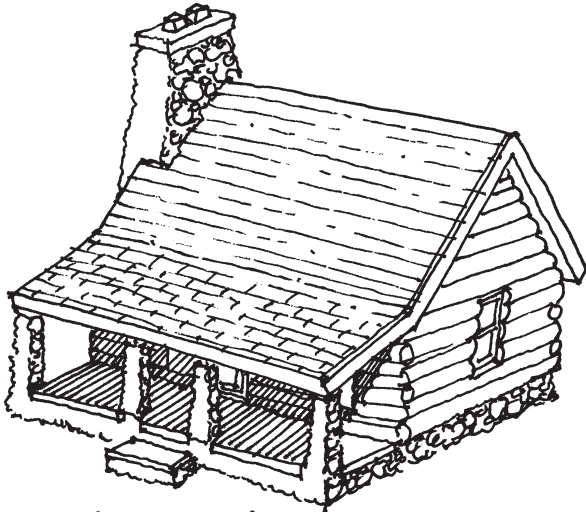
First Grade ♦ Lesson Four



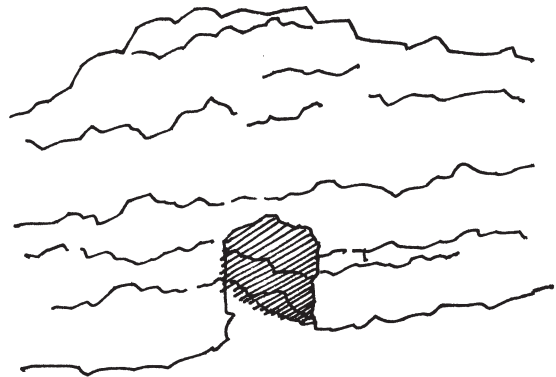
Igloo



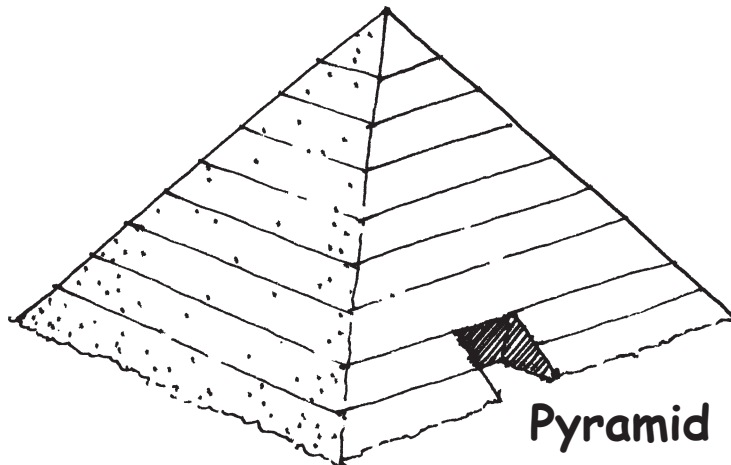
Teepee



Log Cabin



Cave



Pyramid



First Grade ♦ Lesson Five



FIRST GRADE

LESSON NO. 5 DRAW YOUR HOME FROM MEMORY

LENGTH OF LESSON: 30 to 60 Minutes

ARCHITECTURAL PRINCIPLES:

Design is accomplished by composing the physical characteristics of size, shape, texture, proportion, scale, mass and color.

Visual thinking is a key to awareness of the built environment.

Design is experienced with human sensory perception.

MATERIALS

1. Handouts of shapes cut from construction paper of various colors - use squares and rectangles of different sizes (teacher to provide)
2. Crayons or markers
3. Scissors
4. Glue
5. 8-1/2 x 11-inch sheets of paper on which to draw floor-plan diagram and glue room-diagram arrangement
6. Examples of sample Floor-Plan Diagrams

VOCABULARY (See glossary for definitions)

1. Diagram
2. Floor Plan
3. Space
4. Sensory perception
5. Spatial relationship



First Grade ♦ Lesson Five



ACTIVITY

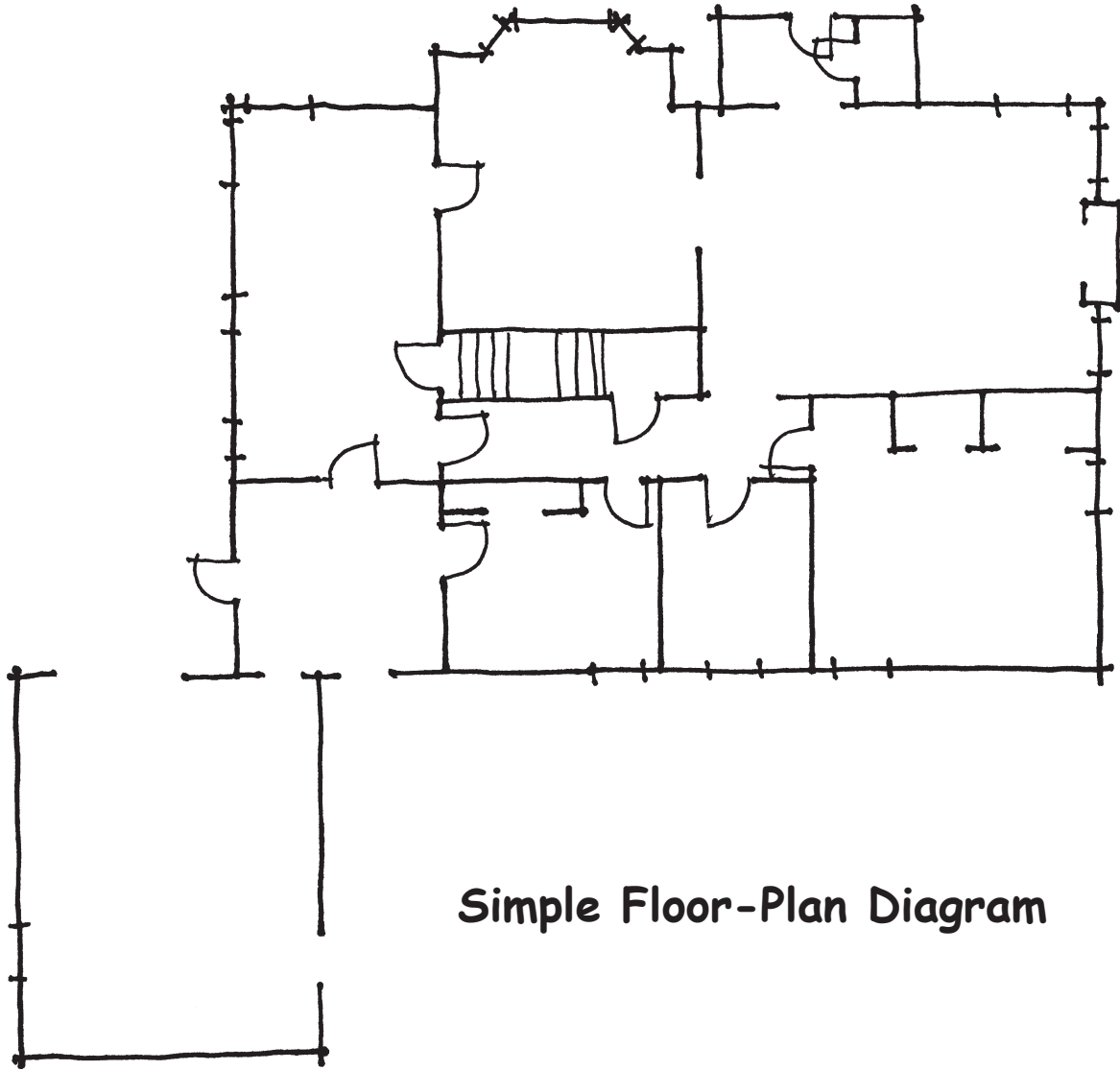
- A. Begin by having students close their eyes and visualize their "homes." They may work with a partner and report what they "see" as they visualize a walk through their homes.
- B. Record either individually or collectively lists of words and phrases students use to describe their homes. Encourage them to include sounds, smells and other emotional and sensory experiences on the list.
- C. Identify those words that describe or label spaces in the home, such as "living room," "kitchen," "bathroom," etc.
- D. As classroom work, ask the students to draw a "floor-plan diagram" of various rooms in their homes and how they are organized. This floor plan can be explained as looking down at a house as if the roof were taken off. This exercise should emphasize the relationship of the rooms to each other. Scale, doors, windows, etc., are not important. Students should be encouraged to talk about access to the various rooms, i.e., "I walk through the dining room to get to the kitchen," or "The bathroom is down a hallway." Use the example of the "Simple Floor-Plan Diagram" for this step. Use the example of the "Floor-Plan Diagram" (included) to show the class a floor plan drawn by an architect.
- E. As homework, have students to do the same exercise of making a "floor-plan diagram" of their home. The students should compare the "floor-plan diagram" they made in class to the "homework floor-plan diagram."
- F. Have the students label teacher-prepared squares and rectangles of paper in various colors with the room names found in their homes. Students should arrange the paper rooms to show the configuration of their homes. Glue arrangement on paper.

TEACHER'S EVALUATION

- A. Analyze student artwork for:
 1. Craftsmanship - use and care of art materials, cutting and pasting;
 2. Comparison of the "classroom" version vs. the "on site" version of student floor plan;
 3. Recognition of spatial relationships.



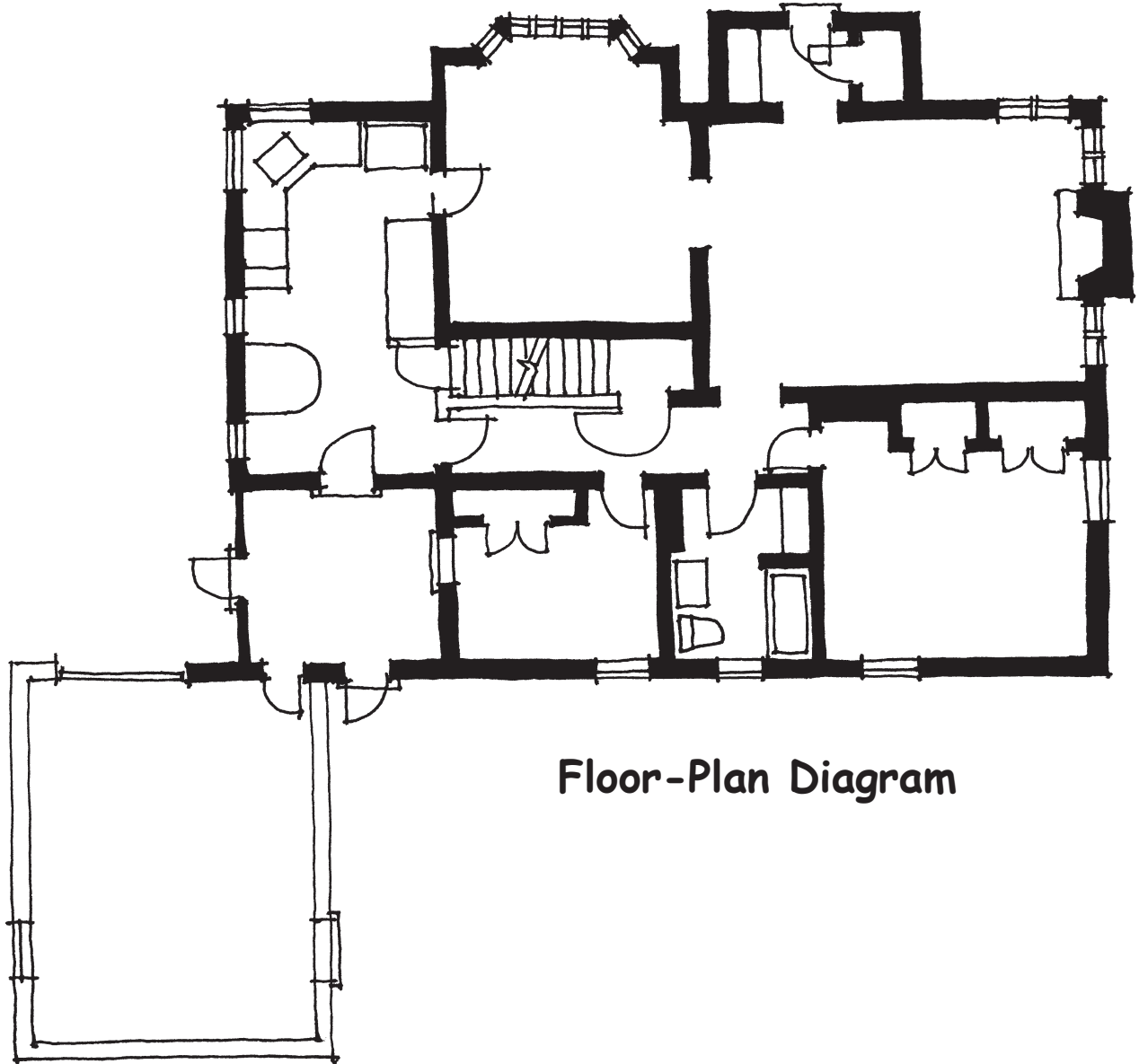
First Grade ♦ Lesson Five



Simple Floor-Plan Diagram



First Grade ♦ Lesson Five



Floor-Plan Diagram



First Grade ♦ Lesson Six



FIRST GRADE
LESSON NO. 6

EARTH FRIENDLY

LENGTH OF LESSON:

30 Minutes

ARCHITECTURAL PRINCIPLES:

Sustainable design of the built environment protects the natural environment.

Nature is a model for architectural forms and shapes.

Climate and the natural environment influence design decisions.

Past, current and future technologies influence design decisions.

MATERIALS

1. Letter to parents (included)

VOCABULARY (See glossary for definitions)

- | | |
|---------------------|-------------------------------|
| 1. Air | 6. Natural environment |
| 2. Climate | 7. Sustainable |
| 3. Energy | 8. Recycle |
| 4. Pollution | 9. Pollution |
| 5. Greenhouse Gases | 10. Environmental stewardship |

ACTIVITY

- A. Teacher should discuss the meaning of the following vocabulary words:
1. Air - What do we breathe that is needed to sustain life?
 2. Energy - What makes the lights work, heats our homes and provides power? (most of our energy comes from oil, gas and coal - all natural resources)
 3. Heat/Air Conditioning - What makes air warm or cool in a building?
 4. Water (hot and cold) - What do we use for drinking, cooking and cleaning?



First Grade ♦ Lesson Six



5. Natural Materials/Resources - What are some materials found in or on the earth? (rocks, trees, water, etc.)
 6. Man Made - What do we call things humans make using natural materials?
 7. Pollution - How does pollution harm our environment?
 8. Earth Friendly/Environmental Stewardship - What do we call taking responsibility for our environment and helping to protect our natural resources? What can students do to help at home and in their neighborhoods to be kinder to the environment?
- B. Discuss with students different ways to help the environment:
1. Air - Keep it fresh and clean, conserving energy whenever possible (from heating, lighting, driving, etc.) by reducing pollution from power plants; plant trees and other plants to help clean the air.
 2. Electricity - Open windows for natural ventilation; turn off lights, TV and computers when not using.
 3. Heat - Turn temperature setting down in winter and up in summer; change filters in furnace; keep doors and windows closed in the winter; use storm windows in the winter and screens in the summer; use blinds and curtains to keep the sun out in the summer and let the sun in during the winter.
 4. Water - Stop leaky faucets and running toilets; take short showers; turn off water in sink when brushing teeth; mow the lawn only when necessary; use hot water only when necessary (hot water requires energy to heat it).
 5. Natural Resources - Reuse as much as possible (use both sides of paper, buy products that have recycled content, compost); protect (don't use toxic chemicals near lakes and rivers, take reusable bags to the grocery store).
 6. Man-Made Materials - When using man-made products, such as toys, tools, clothes, etc., try to get maximum use instead of disposing of them; repair items when possible, or donate for others to use.
 7. Recycle - When discarding trash, recycle newspapers, bottles and cans; learn how to dispose of chemicals, engine oil, gasoline, paint, batteries, etc., safely; your community can help you identify how and where to do this; don't litter - ever.
 8. Be an Environmental Steward - Protect the environment and leave it better than you found it; always use natural resources wisely; take responsibility and talk to your parents about what you can be doing to help the environment.



First Grade ♦ Lesson Six



- C. As homework, have students take home a copy of the "earth friendly" letter to parents. The letter students take home to share with their parents asks the question: What is being done at home that is "earth friendly"?

TEACHER'S EVALUATION

- A. Analyze student homework for evidence of understanding of environmental issues and the vocabulary words used during discussion.



First Grade ♦ Lesson Six



Dear Parents/Guardians:

Your child's class is learning the basic elements of being "earth friendly." This includes a basic understanding of such issues as air and water pollution and resource conservation.

Today in class, we discussed these issues and talked about how all of us can be kind to our environment and be more "earth friendly."

As part of the learning process, we have asked the class to look at how their own home is earth friendly. Please discuss with them what steps you take such as recycling newspapers, bottles, cans and other materials; shutting off lights to conserve electricity; lowering the heating thermostat to conserve energy; composting your waste; buying recycled products; using less water for showers and for brushing teeth.

We will then have a class discussion in which the children can participate and explain how their family is "earth friendly." The date for the class discussion is _____. Please have the discussion on how your family is earth friendly at home before the class discussion date.

Your help in encouraging your child to become more aware of our environment is greatly appreciated.

Thank you,



First Grade ♦ Lesson Seven



FIRST GRADE
LESSON NO. 7

STREETSCAPES

LENGTH OF LESSON:

30 Minutes

ARCHITECTURAL PRINCIPLES:

Design is accomplished by composing the physical characteristics of size, shape, texture, proportion, scale, mass and color.

Order is the arrangement and organization of elements to help solve visual and functional problems.

Visual relationships are determined by light, shadow, edges and contrast.
Balance is the creation of visual harmony through the use of color and the manipulation of form.

Architecture satisfies emotional and spiritual needs in addition to physical needs.

Past, current and future technologies influence design decisions.

MATERIALS

1. "Streetscape" handout (included)
2. Outline of streetscape townhouse (4 types included) - Note: Copy each townhouse outline on 8 1/2 x 11-inch or 9 x 12-inch paper for student use
3. Large sheet of paper for streetscape mural (approximately 24 inches tall)
4. Patterns of materials (included)
5. Pencils
6. Crayons or markers
7. Colored paper
8. Glue
9. Masking tape



First Grade ♦ Lesson Seven



VOCABULARY (See glossary for definitions)

1. Circle
2. Rectangle
3. Semi-Circle
4. Square
5. Streetscape
6. Texture
7. Townhouse
8. Triangle

ACTIVITY

- A. The teacher hands out a streetscape photograph to each student.
- B. Tack a long, blank sheet of paper (approximately 24 inches tall) at the front of the class for use as the background of a streetscape mural.
- C. While students look at their streetscape photo handout, discuss the color, pattern and texture within the geometric shapes they identify. If the streetscape photo is black and white, discuss its light and dark tones.
- D. Hand out an outline of a streetscape townhouse, one per student, and a copy of Examples of Textures, Doors and Windows (included). Have students add color, pattern and texture to their outlined townhouse (as examples, use the patterns provided). Cut out the finished townhouses.
- E. Have each student place his/her townhouse on the long, blank streetscape paper hung in front of the class. The teacher can place a building he/she made from the available materials as an example.
- F. The students should arrange their buildings on the streetscape mural with tape until they are satisfied with the arrangement and then glue them permanently to the mural.



First Grade ♦ Lesson Seven



TEACHER'S EVALUATION

- A. Analyze student artwork for:
1. Appropriate shapes used within their buildings;
 2. Shapes correctly arranged to create their building;
 3. Neatness in students' use of scissors, glue, and making arrangements.



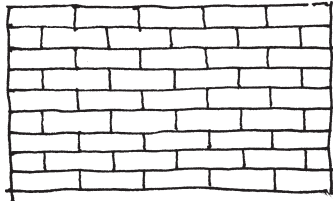
First Grade ♦ Lesson Seven



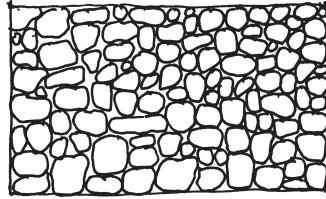
Streetscape



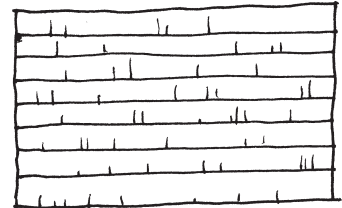
First Grade ♦ Lesson Seven



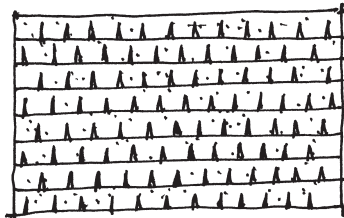
Brick



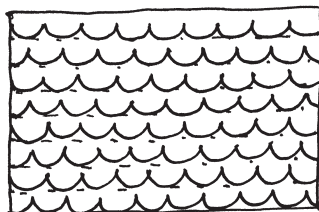
Stone



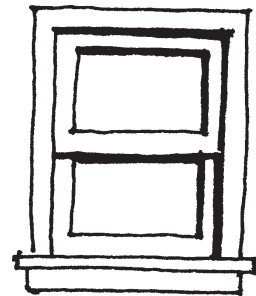
Wood Siding



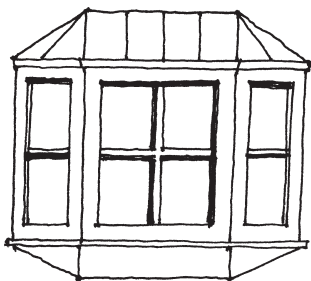
Shingles



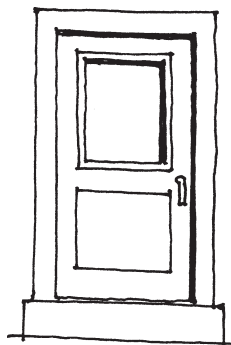
Shingles



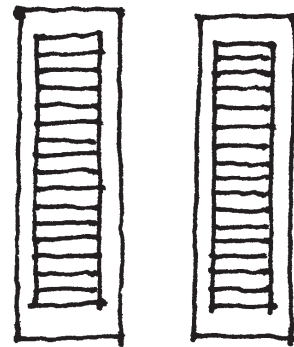
Window



Bay Window



Door



Shutters

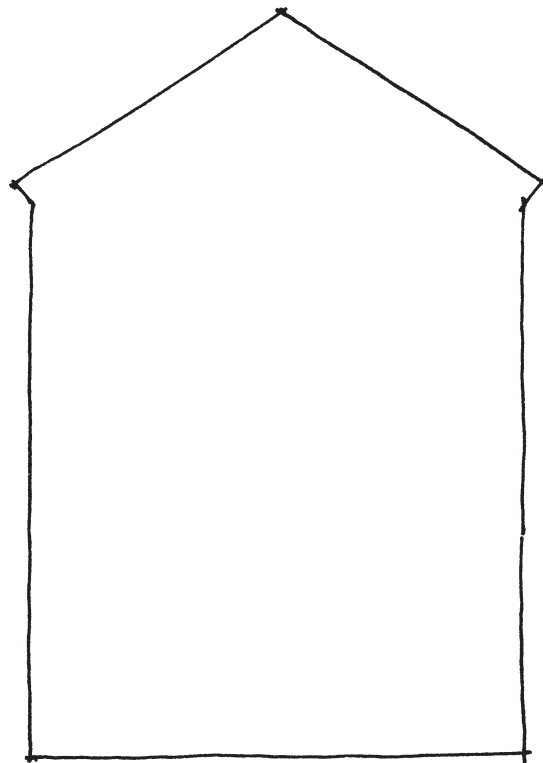
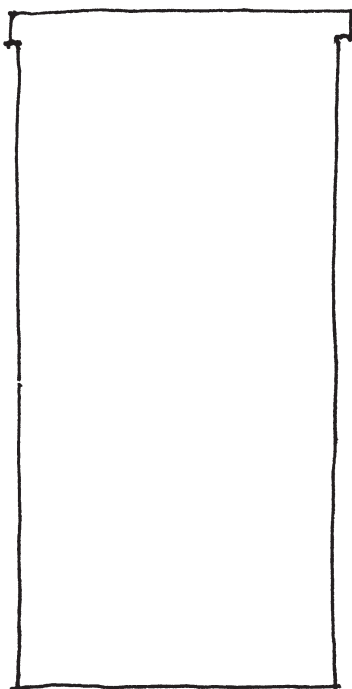
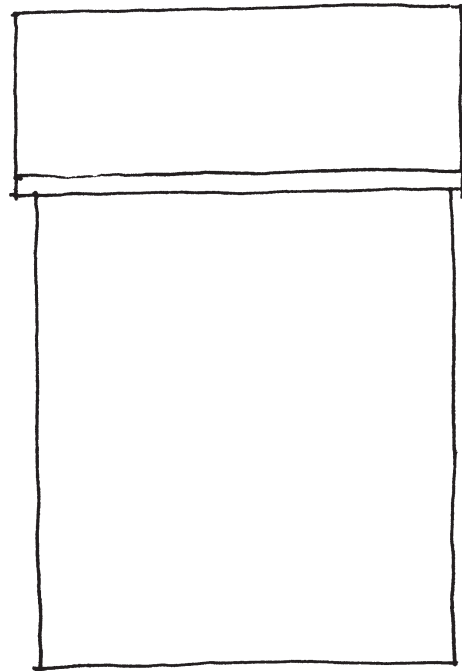
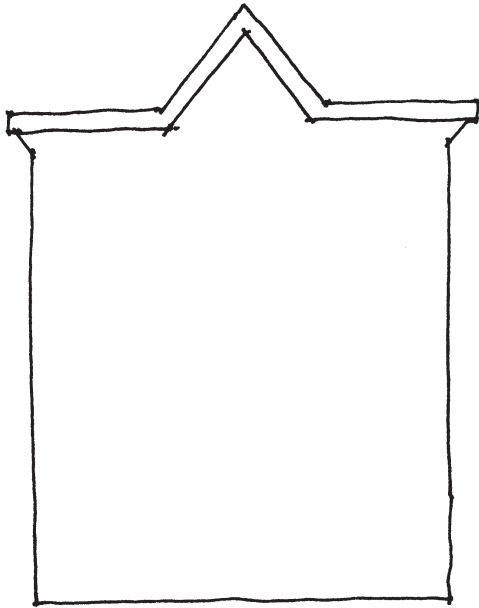
Examples of Textures,
Doors and Windows



First Grade ♦ Lesson Seven



Townhouse Outlines



First Grade ♦ Lesson Eight



FIRST GRADE
LESSON NO. 8

PROPORTIONS AND SCALE -
TWO-DIMENSIONAL

LENGTH OF LESSON:

30 Minutes

ARCHITECTURAL PRINCIPLES:

Design is accomplished by composing the physical characteristics of size, shape, texture, proportion, scale, mass and color.

Visual relationships are determined by light, shadow, edges and contrast.

MATERIALS

1. Examples of shelters from nature or pictures (if available)
2. Outline drawings of two houses and large and small cutouts of human silhouettes, doors and windows
3. Outline drawings of a large and a small rectangle for each student (teacher to provide)
4. Scissors
5. Glue
6. Colored pencils
7. 8 1/2 x 11-inch paper for each student

VOCABULARY (See glossary for definitions)

1. Proportion
2. Relationships
3. Scale
4. Two-dimensional



First Grade ♦ Lesson Eight



ACTIVITY

- A. Review Kindergarten Lesson No. 6, "Human Proportions." Remind students how they measured their classroom (desk, chair, etc.) by using parts of their own bodies (fingers, arms, feet, etc.), and how the various objects related to human size.
- B. Have a class discussion. Explain that it is important to design the objects we use and spaces we occupy to be comfortable for people. Objects are scaled to fit our size. A model train set would illustrate how objects are scaled down to a smaller size. We see many examples in nature of shelters that are built to suit their inhabitants - a bird's nest, a moth's cocoon, an ant colony or a wasp's nest. If the school has a nature area where these things are available, it would be helpful to show them to the class during the discussion. The entrance openings and internal spaces relate to the size of the inhabitants.
- C. Hand out a set of outline drawings to each student. Have the students cut out the windows, doors and people.
- D. Arrange the students in small groups. Ask students to position and glue the large house and the small house on an 8 1/2 x 11-inch piece of paper. Next have them position and glue the doors and windows on the appropriately scaled house drawing. Then have them position and glue the appropriate size person on the paper next to each house. Explain that the positioning should allow the figure to walk through the doorway and look through the window.
- E. The next exercise is performed individually. Each student is given two rectangles (of different sizes) representing buildings (teacher to provide rectangles). The students should draw windows, doors, a person and a tree on their rectangle buildings. The drawings should then be compared for size to establish whether the students have related the elements at appropriate scale. Can the person fit through the door and look out the window?
- F. Remind students to bring in a shoe box for Lesson No. 9.

TEACHER'S EVALUATION

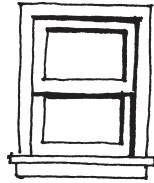
- A. Analyze student art work for:
 1. House features that are drawn in appropriate scale and correct positioning.



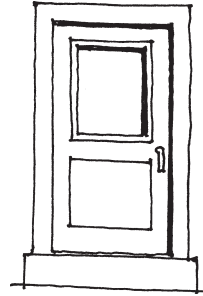
First Grade ♦ Lesson Eight



Little Person



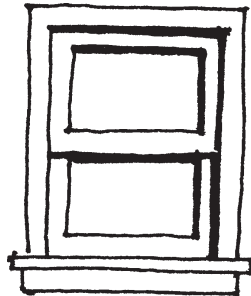
Little Window



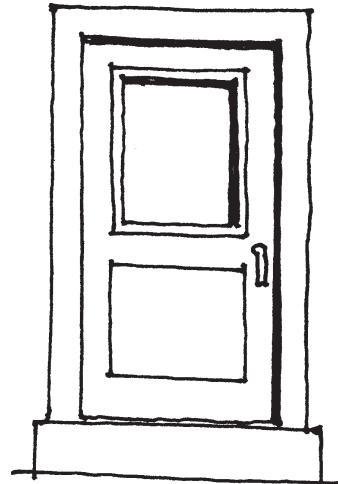
Little Door



Big Person



Big Window

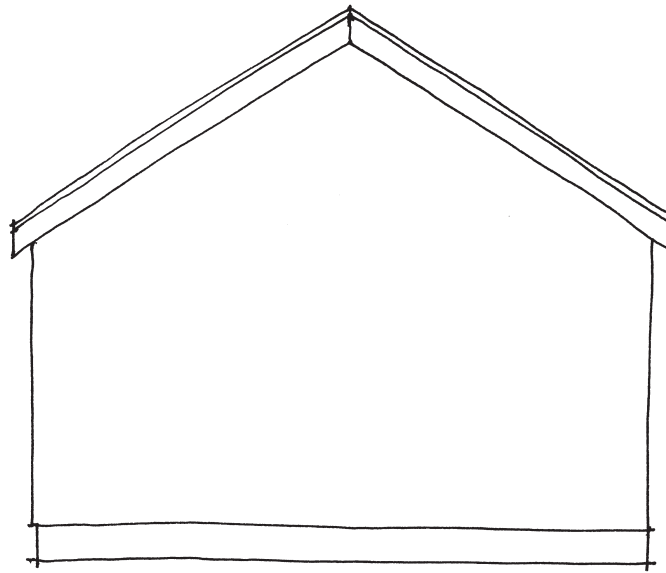


Big Door

Outline Drawing

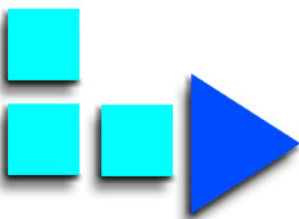


First Grade ♦ Lesson Eight

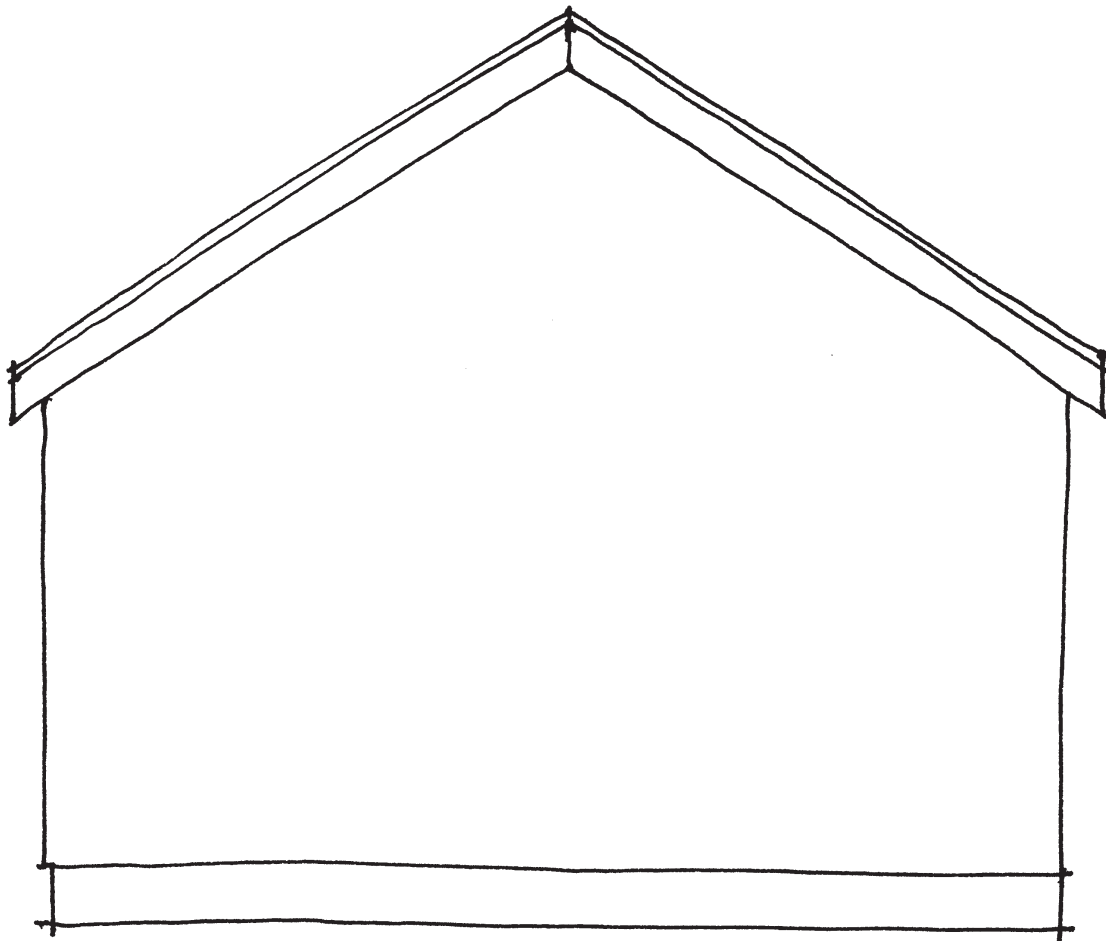


Little House

Outline Drawing



First Grade ♦ Lesson Eight



Big House

Outline Drawing



First Grade ♦ Lesson Nine



FIRST GRADE
LESSON NO. 9

PROPORTIONS AND SCALE -
THREE-DIMENSIONAL (PART 1)

LENGTH OF LESSON: 30 Minutes

ARCHITECTURAL PRINCIPLES:

Design is accomplished by composing the physical characteristics of size, shape, texture, proportion, scale, mass and color.

Order is the arrangement and organization of elements to help solve visual and functional problems.

Balance is the creating of visual harmony through the use of color and the manipulation of form.

Mass creates form, which occupies space and creates a spatial articulation.

Aesthetics is the artistic component of architecture.

Climate and the natural environment influence design decisions.

The creative process is basic to design.

MATERIALS

1. Shoe box
2. An outline of a person in correct scale for students to use in a house constructed from a shoe box (teachers should appropriately size picture included in Lesson No. 8)
3. A page of various sizes of windows and doors for student reference (included in Lesson No. 7)
4. Pencils and erasers
5. Construction paper in various colors
6. Scissors
7. Rulers
8. Markers



First Grade ♦ Lesson Nine

VOCABULARY (See glossary for definitions)

1. Aesthetics
2. Climate
3. Three-dimensional
4. Proportion
5. Scale

ACTIVITY

- A. This lesson builds on the material of Lesson No. 8: "Proportions and Scale - Two-Dimensional." Review Lesson No. 8 concerning position and scale of doors and windows. Extend the discussion to include types of materials used to protect your home from the climate, i.e. brick, shingles, siding. To extend the students' imagination, discuss the aesthetic aspects of windows and doors in terms of style, color and size.
- B. Each student should have a shoe box to create his/her own house. First, have the students cover their box with construction paper.
- C. The students will then design their own windows and doors, drawing them on paper of various colors. They should first concentrate on scale and then on a variety of decorative qualities.
- D. Project continues in Lesson No. 10.

TEACHER'S EVALUATION

- A. Analyze student artwork after Lesson No. 10.

First Grade ♦ Lesson Ten



FIRST GRADE
LESSON NO. 10

PROPORTIONS AND SCALE -
THREE-DIMENSIONAL (PART 2)

LENGTH OF LESSON: 30 Minutes

ARCHITECTURAL PRINCIPLES:

Design is accomplished by composing the physical characteristics of size, shape, texture, proportion, scale, mass and color.

Order is the arrangement and organization of elements to help solve visual and functional problems.

Balance is the creating of visual harmony through the use of color and the manipulation of form.

Mass creates form, which occupies space and creates a spatial articulation.

Aesthetics is the artistic component of architecture.

Climate and the natural environment influence design decisions.

The creative process is basic to design.

MATERIALS

1. Shoe box (Started in Lesson No. 9)
2. Pencils and erasers
3. Construction paper in various colors
4. Scissors
5. Rulers
6. Markers
7. Glue



First Grade ♦ Lesson Ten



VOCABULARY (See glossary for definitions)

1. Ornament
2. Proportion
3. Texture

ACTIVITY

- A. This lesson continues from Lesson No. 9, "Proportions and Scale - Three-Dimensional." Review Lesson No. 9 concerning position and scale of doors and windows.
- B. When students are satisfied with their scale for doors and windows, they will cut them out and glue them in place.
- C. The students can embellish their houses with additional architectural details, such as a roof. To create a roof, draw shingles on construction paper, fold in half and glue on top of the shoe-box house.
- D. The students may add other ornamentation and texture, such as shutters, shingles, brick, etc.
- E. The students may assemble the houses to create a three-dimensional neighborhood street for a display.
Note: The class can use this activity as a team project suitable for presenting to parents on Family Night. Students should have the opportunity to explain their work but without pressure to do so.

TEACHER'S EVALUATION

- A. Analyze student art work for:
 1. Appropriate scale and position;
 2. Aesthetic appearance - neatness and attractiveness of student work;
 3. Doors, windows and other elements included in class discussion.



Curriculum Guide



Second Grade

Second Grade ♦ Lesson One



**SECOND GRADE
LESSON NO. 1**

ANIMAL HOUSES

LENGTH OF LESSON:

30 - 60 MINUTES

ARCHITECTURAL PRINCIPLES:

Form follows function is a design approach where the form of the building is determined by the function of its spaces and its parts.

Nature is a model for architectural forms and shapes.

Social structure, culture and the built environment have a direct influence on one another.

Climate and the natural environment influence design decisions.

MATERIALS

1. Animal homes - actual examples or photographs on 8-1/2 X 11-inch paper (some sample photographs are included)
2. Crayons, colored pencils, paint, etc. (teacher's choice)
3. Scissors
4. Glue

VOCABULARY (See glossary for definitions)

1. Safety
2. Shelter



Second Grade ♦ Lesson One



ACTIVITY

- A. Begin by having students suggest a list of animals and the type of homes they build or occupy. Write the list of student suggestions on the board. Where possible, staff and students can bring in actual examples: a bird's nest, a hornet's nest, a honeycomb, sea coral or a spider web. A sample of various animal homes is included for teacher's use.
- B. Discuss each animal and its home. Specifically discuss how each home addresses such issues as safety, protection from elements and food gathering, and how each home is constructed. Emphasize how each animal uses only natural materials found nearby. When an animal abandons his home it may be used by another creature, or it returns to nature. Examples may include animal-constructed homes, caves, trees, holes in the ground and man-made animal homes, such as a doghouse or a birdhouse.
- C. Discuss with students how each type of home relates to the animal's specific social structure. Does the animal live alone, in a family, or in a community? If in a community, are there different roles each animal plays within that community? Examples include the division of labor in an anthill, the role of "food gatherer," or "lookout" in a prairie dog colony, etc.
- D. Ask students how they would describe the social structure of a family. How would they describe the social structure of a community? Do people live alone or with families? Do people have different roles within their family?
- E. Have students choose an animal and draw or paint the animal and its home. These are to be included in the mural project in Lesson No. 10.

Note: Decide on the size of the mural before students create their artwork. Their animals/homes need to be in proper proportion to the size of the final mural. Lesson No. 9 suggests the mural be 4 feet in height by 8 feet in length.

TEACHER'S EVALUATION

- A. Analyze student artwork for:
 1. Accuracy according to the discussion and examples
 2. Careful execution and neatness



Second Grade ♦ Lesson One



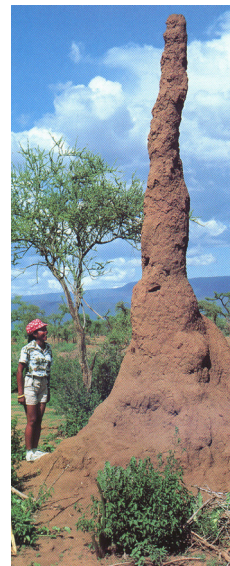
Beaver Dam



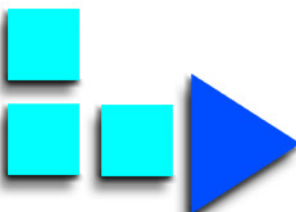
Beehive



Bird's Nest



Termite Tower



Second Grade ♦ Lesson Two



SECOND GRADE
LESSON NO. 2

MAN-MADE STRUCTURES

LENGTH OF LESSON:

30 - 60 MINUTES

ARCHITECTURAL PRINCIPLES:

Form Follows Function is a design approach where the form of the building is determined by the function of its spaces and its parts.

Nature is a model for architectural forms and shapes.

Climate and the natural environment influence design decisions.

An understanding of the natural environment can help to save energy and water

Social structure, culture and the built environment have a direct influence on one another.

Architecture satisfies emotional and spiritual needs in addition to physical needs.

Past, current, and future technologies influence design decisions.

MATERIALS

1. Visual aids: "Homes Are Different" and "Roles People Play" charts (included); make a copy for each student or use transparency with overhead projector
2. 8-1/2 X 11-inch paper
3. Crayons, colored pencils, paint, etc. (teacher's choice)
4. Scissors
5. Graph paper ($\frac{1}{2}$ -inch grid); students will draw buildings on the back side of the graph paper (the grid should be dark enough to see through the paper)



Second Grade ♦ Lesson Two



VOCABULARY (See glossary for definitions)

1. Community
2. Home
3. Natural Environment

ACTIVITY

- A. Display the "Homes Are Different" chart handout (provided). Teacher may choose to create an overlay of the chart and use an overhead projector for display. Continue discussion of animal homes; talk about the similarities to how people build homes. Also, discuss the various types of "homes" people live in, such as houses, apartments, mobile homes, houseboats and tents.
- B. While referencing the "Homes Are Different" handout, discuss how people's homes have changed historically. Refer to prehistoric man and caves, knights and castles, Native Americans and teepees, and Southwest Native Americans and cliff dwellings. How did each group respond to the time and place in which it lived? Talk about such things as protection from the elements, safety, building materials available, and social structure.
- C. Discuss with students how people's houses differ geographically in response to different environments and building materials available. Examples could include Eskimos and igloos, African tribes and grass huts, desert dwellers and tents, etc. Discuss how these groups of people utilized the natural environment. Discuss how the direction of the sun or wind might affect the way the house should face. Discuss how the amount of rain, snow or sun might affect how the house is built.



Second Grade ♦ Lesson Two



D. Display the "Roles People Play" chart. Remind students of the discussion about animals that live in communities and the social structure, or division of labor, inherent in each community. Have students discuss the roles people have in families and communities. Develop a list of roles people play in a community and the buildings needed to house each of these functions:

- Fire fighter..... Fire station
- Police..... Police station
- Teacher..... School
- Librarian..... Library
- Mayor..... City Hall
- Doctor/nurse..... Hospital and medical offices
- Other examples: clerk and store, baker and bakery, mechanic and garage, etc.

E. Ask students to draw a building from the "Roles People Play" chart created in Step E. A one-story building should be 4-inches (or 8 squares); a two story building 8-inches (or 16 squares). These will be included in the mural project in Lesson No. 10. Ask students to consider how the natural environment may be considered in their design.

TEACHER'S EVALUATION

- A. Analyze student art work for:
1. Accuracy according to the discussion and examples;
 2. Careful execution and neatness.
 3. Use of natural materials and consideration of the natural environment.

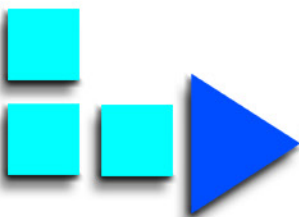


Second Grade ♦ Lesson Two



IN A COMMUNITY . . . ROLES PEOPLE PLAY	
ROLE	BUILDING
FIRE FIGHTER	
POLICE	
TEACHER	
LIBRARIAN	
MAYOR	
DOCTOR/NURSE	
CLERK	
BAKER	

Roles People Play

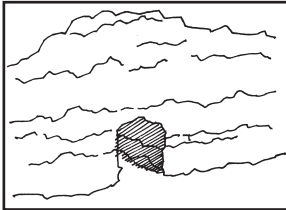


Second Grade ♦ Lesson Two

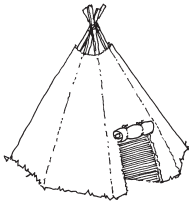


Homes Are Different

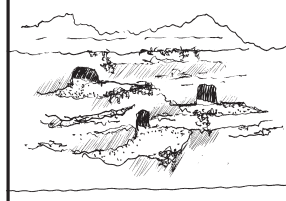
...In History



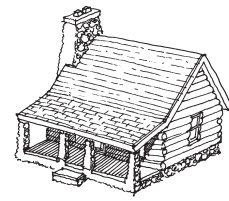
Caves



Teepees

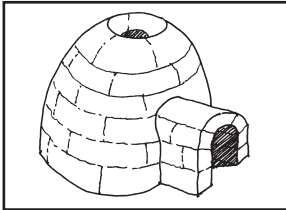


Cliff Dwellers



Log Cabin

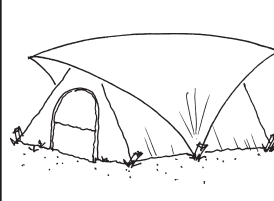
...In Other Places



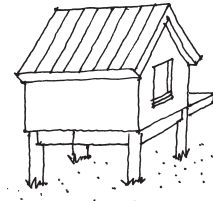
Igloo for Eskimos



African Tribes

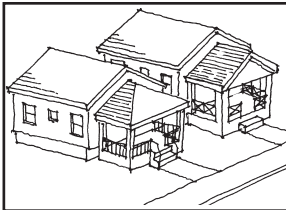


Desert Dwellers



Stilt Houses

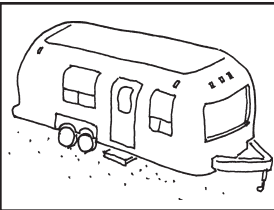
...Today



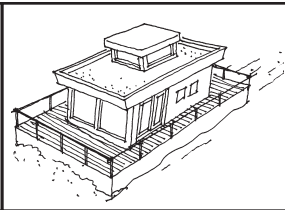
Houses



Apartment



Mobile Home



Houseboat



Second Grade ♦ Lesson Three



SECOND GRADE
LESSON NO. 3

STRUCTURAL CONCEPTS

LENGTH OF LESSON: 30 - 60 MINUTES

ARCHITECTURAL PRINCIPLES:

Nature is a model for architectural forms and shapes.

Sustainable design of the built environment protects the natural environment.

Order is the arrangement and organization of elements to help solve visual and functional problems.

Form follows function is a design approach where the form of the building is determined by the function of its spaces and its parts.

Past, current and future technologies influence design decisions.

MATERIALS

1. Sketches of structures - arches (aqueducts), Greek columns, beam, suspension bridge, dome and cross-section of a dome
2. Copies for each student of photographs of different structural types (included) from Kindergarten Lesson No. 5 - "Acting Out Structures"
3. Wood blocks and books
4. String
5. Bowl
6. Pencils or crayons

VOCABULARY (See glossary for definitions)

- | | | |
|-------------|----------------|--------------|
| 1. Aqueduct | 4. Column | 7. Gravity |
| 2. Arch | 5. Compression | 8. Structure |
| 3. Beam | 6. Dome | 9. Tension |



Second Grade ♦ Lesson Three



ACTIVITY

- A. Review the concept of "structure." The teacher rests his/her elbow on the desktop with forearm up and hand out flat, palm up, to hold up a book. Ask why the book doesn't fall to the ground. Discuss the pull of gravity. Explain that the teacher's forearm is an example of a column, and the book is a beam. What holds these things in place? Show how the weight of the book is transferred to the ground (desktop) through the column (forearm).
- B. Review elements of Kindergarten Lesson No. 5: "Acting Out Structures." Using models, wood blocks or books, demonstrate a column and beam structure. Explain how the weight is transferred through the columns. Explain how the columns are in "compression." Show pictures of Greek temples and ask students to identify the column and beam structures, and what elements of the building are in compression.
- C. Using a block and string, demonstrate "tension." Tie a string on both ends of the beam (block of wood). Hold the end of each piece of string and suspend the block of wood down from the string on each end. Have students identify what is holding up the beam and how the weight is transferred. Explain the string is in "tension." Show the students a picture of a suspension bridge and ask students to identify which parts are in tension.
- D. Put a book on an overturned bowl. Explain how it is an example of a "dome" structure. Show the students pictures of domed buildings and ask them to identify the dome elements.
- E. Display the cross-section of the dome. Identify the resulting configuration as an arch. Discuss how weight is transferred in this type of structure. If possible, have a model of an arch and put weight on it. Show a picture of a building with arched openings and have students identify the arches.
- F. Using the photographs of different structural types from Kindergarten Lesson No. 5, have students draw a picture of a building that has a column, a beam, a dome and an arched opening.



Second Grade ♦ Lesson Three

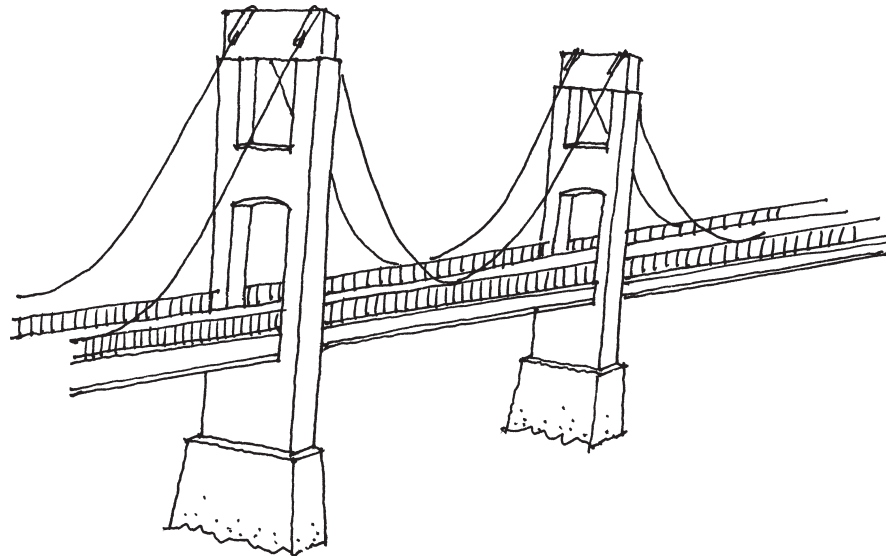


TEACHER'S EVALUATION

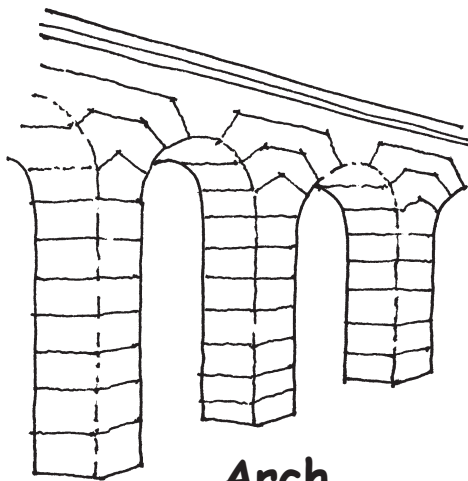
- A. Analyze student art work for:
1. Accuracy according to the discussion and examples. Student drawings should include a column, a beam, a dome and an arch;
 2. Careful execution and neatness;
 3. Understanding the concepts identified by the vocabulary words.



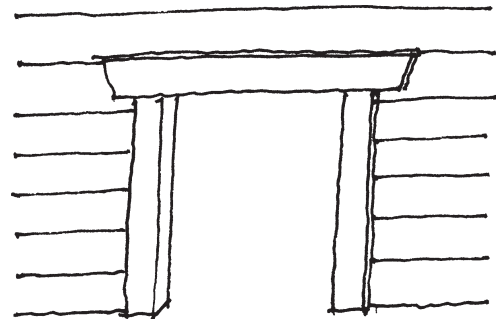
Second Grade ♦ Lesson Three



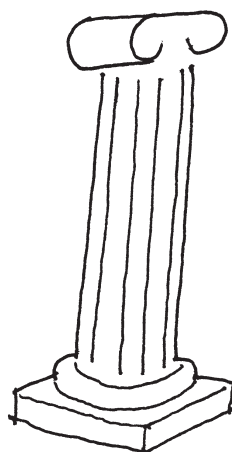
Suspension Bridge



Arch



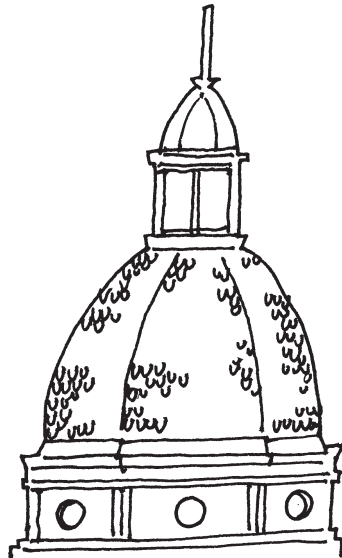
Post & Beam



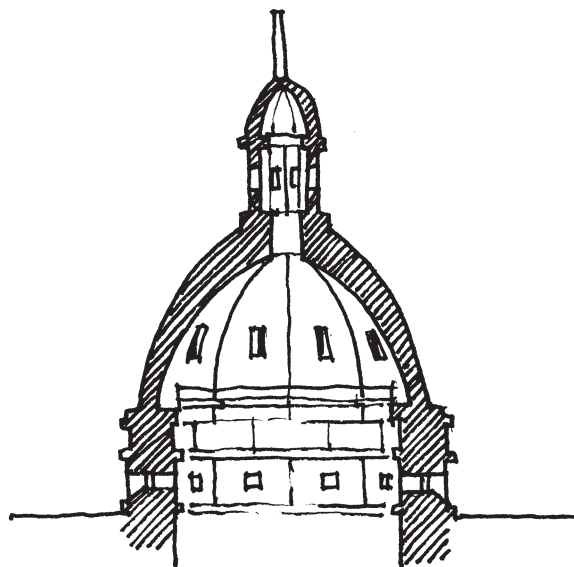
Column



Second Grade ♦ Lesson Three



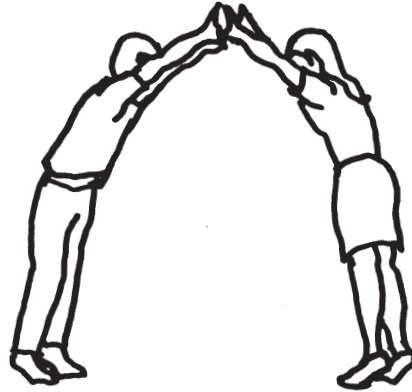
Dome



Dome Section



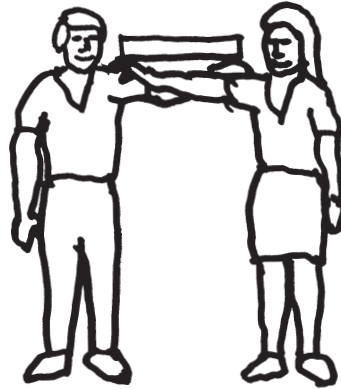
Second Grade ♦ Lesson Three



Arch



Second Grade ♦ Lesson Three



Column & Beam



Second Grade ♦ Lesson Three



Column



Second Grade ♦ Lesson Three



Dome



Second Grade ♦ Lesson Four



SECOND GRADE
LESSON NO. 4

MEASURING

LENGTH OF LESSON:

30 MINUTES

ARCHITECTURAL PRINCIPLES:

Design is accomplished by composing the physical characteristics of size, shape, texture, proportion, scale, mass and color.

Order is the arrangement and organization of elements to help solve visual and functional problems.

Visual thinking is a key to awareness of the built environment.

Design is experienced through human sensory perception.

MATERIALS

1. "Foot" ruler (included), copied on durable paper
2. "Measurement Chart" (included); make copies of chart for student groups
3. Pencils and erasers
4. Masking tape

VOCABULARY (See glossary for definitions)

1. Measure



Second Grade ♦ Lesson Four



ACTIVITY

- A. Teacher preparation:
1. Make copies of the "Foot" ruler that is marked with inches. This could be copied on heavy paper and laminated or traced on tag board, then cut out. Use the half-size model and photocopy at twice the size, or re-draw at twice the size.
 2. Select six items in the room that can easily be measured. While selecting items, think in terms of measuring in inches as well as feet.
 3. Write your selections on the "Measurement Chart" that is provided. Make copies of this chart for small-group use in Step D below.
- B. Discuss with the students their unit of measurement, the "cut-out foot." Compare the foot to the ruler and its similar uses. Explain the use of inches. Show how to write the measurements using numerals. Example: 12 feet and 1 inch is 12' - 1". This concept will be further explained in Lesson No. 5.
- C. At this time, have the students individually use the foot ruler to measure a few items they select. Ask them to measure items smaller than 1 foot to determine if they grasp the concept of measuring in inches.
- D. Divide the students into small work groups. They will work together to measure the pre-selected items and write the measurement on their chart.
- E. Now divide the students into work groups of two. Have the students mark the height of their partner on the wall with a piece of masking tape. Then have each student use the "foot" ruler to measure his/her partner's height and record the findings on the piece of tape. Example: Sara 4' - 2".
- F. Assemble the class and compare the measurements from each group.

TEACHER'S EVALUATION

- A. Analyze the charts for accuracy. The teacher has measured the pre-selected items and knows the answers. This will indicate if the students understand feet and inches measurement.

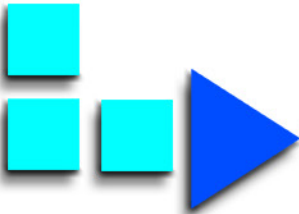


Second Grade ♦ Lesson Four

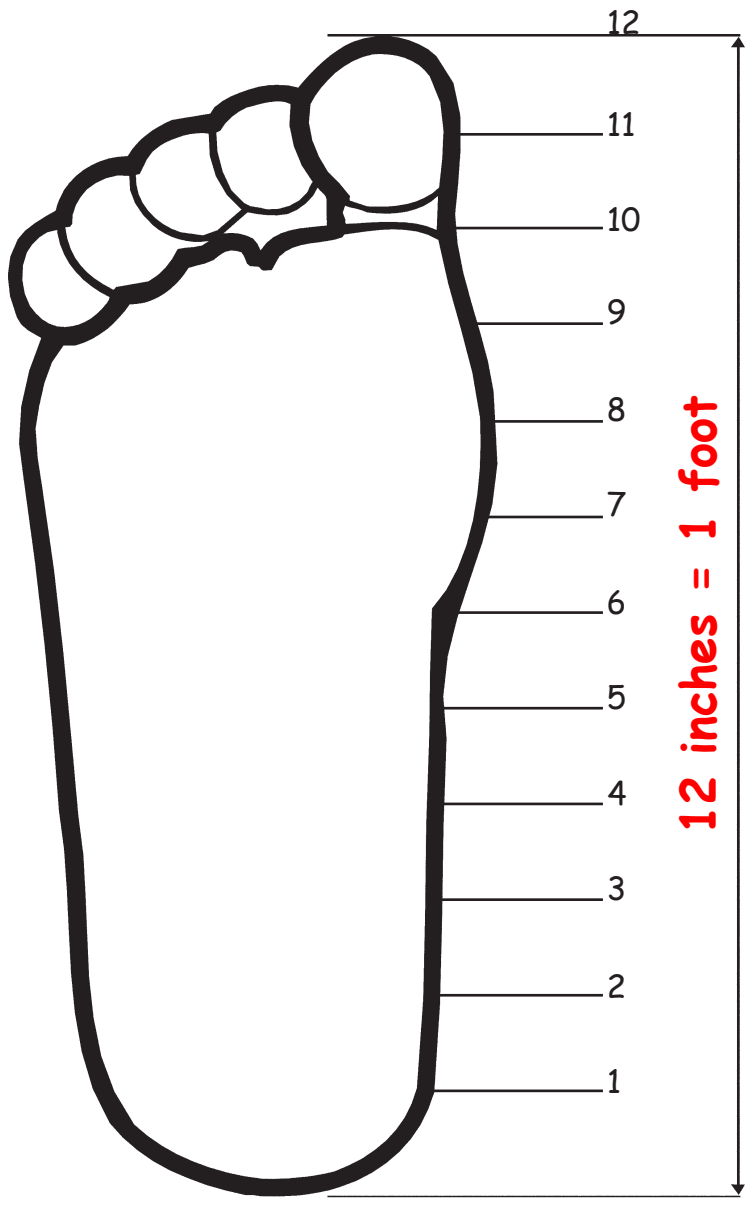


OBJECT NAME	SIZE	
	FEET	INCHES

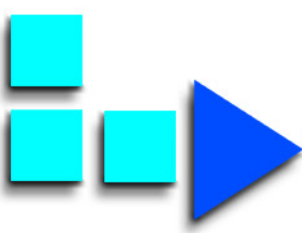
Measurement Chart



Second Grade ♦ Lesson Four



"Foot" Ruler
(This image is half size - enlarge 100 percent)



Second Grade ♦ Lesson Five



**SECOND GRADE
LESSON NO. 5**

**MEASURING AND DRAWING
YOUR CLASSROOM**

LENGTH OF LESSON: 30 - 60 MINUTES

ARCHITECTURAL PRINCIPLES:

Design is accomplished by composing the physical characteristics of size, shape, texture, proportion, scale, mass and color.

Visual relationships are determined by light, shadow, edges and contrast.

Design is experienced through human sensory perception.

Visual thinking is a key to awareness of the built environment.

Order is the arrangement and organization of elements to help solve visual and functional problems.

MATERIALS

1. Rulers
2. Graph paper (4 squares per inch)
3. Pencils or crayons
4. "Classroom Measurement Chart" (included)
5. Poster board for measurement chart

VOCABULARY (See glossary for definitions)

1. Estimate



Second Grade ♦ Lesson Five



ACTIVITY

- A. Using the "Classroom Measurement Chart" as a guide, prepare a three-column chart on poster board. Column 1 is for the group name, Column 2 is for estimating the classroom size, and Column 3 is for actual measurements taken by the students.
- B. As each student looks at his/her ruler, explain a ruler is usually 12 inches long, which also is called a "foot" when measuring (refer to Lesson No. 4). Then ask students to guess the size of their classroom (length and width, in feet).
- C. Discuss the need for a universal system of measurement. Introduce the history of measurement based on early kings' arms and feet (e.g., the king's foot = 1 foot).
- D. Demonstrate how to use a ruler to measure. Tell students to line up the edge of the ruler to the edge of the object they are measuring.
- E. Separate the children into groups of two students each.
- F. Have each group measure the wall lengths of the classroom. More than one group can measure the same wall by starting at opposite ends.
- G. All groups record their results on the poster board in the correct columns.
- H. Discuss the differences in measurements, and why they differ.
- I. Distribute graph paper. Using the actual measurements (not the estimate), have each child draw the classroom floor plan. One block on the graph paper equals 1 foot. The students should include furniture and indicate where doors and windows are located.

TEACHER'S EVALUATION

- A. Analyze student work for:
 1. Understanding and accurately measuring the classroom size;
 2. Accurately generating the classroom floor plan.



Second Grade ♦ Lesson Five



GROUP	GUESS (ESTIMATE)	MEASUREMENT

Classroom Measurement Chart



Second Grade ♦ Lesson Six



**SECOND GRADE
LESSON NO. 6**

**SENSORY ASPECTS OF YOUR
CLASSROOM**

LENGTH OF LESSON:

60 MINUTES

ARCHITECTURAL PRINCIPLES:

Design is accomplished by composing the physical characteristics of size, shape, texture, proportion, scale, mass and color.

Balance is the creation of visual harmony through the use of color and the manipulation of form.

Design is experienced through human sensory perception.

Aesthetics is the artistic component of architecture.

Architecture satisfies emotional and spiritual needs in addition to physical needs.

MATERIALS

1. Make a copy of classroom drawing for each student (included); drawing can be enlarged to help facilitate the placement of materials.
2. Sample texture sheet
3. Colored pencils
4. Texture plates for rubbings (samples of bricks, tiles, carpet, etc.)
5. Construction paper of various colors (red, orange, yellow, blue, green, purple, gray, black, white)

VOCABULARY (See definitions in glossary)

1. Color
2. Echo
3. Senses
4. Texture



Second Grade ♦ Lesson Six



ACTIVITY

- A. Begin with a discussion of the senses in general (sight, hearing, smell, taste and touch). Then talk with students about memories of a scent, e.g., hot dogs cooking at a ballpark, popcorn at the movies, etc.
- B. Explain that color serves many purposes. Color helps us communicate, such as traffic lights with red, yellow and green signals. Color is important in nature. Many colorful flowers and fruits attract fruit-eating insects and animals. Color adds pleasure to our lives. We enjoy the beauty of colorful flowers. We choose clothing colors carefully, and we decorate our buildings with color. We paint walls and install carpet with color. Building materials like brick and wood have natural colors.
- C. Next, show the students examples of construction paper in various colors. Use the examples as a visual aid for discussion.
- D. Discuss warm and cool colors:
 1. Warm colors: Red, yellow and orange;
 2. Cool colors: Blue, green and gray.
- E. Have students talk about how these colors make them feel. For example, blue is associated with sadness; red is associated with energy or anger, etc.
- F. Discuss how we hear echoes in large rooms or in a wide-open canyon surrounded by mountains. Echoes make us feel that we are in an open area, even if the area is not open. Echoes are used in recording music to create this feeling.
- G. Discuss how smell and taste are closely related. When we go into a home where dinner has been cooking, we smell the aromas of the food and can almost taste it before it is eaten.
- H. Discuss how the sense of touch is all around us in the various textures of materials. Brick and block are rough and hard surface textures. Clothing fabrics are usually smooth and soft surface textures. Point out the various textures in the classroom, utilizing the sample texture sheet (included).



Second Grade ♦ Lesson Six



- I. Have the students place texture plates under the classroom drawing. Have them make rubbings using colored pencils. Instruct students to use different textures (and colors) to represent different surfaces.
- J. Have each student explain his/her classroom drawing to the class.

TEACHER'S EVALUATION

- A. Display the rubbings.
- B. Evaluate each student's understanding of the concepts discussed through his/her drawing and discussion.



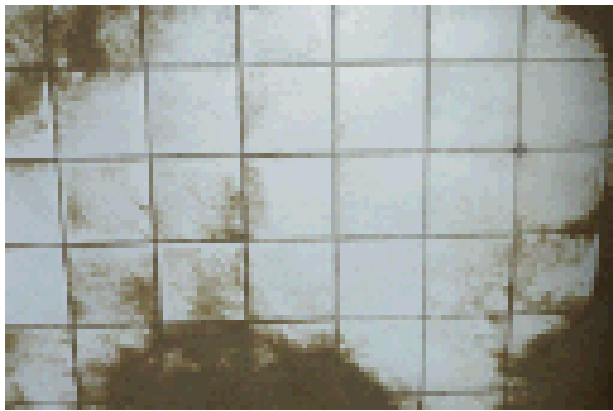
Second Grade ♦ Lesson Six



Brick Wall



Block Wall



Tile



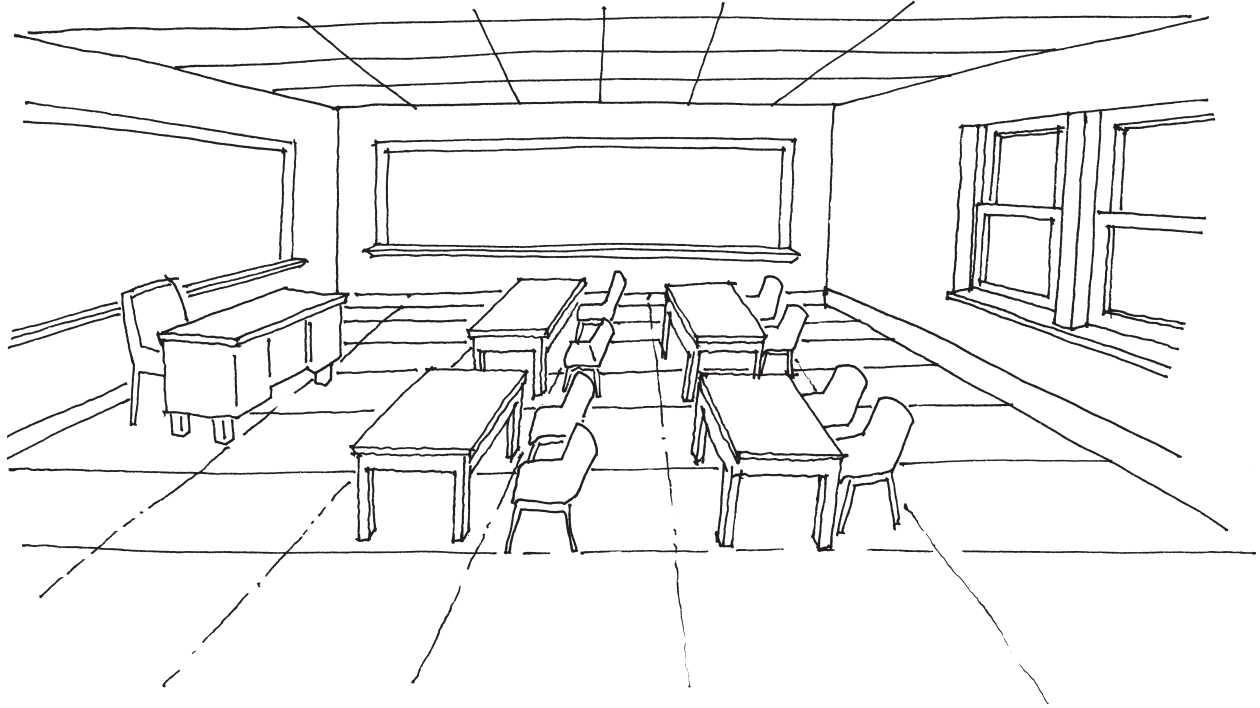
Carpet



Drapes



Second Grade ♦ Lesson Six



Drawing of Classroom



Second Grade ♦ Lesson Seven



SECOND GRADE
LESSON NO. 7

BUILDING TYPES

LENGTH OF LESSON:

30 - 60 MINUTES

ARCHITECTURAL PRINCIPLES:

Design is accomplished by composing the physical characteristics of size, shape, texture, proportion, scale, mass and color.

Visual thinking is a key to awareness of the built environment.

The creative process is basic to design.

Order is the arrangement and organization of elements to help solve visual and functional problems.

Form follows function is a design approach where the form of the building is determined by the function of its spaces and its parts.

Architecture satisfies emotional and spiritual needs in addition to physical needs.

Past, current and future technologies influence design decisions.

MATERIALS

1. Graph paper with 1/2-inch square grid
2. Rulers
3. Pencils and crayons
4. Example of Building Type/Activity Chart

VOCABULARY (See glossary for definitions)

1. Activity
2. Building



Second Grade ♦ Lesson Seven



ACTIVITY

- A. Begin by having the students recall what buildings they recently have visited. Create a list of those buildings during discussion.
- B. Next to each building, list the rooms students recall being in. Next to each room, list some of the activities that occurred when the students were there. Discuss why some activities occur in some buildings and not in others.
- C. Have the students create a list of buildings not already on the list - buildings they may not have been in but have seen. Total the number of different building types the students can identify. Encourage students to add to the list by prompting them with activities that occur in the buildings and identifying the building that would house the activity.
- D. Discuss the activities below and help the students identify the very unique buildings that house these activities:
 1. Repairing airplanes - airplane hangar
 2. Practicing golf - driving range
 3. Using a telescope - planetarium
- E. Have students select an activity from the list below and describe what would make a particular building good for that activity:
 1. Skateboarding
 2. Playing laser tag
 3. Other unique activities that may be of interest to the students
- F. Have students draw a picture depicting the building or area for an activity that interests them. Use graph paper. A one-story building should be 4 inches high (or 8 squares) and a two-story building should be 8 inches high (or 16 squares). When completed, have students cut out these buildings to add to the final mural in Lesson No. 10.

TEACHER'S EVALUATION

- A. Evaluate discussion to determine student knowledge.
- B. Evaluate student drawings for awareness and accuracy of activities within the built environment.



Second Grade ♦ Lesson Seven



BUILDING TYPE	ACTIVITY
House	Living
Apartments	Multi-family living
Stores/Mall	Buying and selling
Offices	Working
Car wash	Cleaning cars
Hospital	Heal and cure
Bank	Finance
Theater	Entertainment/culture
Parking garage	Park cars
Prison	House criminals
Library	House books
Pool	Swim

BUILDING TYPE	ACTIVITY
School	Learning
Hotel	Sleeping
Restaurant	Eating
Gas Station	Buy fuel
Doctor's office	Health check
Factory	Make things
Museum artifacts	Display
Airport	Travel
Warehouse	Store objects
Temple, church, etc.	Practice religion
Stadium	Sports

Example of a Building Type/Activity Chart



Second Grade ♦ Lesson Eight



SECOND GRADE
LESSON NO. 8

RECIPE FOR A CITY - PART 1

LENGTH OF LESSON:

30 - 60 MINUTES

ARCHITECTURAL PRINCIPLES:

Order is the arrangement and organization of elements to help solve visual and functional problems.

Symbolism is an important means of visual communication for architecture.

Visual thinking is a key to awareness of the built environment.

Climate and the natural environment influence design decisions.

Social structure, culture and the built environment have a direct influence on one another.

Architecture satisfies emotional and spiritual needs in addition to physical needs.

MATERIALS

1. Map of city
2. Aerial photograph (available from county planning agency)

VOCABULARY (See glossary for definitions)

1. Aerial photograph
2. Elevation
3. Map



Second Grade ♦ Lesson Eight



ACTIVITY

- A. Discuss the parts of their city with the students. Show a map of their city and an aerial photograph, if available. Have the students make a list of examples of each of the following eight categories as a class. List the categories and examples on the chalkboard:
1. Places to live
 2. Transportation
 3. Government buildings
 4. Food/growing and production
 5. Places to work
 6. Places to buy things
 7. Places to play
 8. Natural areas
- B. Sample questions for discussion:
1. What do you think is important in your city/town to keep it operating well for the people who live and work there?
 2. What parts of your city/town remain from the past?
 3. What kind of places or buildings does your city/town need that it does not have now?
 4. Are there features that make certain buildings recognizable from the outside?
- C. Divide the class into approximately equal numbers of students for each category. Allow the students some freedom to select the category they like.
- D. Each student should select one place (building type or area) to draw (in Lesson No. 10) that falls within his/her category. This drawing should be a front view (elevation) of the building.

TEACHER'S EVALUATION

- A. Most of the evaluation for this project will occur after Recipe for a City: Part 3 (Lesson No. 10). However, after the discussions in this lesson, students should have a basic understanding of the types of buildings and places found in a city.



Second Grade ♦ Lesson Nine



SECOND GRADE
LESSON NO. 9

RECIPE FOR A CITY - PART 2

LENGTH OF LESSON:

30 - 60 MINUTES

ARCHITECTURAL PRINCIPLES:

Design is accomplished by composing the physical characteristics of size, shape, texture, proportion, scale, mass and color.

Order is the arrangement and organization of elements to help solve visual and functional problems.

Visual relationships are determined by light, shadows, edges and contrast.

Balance is the creation of visual harmony through the use of color and the manipulation of form.

Form follows function is a design approach where the form of the building is determined by the function of its spaces and its parts.

Nature is a model for architectural forms and shapes.

Mass creates form, which occupies space and brings into being a spatial articulation.

Symbolism is an important means of visual communication for architecture.

Visual thinking is a key to awareness of the built environment.

Sustainable design of the built environment protects the natural environment.

Social structure, culture and the built environment have a direct influence on one another.

Design is experienced through human sensory perception.



Second Grade ♦ Lesson Nine



The creative process is basic to design.

Aesthetics is the artistic component of architecture.

Climate and the natural environment influence design decisions.

Architecture satisfies emotional and spiritual needs in addition to physical needs.

MATERIALS

1. Bulletin board paper 4 feet in height by 8 feet in length (longer is OK)
2. 8 1/2 x 11-inch graph paper with 1/2-inch square grid
3. Rulers
4. Pencils
5. Erasers
6. Oil pastels, chalk pastels, tempera paint, etc. (teacher's choice)
7. Example of a streetscape mural (picture below)

VOCABULARY (See glossary for definitions)

1. Elevation



Second Grade ♦ Lesson Nine



ACTIVITY

- A. The teacher makes a background for a student mural, approximately 4 feet in height by 8 feet in length. The background material can be bulletin board paper or any other type of large paper. The teacher starts by adding a sidewalk and a road to the mural. See the example of the streetscape mural below for reference.



- B. The student has selected a building type during Lesson No. 8. The teacher assigns a dimension (in grids) to each student's building for both the building height and width. The building dimensions (in grids) should vary according to the building type (e.g., a house will be smaller than a school; an apartment building will be taller than a house).
- C. The students draw a front view (elevation) of their building, with the teacher circulating among the students to offer assistance. Students color their buildings.
- D. Students also make trees, flowers, animals, etc., for the mural. These are planned to complement the animals and animals' homes from Lesson No. 1 - Activity Step E.
- E. All buildings should be carefully cut out and ready to be attached to the mural. (These items will be attached during Lesson No. 10.)



Second Grade ♦ Lesson Nine



TEACHER'S EVALUATION

- A. Analyze groups' art work to determine students' understanding of the variety of functions of a city/town.
- B. Students should create appropriate buildings according to their groups' category.



Second Grade ♦ Lesson Ten



**SECOND GRADE
LESSON NO. 10**

RECIPE FOR A CITY - PART 3

LENGTH OF LESSON:

60 MINUTES

ARCHITECTURAL PRINCIPLES:

Design is accomplished by composing the physical characteristics of size, shape, texture, proportion, scale, mass and color.

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Visual relationships are determined by light, shadows, edges and contrast.

Balance is the creation of visual harmony through the use of color and the manipulation of form.

Form follows function is a design approach whereby the form of the building is determined by the function of its spaces and its parts.

Nature is a model for architectural forms and shapes.

Mass creates form, which occupies space and brings into being a spatial articulation.

Symbolism is an important means of visual communication for architecture.

Visual thinking is a key to awareness of the built environment.

Sustainable design of the built environment protects the natural environment.

Social structure, culture and the built environment have a direct influence on one another.

Design is experienced through human sensory perception.



Second Grade ♦ Lesson Ten



The creative process is basic to design.

Aesthetics is the artistic component of architecture.

Climate and the natural environment influence design decisions.

Architecture satisfies emotional and spiritual needs in addition to physical needs.

MATERIALS

1. Art work begun in previous lessons
2. Scissors
3. Glue
4. Masking tape
5. Bulletin board paper

VOCABULARY (See glossary for definitions)

1. Mural

ACTIVITY

- A. Retrieve buildings, flowers, etc., from Lesson No. 9. Note: Animals, animal houses and buildings from Lesson No. 1 - Activity Step E, Lesson No. 2 - Activity Step F and Lesson No. 7 - Activity Step F may be added to or substituted for material produced in Lesson No. 9.
- B. As a class, students should place the buildings, flowers, etc., on the paper background that is mounted on the wall. Ask students to focus on the city/town as a totality of many types of buildings and spaces, all of which are related to each other. Students should plan locations before attaching items, considering, for example, that places to live may need to be concentrated in one area. Attach items with small pieces of masking tape rolled up on the back of these items until their final location is determined.



Second Grade ♦ Lesson Ten



- C. Add glue to the back of the items to permanently attach them to the mural.
- D. Evaluate the mural as a class. This is a good time for students to stand back and look at the mural and review what they have put together - how the city/ town will work; whether the buildings are in logical locations; if there is anything they could add in the future; and what they judge to be the best parts of their final mural.
- E. The class can present the mural to parents on family night as a team project. Students should have the opportunity to explain their work but without pressure to do so.

TEACHER'S EVALUATION

- A. Gauge student understanding of the types of buildings and places and their logical proximity to each other.
- B. Evaluate how students worked in teams and as a total class to incorporate their buildings into the mural in a logical manner.
- C. From classroom discussion, determine whether the students understand the kinds of buildings their classmates created in categories different from their own.



Curriculum Guide



Third Grade

Third Grade ♦ Lesson One



**THIRD GRADE
LESSON NO. 1**

METRIC SYSTEM

LENGTH OF LESSON:

30 - 60 Minutes

ARCHITECTURAL PRINCIPLES:

Order is the arrangement and organization of elements to help solve visual and functional problems.

Visual thinking is key to awareness of the built environment.

Design is experienced through human sensory perception.

Mass creates form, which occupies space and brings into being a spatial articulation.

Social structure, culture and the built environment have a direct influence on one another.

MATERIALS

1. Drawings comparing English and metric lengths of some common objects (included).
2. The English and metric ruler (included). Photocopy to the exact size shown and cut out for each student.

VOCABULARY (See glossary for definitions)

1. Centimeter
2. Kilometer
3. Meter
4. Metric system
5. Millimeter



Third Grade ♦ Lesson One



ACTIVITY

- A. The teacher gives students a brief history of the metric system by explaining the following:
1. The metric system began in the 1200s in England as a method for measuring length, volume, temperature, time, and weight or mass.
 2. Most countries other than the U.S. use the metric system today; the U.S. uses a system called the "customary" or "English" system.
 3. Early in the 1970s, Canada began to convert from the "customary" or "English" system to the metric system.
 4. In 1975, the U.S. Congress passed the Metric Conversion Act, calling for a voluntary change over to a system of metric measurement.
 5. The metric system is based on units of "ten" and is simple to use.
 6. Sometimes, the metric system seems more complicated to use than it is. That's because when using the metric system in the U.S., we usually are converting from the English to the metric system.
 7. The basics of the metric system and sample comparisons:
 - a. Volume: Liter (slightly larger than a quart);
 - b. Time: years, hours, minutes, and seconds (same as English system);
 - c. Weight and mass: Gram;
 - d. Temperature: Celsius (32 degrees Fahrenheit = 0 degrees Celsius);
 - e. Length: Millimeter = 1/1,000th of a meter (1 inch = 25 millimeters),
Centimeter = 1/100th of a meter (1 foot = 30 centimeters),
Meter (1 yard = .9 meters),
Kilometer = 1,000 meters (1 kilometer = .6 miles).
- B. The teacher shows the class drawings comparing the lengths of various objects measured in both the English and metric systems (provided). The teacher explains that each student will measure the size of an object using metric measurements.
- C. The teacher assigns each student one or more classroom objects to measure and gives each student a cut-out metric ruler (included). The teacher demonstrates how to use the metric ruler. Each student writes down on a piece of paper the name of the object or objects to be measured and draws a picture of each object. The student then measures the object in the metric system and writes down the measurement next to the drawing of the object.



Third Grade ♦ Lesson One



D. After the class has completed Part C, each student explains the object measured and its metric measurement to the class.

TEACHER'S EVALUATION

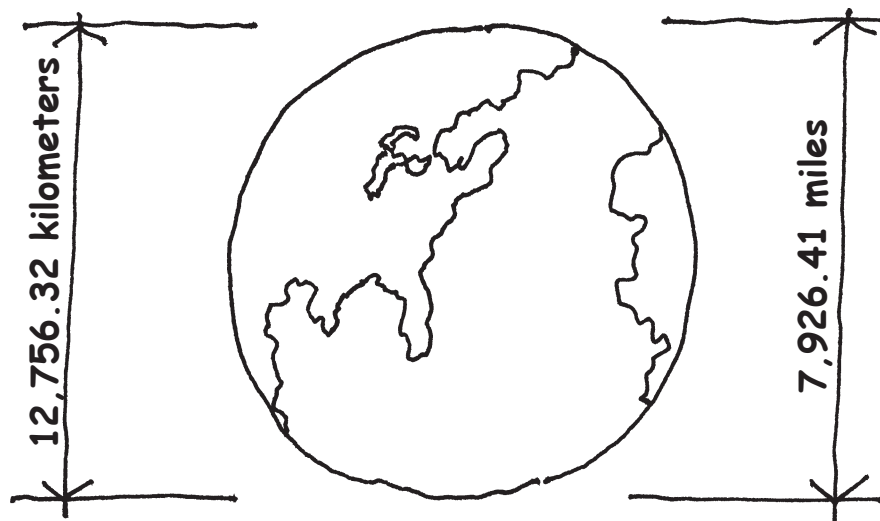
- A. Analyze students' understanding of the concept of an alternate system of measuring lengths, weights, volume, etc.
- B. Evaluate each student's ability to accurately measure with the new ruler.



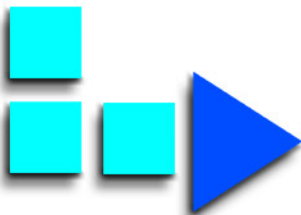
Third Grade ♦ Lesson One



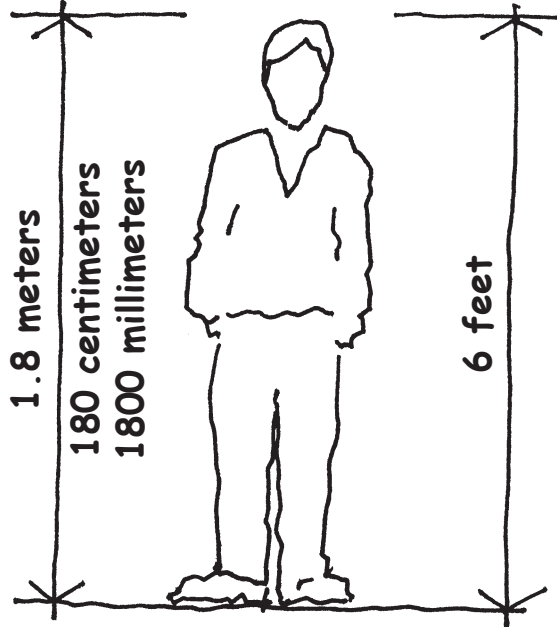
A. House



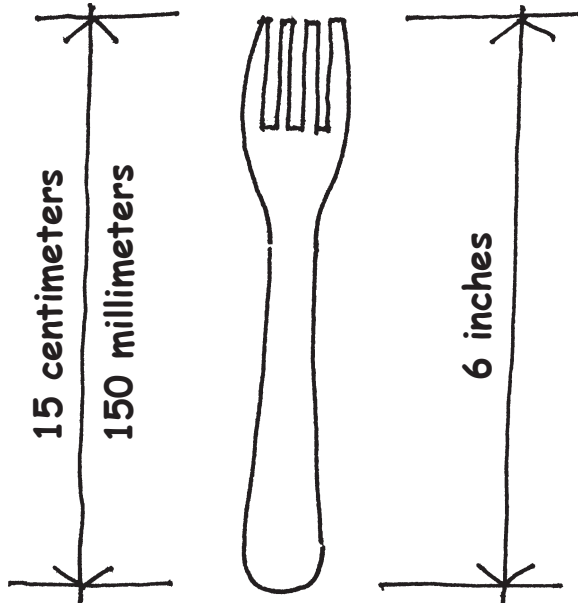
B. Earth



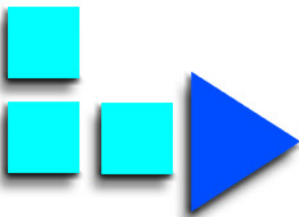
Third Grade ♦ Lesson One



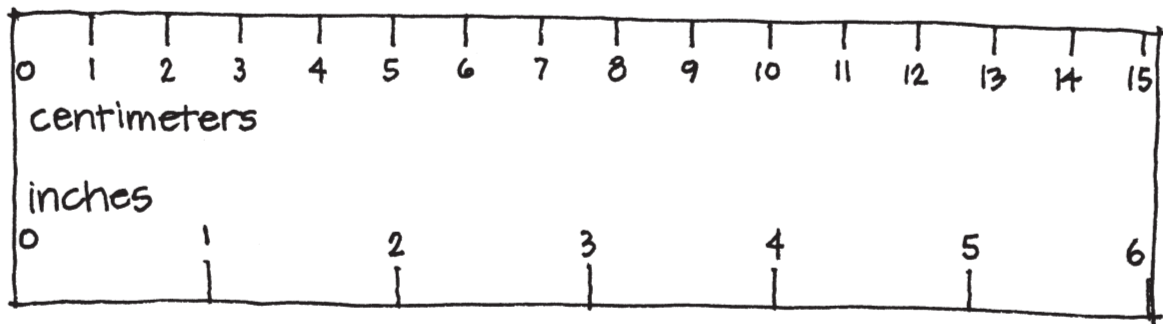
C. Person



D. Fork



Third Grade ♦ Lesson One



Ruler



Third Grade ♦ Lesson Two



**THIRD GRADE
LESSON NO. 2**

ANTHROPOMORPHIC BUILDINGS

LENGTH OF LESSON: 30 - 60 Minutes

ARCHITECTURAL PRINCIPLES:

Form follows function is a design approach where the form of the building is determined by the function of its spaces and its parts.

Nature is a model for architectural forms and shapes.

Design is experienced through human sensory perception.

Climate and the natural environment influence design decisions.

Past, current and future technologies influence design decisions.

MATERIALS

1. Charts, building photos and house outline copied for each student
2. Clipboards for building walk-through
3. Crayons and markers
4. Pencils and erasers

VOCABULARY (See glossary for definitions)

1. Beam
2. Electricity
3. Heating and Air conditioning
4. Plumbing
5. Post
6. Structure



Third Grade ♦ Lesson Two



ACTIVITY

- A. The teacher explains that a building can be compared to a person's body because they share many of the same characteristics.
1. Draw on the board and/or provide a handout to the students of "Comparison Chart #1" (included).
 2. Explain the comparisons listed, pointing to actual areas of a student volunteer's body.
 3. Provide a handout for the class of "Comparison Chart #2" (included), in order to further explain and illustrate the comparison by means of a "Photo Analogy."

- B. Building observation walk:
After discussing the photos with the students, the teacher takes them on a walk around and through their own school building. Try to have a maintenance person or custodian as a guide.

The building tour should be an opportunity to point out to the students the elements and systems, described in the comparison charts, and to demonstrate how they are represented in the building.

The students should make their own comparison chart (similar to the included "Comparison Chart #1") and use it to list and describe any additional anthropomorphic comparison that they may observe.

e.g. windows / eyes, speaker system / voice, awning / eyebrow, computerized building management center or computer center / brain, radio antenna / ears.

- C. As an additional activity, if class time permits, draw a building with human characteristics:
- Talk to students about the surface features of a human being that relate to the outer surface of a house - for example, the eyes for windows, mouth for door, hair for roof, etc.
 - Students use the house outline, crayon or marker to add human features to their building. Have them begin with pencil (erasable) and color over their drawing with crayon or marker.

- D. Display the charts and discuss the comparisons as a group.



Third Grade ♦ Lesson Two



- E. As an additional activity, compare how we take care of our human bodies to sustain our health and longevity, with how a building needs to be taken care of to ensure its health and longevity (its sustainability). See "Comparison Chart #3".

TEACHER'S EVALUATION

- A. Check the accuracy of the charts.
- B. Have each student trade his/her chart with another student to check each other's work.



Third Grade ♦ Lesson Two



Comparison Chart #1






Human Body	Building	Functional Comparison
Skin & Hair	Outside building walls and roof	The surrounding outside material that encloses everything else. <ul style="list-style-type: none"> • Many colors and textures • Many sizes • Many shapes
Skeleton	Structural framework	The bones of the body are like posts and beams that hold up a building - a framework
Digestive System	Plumbing	We eat, drink, and remove waste from our body. Buildings have plumbing that brings in water and removes building waste.
Nervous System	Electricity	Our brain sends signals through our body telling it to do things like move muscles. A building has electrical wires that send through power, allowing us to use electrical appliances, light rooms, etc.
Respiratory System	Heat and Air Conditioning	We breathe in air with our lungs, which the heart then circulates through our body, and then exhale the used air. A building takes in air, heats it, cools it and blows it into rooms. Then "old" air is returned to the furnace to be cleansed.



Third Grade ♦ Lesson Two



Comparison Chart #2 Photo Analogy

Human Body	Building	My Building Parts
Skin & Hair	Outside Building Walls and Roof	
Skeleton	Structural Framework	
Digestive System	Plumbing	
Nervous System	Electricity	
Respiratory System	Heat and Air Conditioning	



Third Grade ♦ Lesson Three



THIRD GRADE
LESSON NO. 3

DIFFERENT KINDS OF HOMES

LENGTH OF LESSON: 30 - 60 Minutes

ARCHITECTURAL PRINCIPLES:

Design is accomplished by composing the physical characteristics of size, shape, texture, proportion, scale, mass and color.

Order is the arrangement and organization of elements to help solve visual and functional problems.

Form follows function is a design approach where the form of the building is determined by the functions of its spaces and its parts.

Nature is a model for architectural forms and shapes.

Climate and the natural environment influence design decisions.

Past, current and future technologies influence design decisions.

MATERIALS

1. Drawings (included) of the following structures for discussion and coloring (make copies):

Apartment	Hut
Castle	Igloo
Town House	Mobile Home
Duplex House	Teepee
Farmhouse	Single-Family House
Earth Sheltered House	
2. Construction paper (blue, green, purple, red, orange, yellow)
3. Pencils or crayons in various colors



Third Grade ♦ Lesson Three



VOCABULARY (See glossary for definitions)

1. Apartment
2. Town House
3. Duplex house
4. Igloo
5. Mobile home
6. Teepee
7. Earth Sheltered House

ACTIVITY

- A. Begin with a visual presentation of a large castle and a small hut. The teacher can use the provided drawings as an overlay to project on a wall or screen as he/she asks questions:
1. Large Castle - "Can you imagine living here?"
 2. Small Hut - "Or here?"
- B. Ask students as a group to brainstorm a list of types of "homes." Write the list on the chalkboard. The following list may supplement the students' list. Show pictures (included) of the houses to the class.
1. Single-family house
 2. Duplex house
 3. Apartment
 4. Farmhouse
 5. Castle
 6. Igloo
 7. Teepee
 8. Hut
 9. Mobile home
 10. Town House
 11. Earth Sheltered House
- C. Using the drawings provided, have a classroom discussion about the differences between types of homes. How many families can live in each unit? How many "homes" can exist in each building type?
- D. Discuss how houses differ due to climate, geography and location. Some homes in Arctic areas are made from ice (igloos). Some homes are lightweight and portable because their owners move around a lot (tents, teepees). Earth Sheltered Houses take advantage of the constant temperature of the earth. These types of homes are less expensive and use less energy to build. Large cities have tall apartment buildings permitting many people to live near each other. Deserts or farm areas generally do not have tall buildings. Explain that large homes or castles are very expensive to build, use more energy to build, and generally have a lot of land around them, while smaller homes can be grouped together into neighborhoods. Smaller homes also cost less to build, take less energy to build and use less energy to operate.



Third Grade ♦ Lesson Three



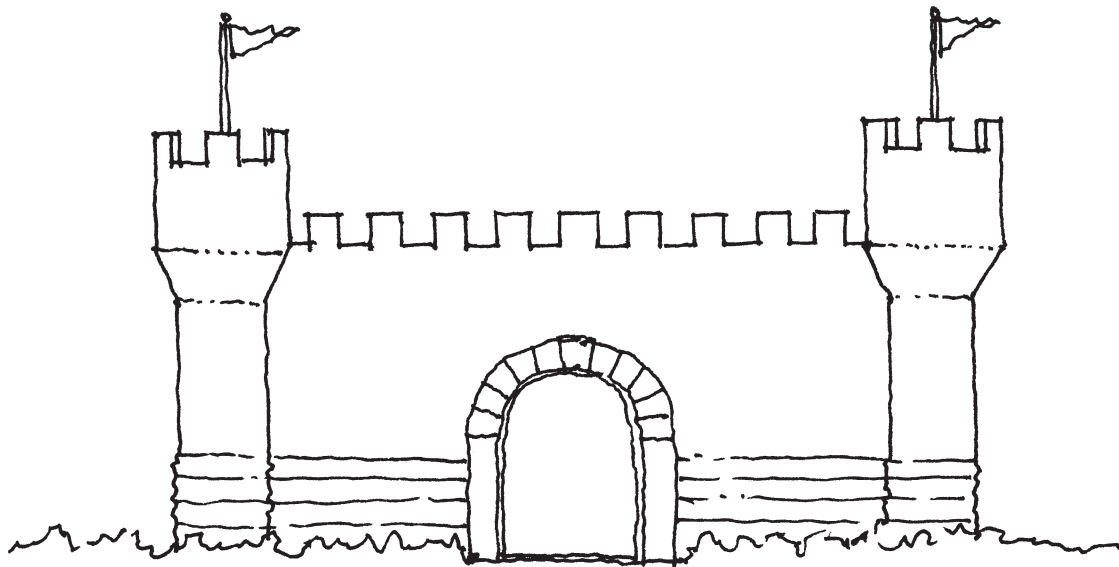
- E. Color is important when designing a house. Sometimes the color of a house matches its environment because it is constructed of unpainted materials from the environment. Igloos and huts are some examples. Show students blue, green and purple paper and explain these are "cool" colors. Show them red, yellow and orange paper and explain these are "warm" colors. Dark colors soak up heat, making them good color choices for homes in cold climates. Light colors reflect heat and are good choices for warm climates. Ask the students to describe where color can be used on a house, and what colors often are used on the outside walls, shutters, decoration, trim, roof, etc.
- F. Ask the students to choose a house type from the drawings provided. After the students have added color to their drawing with pencils or crayons, they will describe their finished house to the class.

TEACHER'S EVALUATION

- A. Through class discussion, determine whether there is an understanding about why different types of homes occur in different locales.
- B. Evaluate how each student describes the color added to his or her drawing and if the color choices are logical.



Third Grade ♦ Lesson Three



Castle



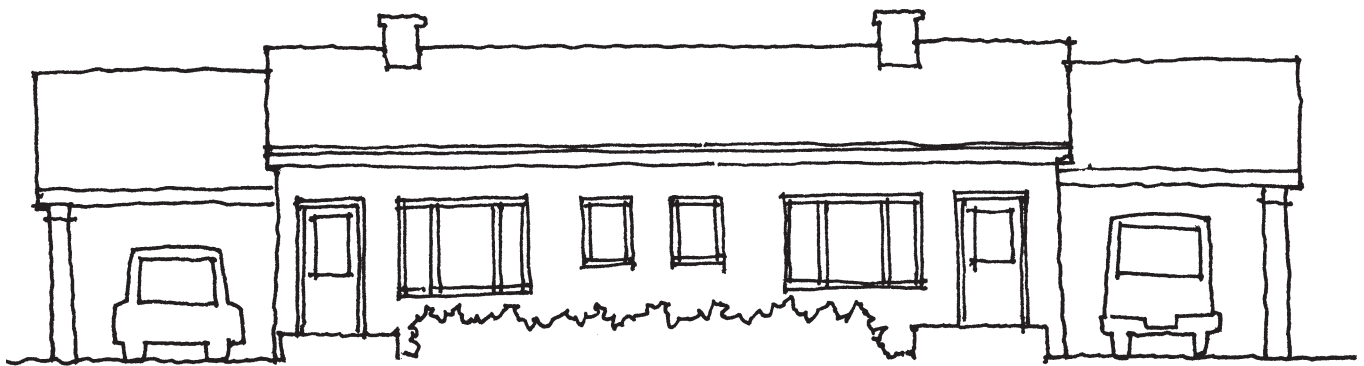
Third Grade ♦ Lesson Three



Condominium



Third Grade ♦ Lesson Three



Duplex House



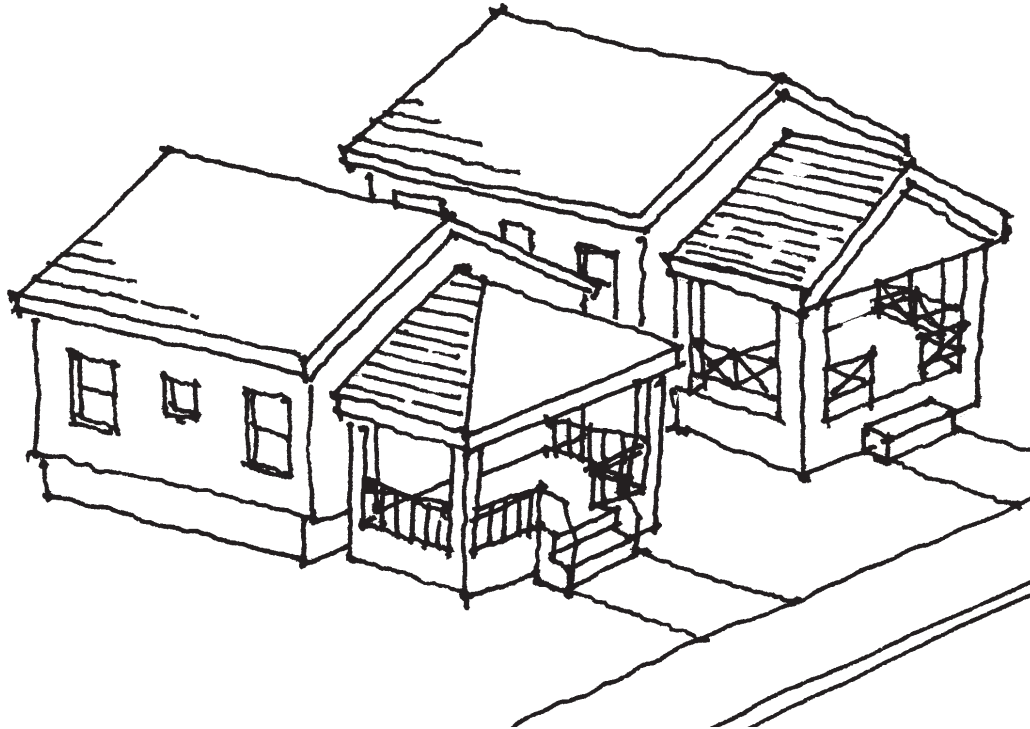
Third Grade ♦ Lesson Three



Farmhouse



Third Grade ♦ Lesson Three



Single-Family Houses



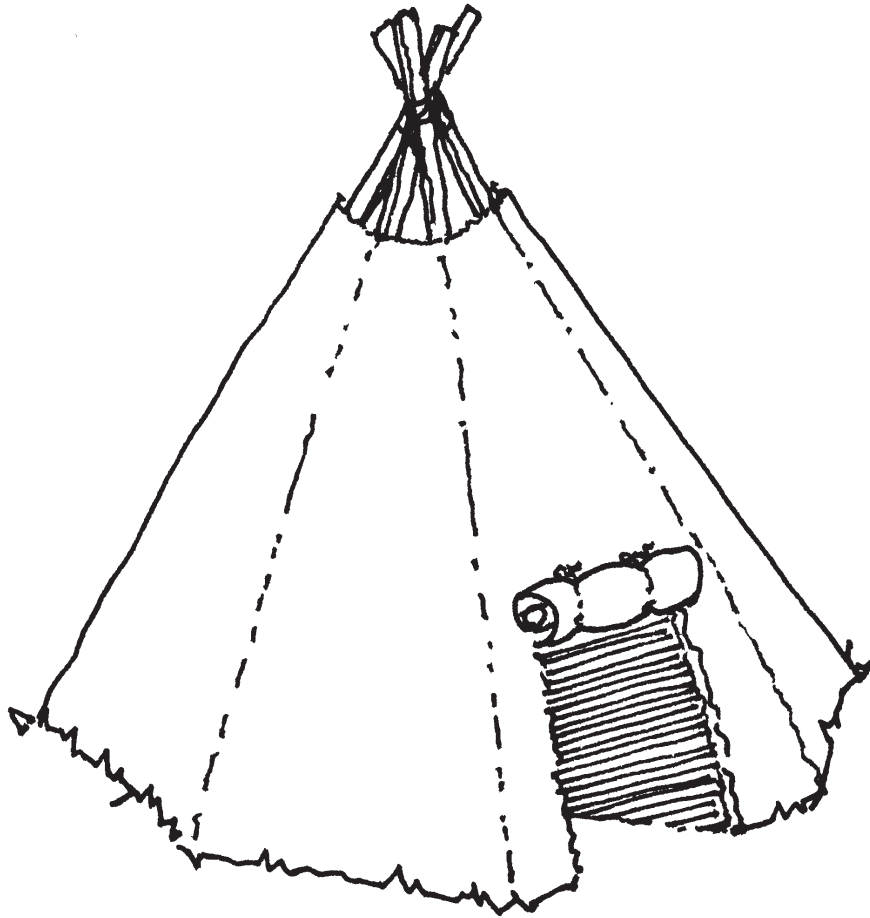
Third Grade ♦ Lesson Three



Apartment



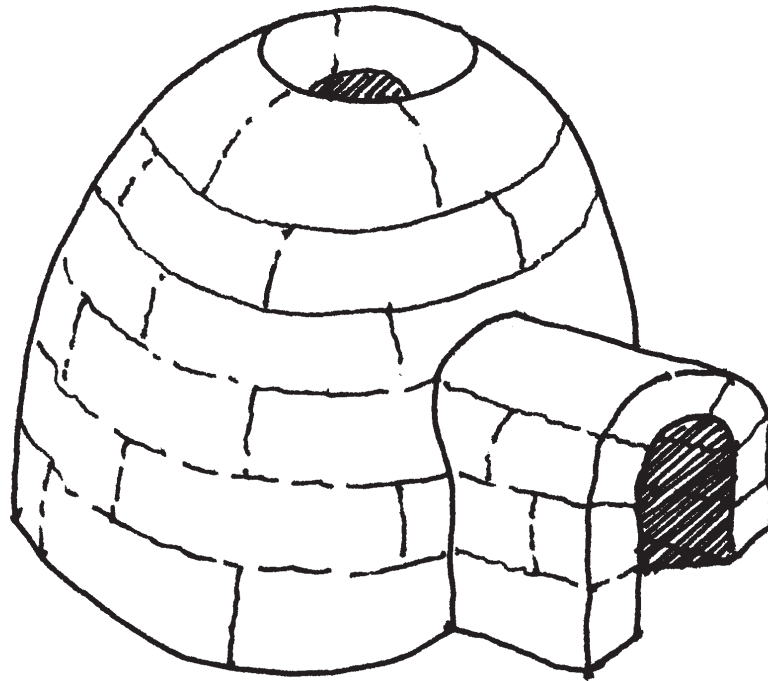
Third Grade ♦ Lesson Three



Teepee



Third Grade ♦ Lesson Three



Igloo



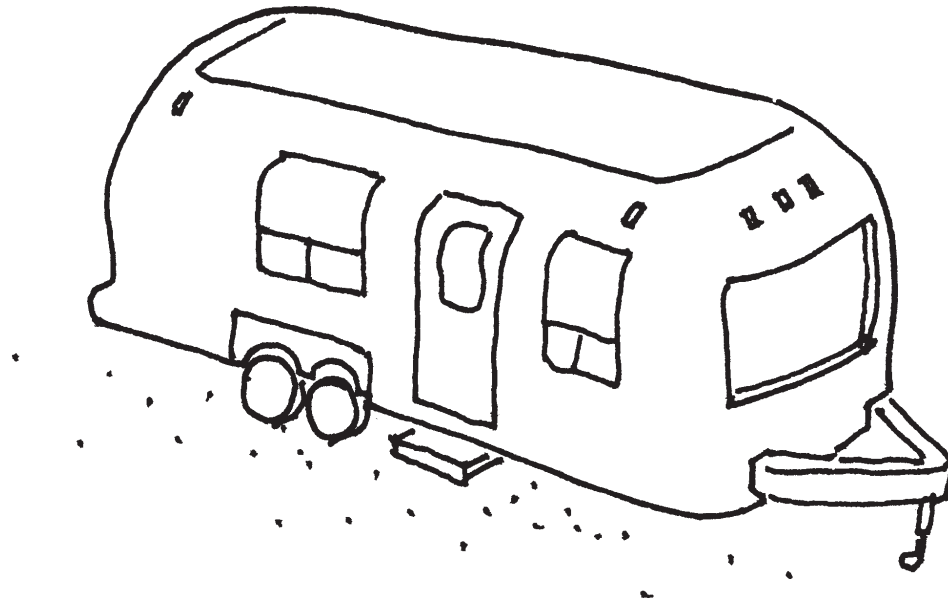
Third Grade ♦ Lesson Three



Hut



Third Grade ♦ Lesson Three



Mobile Home



Third Grade ♦ Lesson Four



THIRD GRADE
LESSON NO. 4

HOUSE MATERIALS

LENGTH OF LESSON:

30 - 60 MINUTES

ARCHITECTURAL PRINCIPLES:

Design is accomplished by combining the physical characteristics of size, shape, texture, proportion, scale, mass and color.

Form follows function is a design approach where the form of the building is determined by the function of its spaces and its parts.

Nature is a model for architectural forms and shapes.

Symbolism is an important means of visual communication for architecture.

Sustainable design of the built environment protects the natural environment.

Social structure, culture and the built environment have a direct influence on one another.

Climate and the natural environment influence design decisions.

Architecture satisfies emotional and spiritual needs in addition to physical needs.

Past, current and future technologies influence design decisions.



Third Grade ♦ Lesson Four



MATERIALS

1. Images of different types of structures (included):
 - Adobe/Clay homes - Desert regions
 - Huts (vines, leaves, trees) - Rainforest regions
 - Igloos - Arctic regions
 - Log cabins/Lumber homes - Deciduous forest regions
 - Stone house (quarried) - Area with rock deposits
2. "Sample Housing Region Chart" and "Examples of Sub-Categories" (included)
 - make copies for each student

VOCABULARY (See glossary for definitions)

- | | |
|--------------|---------------|
| 1. Adobe | 4. Desert |
| 2. Arctic | 5. Quarried |
| 3. Deciduous | 6. Rainforest |

ACTIVITY

Use drawings of structures as visual aids in A-D.

A. Describe how the geography and climate of a region determine what local building materials and locations are available for a house:

1. Arctic regions - snow and ice (igloos)
2. Rainforest regions - vines, leaves, trees, etc.
3. Desert regions - Adobe, clay (bricks)
4. Deciduous forest regions - lumber
5. Mountains - caves, stone

Help the students discover why housing materials change in different climates. Ask why people in Alaska used ice to build their homes in the past. What has changed that allows people in Alaska to use brick and other materials to build their homes today? How has modern truck, ship, air and rail transportation made materials available where they were formerly unavailable? Today, we are returning to the use of materials which are manufactured locally to reduce the environmental impact which results from transporting materials long distances.



Third Grade ♦ Lesson Four



- B. Guide students to identify specific materials used because of geological and environmental factors in the region:
1. Example: baked earth hardened in the hot desert sun. In some areas, this concept has been expanded to the process of oven-baking natural clay found in the ground to make bricks;
 2. Example: concrete made from sand, cement, lime, water and stones. This strong building product was first developed and used by the ancient Romans;
 3. Example: stones, including sandstone and limestone. Stone, marble and granite are quarried in many regions and have been used since ancient times. Marble was used for most of the Greek temples. Limestone is found in many areas (in the U.S., particularly in Indiana).
 4. Example: wood has been the most popular building material because of its availability and ease of working with. The first prehistoric structures were made of wood.
- C. Discuss specific use of materials due to cultural or symbolic reasons:
1. Decorated lightweight fabrics or animal skins for nomadic tribes (easily transported);
 2. Stone, marble and granite have strength and permanence (government buildings, temples and churches).
- D. Discuss how the influences of climate, culture and technology, as well as history, have determined different shapes and structures for human comfort:
1. Ice for igloos is readily available in Arctic regions and provides insulation from cold and shelter from winds;
 2. Thick clay provides insulation from heat in hot areas;
 3. Walls of woven leaves and fibers provide ventilation in tropical regions;
 4. Wood (lumber) is plentiful in many regions, easily harvested and easily assembled into buildings, including log houses;
 5. Construction of ancient structures depended on human and animal labor;
 6. Historically, some tribes used natural forms for their homes - rocks and caves that were ideal for nomadic lifestyles, readily obtainable and low maintenance;
 7. Technological changes have had great influence on materials used for building structures, such as the development of iron and then steel that allowed larger buildings to be built more quickly;
 8. Materials previously unavailable became available with innovations in transportation.



Third Grade ♦ Lesson Four



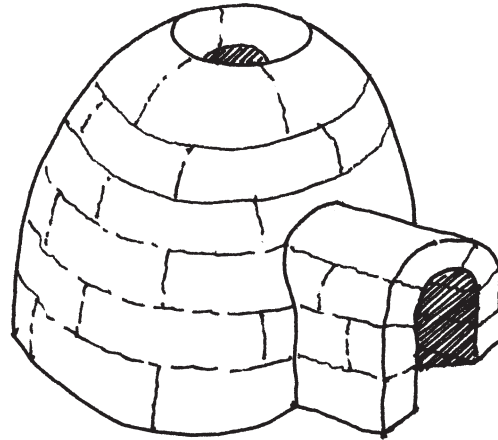
- E. Using the "Sample Housing Region Chart" and "Examples of Sub-Categories" (included):
1. Review the various regions of the United States, e.g., West Coast, Southwest, Midwest, Southeast, Northeast, etc. Ask students to think about other parts of the U.S., and the world as well, and add them to their own Housing Region Chart. Have students review examples of sub-categories climate, cultural types, building materials and housing types and expand the list. Then have students fill in the blanks on the chart for each region listed.
 2. Follow-up activity: Lead a discussion on how technology has changed historical regional/cultural housing types, e.g., new types of materials, transportation, availability of materials.

TEACHER'S EVALUATION

- A. Review the completed charts as a group.



Third Grade ♦ Lesson Four



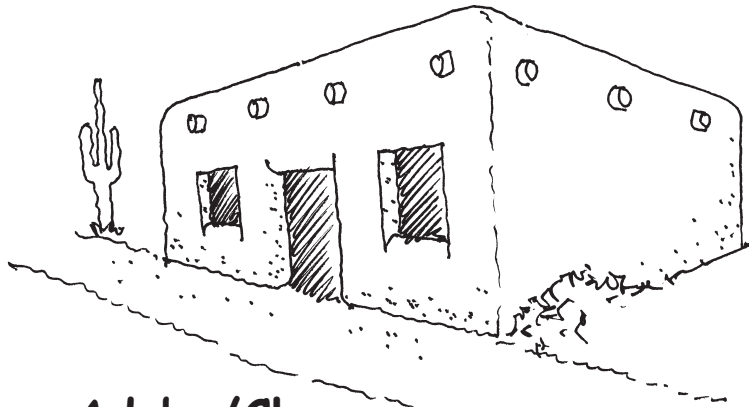
Igloo



Hut



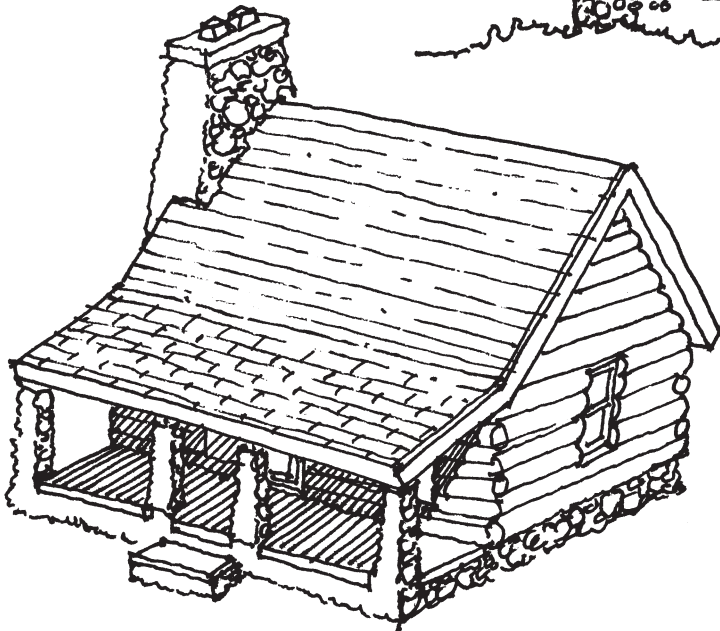
Third Grade ♦ Lesson Four



Adobe/Clay House



Stone House (Quarried)



Log Cabin



Third Grade ♦ Lesson Four



Sample Housing Region Chart

This chart may be expanded to include other locations

	Climate	Culture	Housing types	Materials
Northeast				
Southeast				
Southwest				
Midwest				
Northwest				

Examples of Sub-Categories - to be expanded by students

<u>Climate</u>	<u>Culture</u>	<u>Materials</u>	<u>Housing Types</u>
Arctic	Urban	Ice	Igloos
Desert/Arid	Hispanic	Vines	Huts
Rain Forest	Native American	Lumber (wood)	Caves
Temperate	Asian	Clay	Wood framed
Variable	European	Tile	Cement
		Cement	Steel



Third Grade ♦ Lesson Five



THIRD GRADE
LESSON NO. 5

HOUSE LINKAGES

LENGTH OF LESSON:

60 Minutes

ARCHITECTURAL PRINCIPLES:

Design is experienced through human sensory perception.

Form follows function is a design approach where the form of the building is determined by the functions of its spaces and its parts.

Social structure, culture and the built environment have a direct influence on one another.

Climate and the natural environment influence design decisions.

Past, current and future technologies influence design decisions.

MATERIALS

1. Pencils in various colors
2. Drawing paper
3. Erasers

VOCABULARY (See glossary for definitions)

1. Linkage
2. Utilities
3. Geothermal Heating



Third Grade ♦ Lesson Five



ACTIVITY

- A. Explain that most houses are not isolated but are connected to their surroundings. The connections may be visual - looking in and out through the windows - or may be functional. Functional linkages may exist through connections of side walls, the existence of a street network or through public utilities that link houses to be part of an entire community and city.
- B. List on the chalkboard the purposes of a window. These include looking in and looking out, allowing fresh air into a room, as well as other ways of linking the interior and exterior of a house.
- C. Discuss the importance of the window and its functions. What functions are missing if a room is lacking a window? For example, without windows, people cannot see outdoors from the inside or look into a home from its exterior. When looking in, we see a closed and confined space. When looking out through the same window, we see a very different scene - natural light and more open spaces. Without a window, a ventilation/fan system may be used to air out a room.
- D. What other aspects of the home share similar "in/out" relationships? What important functions are accomplished with the use of phone lines or water pipes? Phone lines enable people to talk with others no matter where they may be. How can we talk to others who are far away without phone lines? Water pipes enable us to cook, clean, bathe, heat our homes, etc. How would we get water in and out of our homes without water pipes?
- E. Discuss public utilities that come to most homes:
 1. Telephone lines
 2. Water lines
 3. Sewer lines
 4. Electrical lines
 5. Gas lines
- F. Discuss alternatives to public utilities:
 1. Telephone lines - cellular phones
 2. Water lines - wells dug in the ground
 3. Sewer lines - septic fields
 4. Electrical lines - windmill power, solar power, generator
 5. Gas lines - fireplace heating, geothermal heating



Third Grade ♦ Lesson Five



G. Discuss how public utilities join homes together: homes are connected to central lines that service many homes. List the types of areas that do not have every type of public utility - farms, remote residences, etc.

H. Two Activity Options:

Activity #1 - Inside/outside:

Create two drawings. On one sheet, have the students draw a picture of the view looking through a window from the house exterior to the inside, On another sheet, draw a picture looking through the window from the inside to the outside.

Activity #2 - Public utilities:

Draw a picture of a house showing where utility lines/pipes come in and out of the house - either above or below ground. Add light switches, electrical outlets, faucets and heating registers to the picture. Draw the same house showing the alternatives to the utilities discussed in Activity F.

TEACHER'S EVALUATION

A. Evaluate each student's drawings to verify visual linkages through windows as well as an understanding of various utility linkages.



Third Grade ♦ Lesson Six



**THIRD GRADE
LESSON NO. 6**

HOW WE USE OUR HOME

LENGTH OF LESSON:

30 - 60 Minutes

ARCHITECTURAL PRINCIPLES:

Form follows function is a design approach where the form of the building is determined by the function of its spaces and its parts.

Symbolism is an important means of visual communication for architecture.

Visual thinking is a key to awareness of the built environment.

Social structure, culture and the built environment have a direct influence on one another.

Design is experienced through human sensory perception.

Climate and the natural environment influence design decisions.

Architecture satisfies emotional and spiritual needs in addition to physical needs.

Past, current and future technologies influence design decisions.

MATERIALS

1. Room/Activity Chart (included) - make two copies for each student
2. Blackboard or whiteboard

VOCABULARY (See glossary for definitions)

- | | | |
|-------------|----------------|----------------|
| 1. Basement | 4. Cellar | 7. Kitchen |
| 2. Bathroom | 5. Dining room | 8. Living room |
| 3. Bedroom | 6. Garage | 9. Room |



Third Grade ♦ Lesson Six



ACTIVITY

- A. 1. Begin with a discussion of some early inhabitants of the region where the students live. Ask the students what they know about these people. Were some of them forest or cave dwellers? Who were the early settlers of the region?

Did Native Americans live in the region?

- Introduce the differences between a tribe and a family.
- Why were some people nomadic (moving according to the season and weather changes or following herds for hunting)?

2. Ask how people used their homes. Discuss hut, lean-to, teepee, cave, pueblo or other regionally based early forms of shelter that can be visualized by the students.
- Was there a kitchen? Bathroom? Bedrooms?
 - The fire area was the center or focal point of early shelter. It provided warmth and nourishment.
3. Discuss how customs changed as generations passed. Homes no longer had to be moved due to climate or food as with nomadic tribes. Now, families move due to job changes or the desire to have a larger home or different type of home.
4. How did inventions change homes? The invention of plumbing changed the kitchen and bathroom. The invention of electricity eliminated oil lanterns and added other conveniences. Ask students if they can think of any other modern conveniences that have changed homes (hint: plumbing, window glass, furnaces, air conditioning, etc.). When sawmills were invented, people were able to build with wood boards, which are easier to handle than logs. What other inventions have changed homes?

- B. Pass out Room/Activity Chart and ask each student to write some of the activities that occur in each room of a house.

- C. After each student's list is established, pair up the areas with various unsuitable activities (examples: bathroom - chop vegetables; dining room - take a bath; garage - eat a meal; kitchen - fix a bike) and ask students why these activities are not suitable for that room. (Example: The kitchen is not suitable for fixing bikes because counters need to be kept clean for preparing food)



Third Grade ♦ Lesson Six



- D. Have the students discuss the reasons each room is used for its particular function. (The dining room has a table and chairs that make eating a meal easy; the bathroom has a bathtub, running water and privacy).
- E. Ask the students to compare the way they use these rooms with people who live in other parts of the world.
- F. As homework, have each student take home a blank copy of the chart. The students should ask their parents, grandparents or guardians if they use or have used any of these rooms for a different purpose than the usual and fill in the chart accordingly. (Example: Some grandparents who lived in a different country may not have had indoor plumbing, affecting the manner in which they used their kitchen and/or bathroom).

TEACHER'S EVALUATION

- A. Students turn in homework assignment charts, which are evaluated for completeness.



Third Grade ♦ Lesson Six



Room/Activity Chart

Areas of a home and their uses	
Rooms	Activities
Living Room	
Kitchen	
Dining Room	
Bathroom	
Bedrooms	
Garage	
Basement	



Third Grade ♦ Lesson Seven



THIRD GRADE
LESSON NO. 7

DRAW YOUR HOME

LENGTH OF TIME:

30 - 60 MINUTES

ARCHITECTURAL PRINCIPLES:

Order is the arrangement and organization of elements to help solve visual and functional problems.

Form follows function is a design approach where the form of the building is determined by the function of its spaces and its parts.

Mass creates form, which occupies space and brings into being a spatial articulation.

Visual thinking is key to awareness of the built environment.

Design is experienced through human sensory perception.

Architecture satisfies emotional and spiritual needs in addition to physical needs.

MATERIALS

1. Pencils
2. Pencils in various colors
3. 18 x 24-inch grid paper (to help students draw straight lines)
4. Ruler
5. Sample drawing of floor plan diagram

VOCABULARY (See glossary for definitions)

1. Floor plan



Third Grade ♦ Lesson Seven



ACTIVITY

- A. Tell the students they will draw a picture of their home, and to do so, need to spend a minute thinking about the rooms in their home. Ask them where their family spends the most time, and which room they consider to be the family favorite. Explain how this room is considered to be the "center" of the home. Ask them to talk to the class about the center of their home. Is it where people cook or eat? Is it where they watch TV? Do different family members have different centers in the home?
- B. Tell the students to describe their own "center" of the home. What makes it a special space? Is it the view from the windows, the way it looks, the sounds they hear or the quiet of the room, the presence of others, or the cooking aromas? Ask the students how they feel when they are in their center of the home.
- C. Tell the students they are going to draw several pictures of their home showing the view as if they were flying above in a helicopter and looking straight down at the floor. The teacher should offer help as students work on their drawings. For their first picture, the students should begin by drawing the "center" of their home, showing the walls, doors, windows and furniture. What shape is the room? Give each student a copy of the sample floor plan diagram (included) to use as a reference when doing the drawings. Tell them their home will not look exactly like the home in the sample floor plan diagram but should follow its format.
- D. Once everyone has drawn a floor plan of the "center" of his/her home, tell the students they will draw a second floor plan showing the surrounding rooms. Do the rooms connect through the doors? Do they have windows or doors to the outside? Is there a second floor with a stairway up from the first floor?
- E. Encourage students to talk about how they access various rooms. For example, "I walk through the dining room to get to the kitchen," or "The bathroom is down the hallway." Have the students label each room with its name. Also have them add some furniture to the drawing.
- F. Give the students a piece of grid paper and ask them to take their drawings home with them that night. For homework, have them draw a new drawing of their home from observation rather than from memory.



Third Grade ♦ Lesson Seven

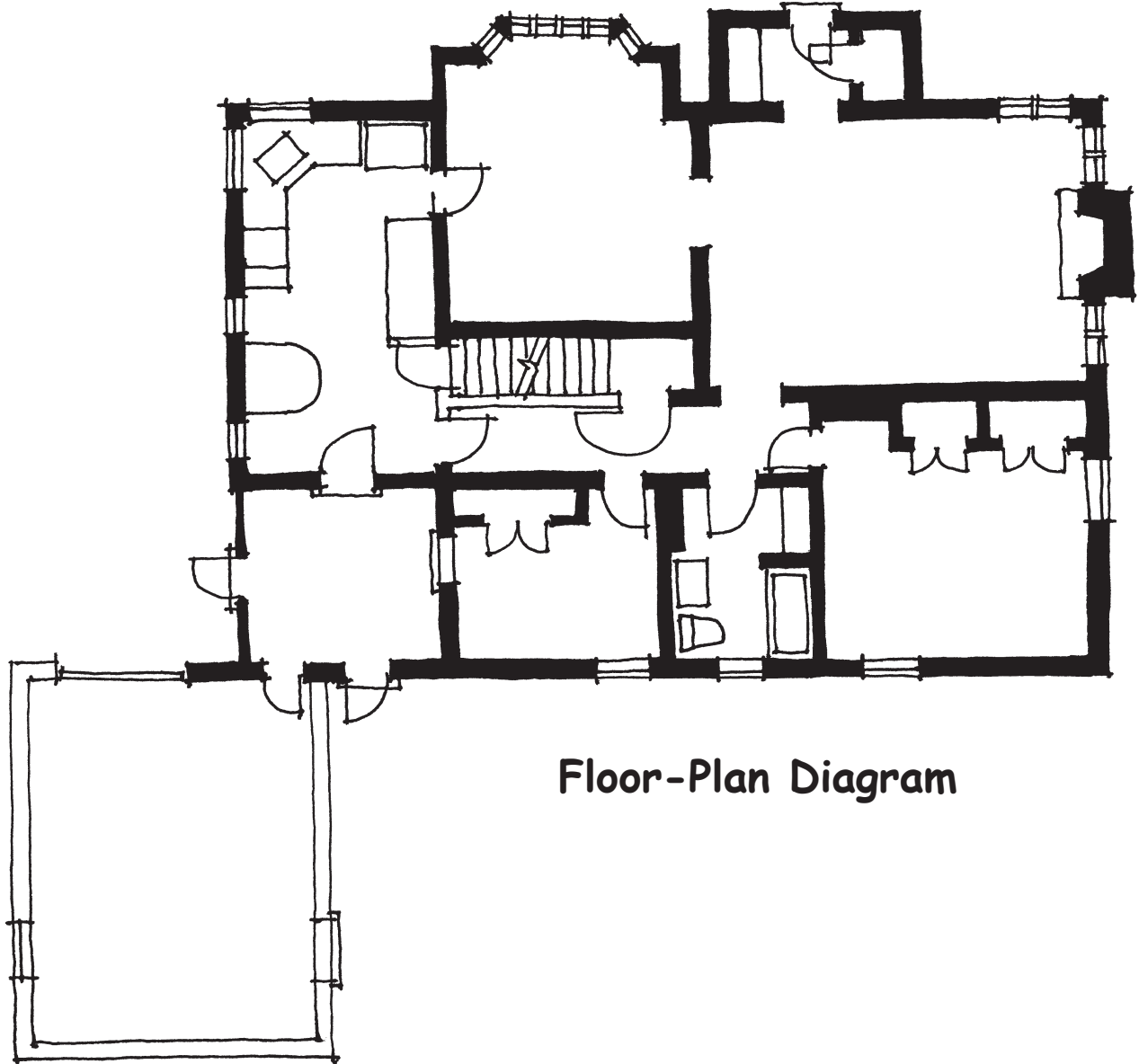


TEACHER'S EVALUATION

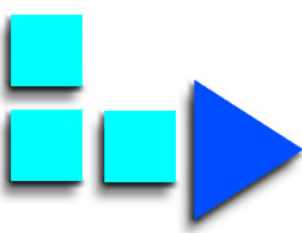
- A. Students' floor plans should include a representation of their home, including standard rooms (kitchen, bathroom, etc.) along with doors, windows and furniture. Assess the drawings done at home as compared with the drawings done from memory at school. Are the drawings done at home more complete? Did the in-school drawings indicate a good recollection of the actual home floor plan?



Third Grade ♦ Lesson Seven



Floor-Plan Diagram



Third Grade ♦ Lesson Eight



THIRD GRADE
LESSON NO. 8

DESIGN YOUR OWN HOME - PART 1

LENGTH OF LESSON: 60 Minutes

ARCHITECTURAL PRINCIPLES:

Design is accomplished by composing the physical characteristics of size, shape, texture, proportion, scale, mass and color.

Order is the arrangement and organization of elements to help solve visual and functional problems.

Form follows function is a design approach where the form of the building is determined by the function of its spaces and its parts.

Symbolism is an important means of visual communication for architecture.

Visual thinking is a key to awareness of the built environment.

Social structure, culture and the built environment have a direct influence on one another.

The creative process is basic to design.

Aesthetics is the artistic component of architecture.

Architecture satisfies emotional and spiritual needs in addition to physical needs.

Past, current and future technologies influence design decisions.



Third Grade ♦ Lesson Eight



MATERIALS

1. "My Building Program" chart (included). Make one copy for each student.
2. Construction paper
3. Scissors
4. Pencils
5. Student floor plan made in Lesson No. 7
6. Drawing paper

VOCABULARY (See glossary for definitions)

1. Building program
2. Creative
3. Design
4. Freehand sketch

ACTIVITY

- A. Each student should have the floor plan he/she drew of his/her own home in Lesson No. 7 to use as reference for this activity. Tell the students they will have an opportunity to design their own new home, and that the word "design" means to create from their own imagination. Tell them they can imagine the type of home they would like to have. It can be very different from their home now, or it may be similar. The floor plan of their current home will help remind them of some of the rooms that a home needs.
- B. To begin, tell each student to think about what types of rooms will be in the home and how large these rooms will be. They can add whatever types of rooms they want. Will they be small, medium or large? Explain that the "My Building Program" chart (included) is a list showing rooms and their sizes that will aid in the design of the actual home. The student should include the name of each room, its size (small, medium or large) and what furniture should go in the room. Students may add additional rooms to the chart.
- C. Remind the students to be creative in thinking about the rooms for their home. Perhaps they want a special room, like a "music listening " room or a "video game" room, that is different from the usual rooms in a home.



Third Grade ♦ Lesson Eight



- D. Ask students to draw a freehand sketch (not using rulers) of the rooms in the home they are designing. Decide how these rooms will be organized. What room will be the first all will see when they walk in the front door? Think about how to get from one room to another - through doors or a hallway.
- E. Students also can cut out construction paper circles and ovals and label each with a name of one of their rooms. This will help the students plan the different room locations by moving the labels around until they are happy with the room arrangement.

TEACHER'S EVALUATION

- A. Compare the Building Program to the freehand sketches drawn. Does the free-hand sketch show an understanding of the room sizes and relationships?
- B. Rooms listed on the Building Program should be included on the final sketches.



Third Grade ♦ Lesson Eight



My Building Program

Rooms	Size (Small, Medium, Large)	Furniture
Living Room		
Kitchen		
Bathroom		
Bedroom		



Third Grade ♦ Lesson Nine



THIRD GRADE
LESSON NO. 9

DESIGN YOUR OWN HOME - PART 2

LENGTH OF LESSON: 60 Minutes

ARCHITECTURAL PRINCIPLES:

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Past, current and future technologies influence design decisions.



Third Grade ♦ Lesson Nine



MATERIALS

1. Drawings from Lesson No. 8
2. 18 x 24-inch grid paper
3. Sample floor-plan diagram- make a copy for each student
4. Ruler
5. Pencils
6. Pencils in various colors

VOCABULARY (See glossary for definitions)

1. Floor plan
2. Freehand sketch

ACTIVITY

- A. The teacher explains to the students that, using the freehand sketch made in Lesson No. 8 as a reference, they will now redraw their house design using grid paper, a ruler and straight lines, indicating windows and doors even more clearly. They will figure one grid as 1 foot of measurement, so by counting grids they will know how large to make a room or a piece of furniture.
- B. Discuss with students the architectural components of a room. Using the classroom as an example, discuss how floors, walls and ceilings enclose a room. Talk about how doors allow people to get in and out of rooms and how windows let in light and fresh air from the outside. Also, discuss the hallway outside the classroom. Note how, sometimes, hallways are needed to get from one room to another.
- C. Show students the example of a floor-plan diagram (included). Have students use their freehand sketch design from Lesson No. 8 to draw a more organized plan on grid paper. Explain that the bottom of the page is where the front of their house should be located. Using the freehand sketch, students should draw the same relationships among the rooms, using "wall" lines drawn in pencil around the exterior of the rooms. Help students understand they may need a hallway to get to some of the rooms. Ask students to label the rooms.



Third Grade ♦ Lesson Nine



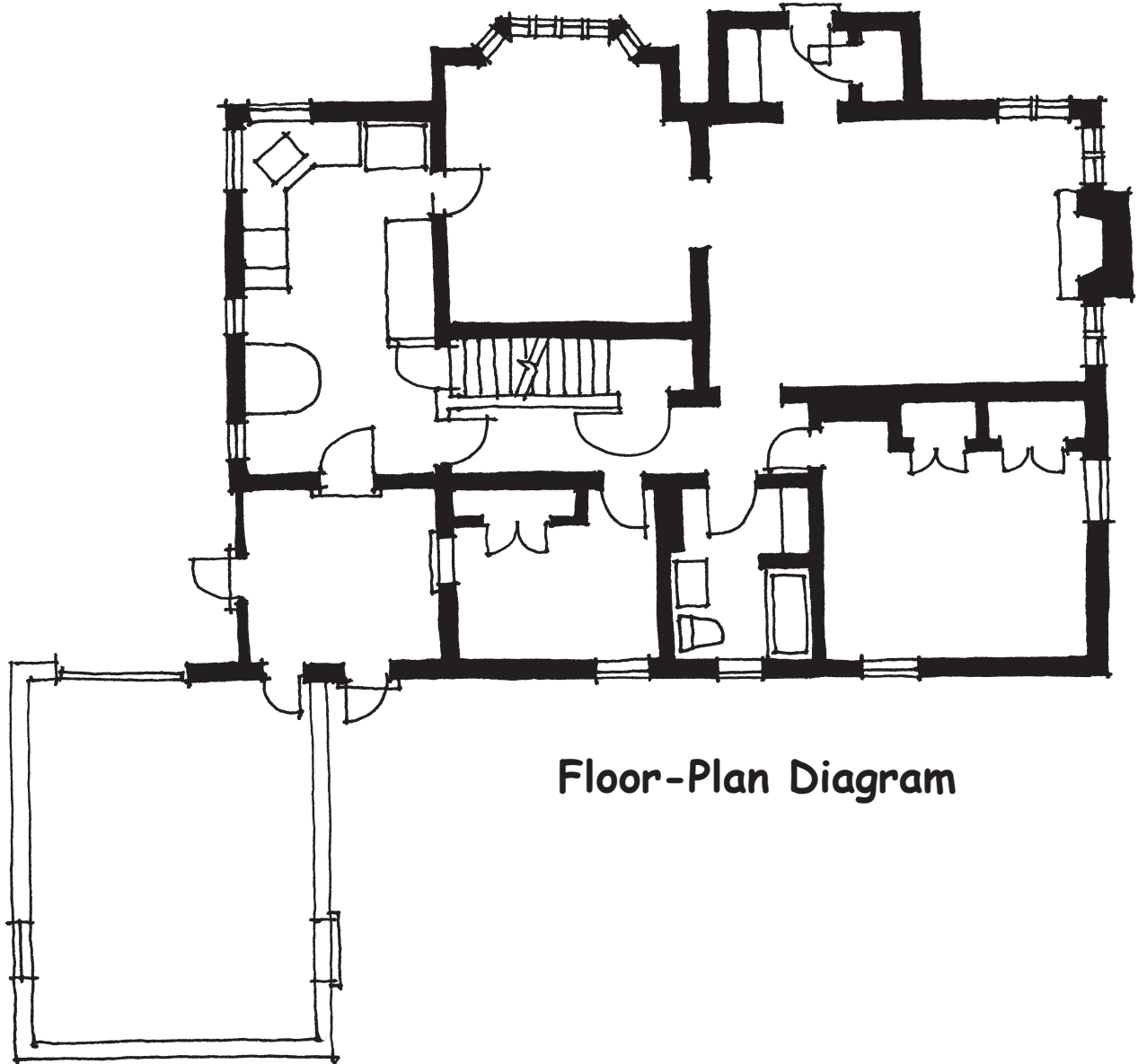
- D. Then ask the students to insert doors and windows by either drawing a double line or erasing part of the wall line. Windows should be located on the outside walls. Tell students they have just drawn what is called a "floor plan."
- E. Using the floor plan included, show students how they may "walk" through the house and look out the windows. Encourage students to show their plans to the class and discuss how they can imagine "walking through" their house using doors and hallways. Also have them indicate where they can look out of windows.
- F. If desired, the students also can draw furniture on their floor plans.
- G. Each student should explain his or her floor plan to the class.

TEACHER'S EVALUATION

- A. Students should demonstrate an understanding of a floor plan. Evaluate student participation in discussion, particularly their ability to walk through their home indicating doors and windows.



Third Grade ♦ Lesson Nine



Floor-Plan Diagram



Third Grade ♦ Lesson Ten



THIRD GRADE
LESSON NO. 10

DESIGN YOUR OWN HOME - PART 3

LENGTH OF LESSON: 60 Minutes

ARCHITECTURAL PRINCIPLES:

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Past, current and future technologies influence design decisions.



Third Grade ♦ Lesson Ten



MATERIALS

1. 18 x 24-inch grid paper
2. Pencils in various colors
3. Rulers
4. Markers
5. Photos of different types of houses (included)
6. Floor-plan drawings from Lesson No. 9

VOCABULARY (See glossary for definitions)

1. Elevations
2. Floor Plan

ACTIVITY

- A. The teacher shows the class photographs of different types of houses (included) and explains the way houses look can vary greatly - some are one floor and some are two or more floors. Also explain that houses can be constructed with different materials, and in different colors and styles of architecture.
- B. Discuss the types of materials students might choose for the outside of the homes they are designing. Such materials can include brick, stucco, wood, aluminum siding or stone. Also, discuss size and types of windows, as well as the rooms in which they will be located.
- C. The teacher should ask students to think about the shape of the roof for the house they are designing, pointing out the various roofs on the buildings in the photographs (included). Do they prefer high, pitched roofs or low, flat roofs? Explain that pitched roofs are used because they allow rain and snow to easily drain off the roof. Flat roofs on homes may be more common in desert areas.
- D. Ask the students to think about what they want the front, side and rear views of their houses to look like. These are called the "elevations." Each elevation shows the outside wall with windows and doors, as well as any other feature that is on that wall, such as planters and porches.



Third Grade ♦ Lesson Ten



- E. The teacher hands out each student's floor plan from Lesson No. 9. Give the students grid paper, rulers, and pencils and/or markers in various colors. The students are then instructed to draw a picture of each of the "elevations" of their house design, making sure windows and doors are shown, as well as the selected exterior materials for the house. Students also should be given the opportunity to draw gutters, downspouts, chimneys, porches and any other house details they want to include.
- F. After each student has completed his/her drawing, he/she should describe it to the class. The class can invite parents for a special evening, where all of the final house plans and elevations are put on display.

TEACHER'S EVALUATION

- A. The teacher reviews how each student was able to develop the building elevations from the floor plan of the previous lesson, and how well the building elevations are developed to show windows, doors, etc.
- B. The teacher should also evaluate how well each student was able to conceptually analyze his/her own home design.



Third Grade ♦ Lesson Ten



Victorian House



Third Grade ♦ Lesson Ten



Georgian Colonial House



Third Grade ♦ Lesson Ten



California Mission-Style Bungalow



Third Grade ♦ Lesson Ten



Cape Cod House



Third Grade ♦ Lesson Ten



English Tudor House



Third Grade ♦ Lesson Ten



American Bungalow



Third Grade ♦ Lesson Ten



Log Cabin



Curriculum Guide



Fourth Grade

Fourth Grade ♦ Lesson One



FOURTH GRADE
LESSON NO. 1

WHAT IS A NEIGHBORHOOD?

LENGTH OF LESSON: 30 - 60 Minutes

ARCHITECTURAL PRINCIPLES:

Design is accomplished by composing the physical characteristics of size, shape, texture, proportion, scale, mass and color.

Order is the arrangement and organization of elements to help solve visual and functional problems.

Visual relationships are determined by light, shadow, edges and contrast.

Balance is the creation of visual harmony through the use of color and the manipulation of form.

Form follows function is a design approach where the form of the building is determined by the function of its spaces and its parts.

Nature is a model for architectural forms and shapes.

Mass creates form, which occupies spaces and brings into being a spacial articulation.

Symbolism is an important means of visual communication for architecture.

Visual thinking is a key to awareness of the built environment.

Sustainable design of the built environment protects the natural environment.

Social structure, culture and the built environment have a direct influence on one another.



Fourth Grade ♦ Lesson One



Design is experienced through human sensory perception.

The creative process is basic to design.

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Climate and the natural environment influence design decisions.

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MATERIALS

1. Large Aerial Photograph: A drawing or city street map of your city. These usually can be obtained from the planning department of the city or the county. If your location is a large city, the photograph or map should be limited to your community, district or suburb of the city.
2. Community Neighborhood Map: A drawing of the neighborhood around the school for display, which may be created by tracing the neighborhood area from the aerial photograph and then enlarging it, or enlarging the neighborhood portion of the city street map (Be sure to include outlines of streets, land, significant buildings or landmarks for reference).
Note: The aerial photograph, drawing or map of your city is essential since it will be used in other lesson plans for Grade Four.
3. Copies of neighborhood drawing (one for each student).
4. Crayons, colored pencils or magic markers.

VOCABULARY (See glossary for definitions)

- | | | |
|----------------------|----------------|-----------------|
| 1. Aerial photograph | 3. Ethnic | 5. Neighborhood |
| 2. Boundary | 4. Focal Point | 6. Social |



Fourth Grade ♦ Lesson One



ACTIVITY

- A. The teacher displays the "Large Aerial Photograph" of the city to the class and outlines various districts and neighborhoods, explaining where each is located. The teacher also explains why each neighborhood is unique. For example, are there major streets at the perimeter that define the neighborhood? Is there a park, shopping area, school or some other feature that makes it unique?
- B. Next, the teacher displays the "Community Neighborhood Map," a drawing of the neighborhood area around the school, and discusses with the class the elements that make up the neighborhood. What are the neighborhood boundaries? Is the school, or some other area, the focal point or center of the neighborhood? Are there ethnic or social characteristics that are common to people of the neighborhood? What types of buildings are found in the neighborhood? What types of houses are found in the neighborhood? Is the entire neighborhood within walking distance from the school? What are similar characteristics of surrounding neighborhoods? Do the students feel an identity with their neighborhood that makes them feel they are a part of it?
- C. Provide each student with a copy of the "Community Neighborhood Map." Ask the students to find their home (or other familiar building or landmark) on the drawing and to color it. Then ask the students to color the school, shopping areas, religious institutions, parks, etc., and to label each one. Ask the students where they like to walk in the neighborhood. Where do they bike, run and play? Have the students draw symbols to indicate where they bike, run and play. Examples of symbols: "swing" to play, "bicycle" to bike, "soccer ball" to run, etc.

TEACHER'S EVALUATION

- A. The teacher should engage all of the students in the discussion and use it to determine their fundamental understanding of what a neighborhood is. The students' drawings should clearly show the elements of their neighborhood.



Fourth Grade ♦ Lesson Two



**FOURTH GRADE
LESSON NO. 2**

GUIDED NEIGHBORHOOD WALK

LENGTH OF LESSON:

60 Minutes

ARCHITECTURAL PRINCIPLES:

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Design is experienced through human sensory perception.



Fourth Grade ♦ Lesson Two



The creative process is basic to design.

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Past, current and future technologies influence design decisions.

MATERIALS

1. A new copy of the drawing of the neighborhood around the school (from Lesson No. 1) for each student
2. A list of landmarks to be recorded during the walk (teacher to compile based on examples in Activity A below)
3. A copy of "My Neighborhood Walk Recording Chart" for each student to record observations on the walk (included)
4. A copy of "Community Improvement Chart" for each student (included)
5. Pencils and erasers
6. A clipboard for each student, if available

VOCABULARY (See glossary for definitions)

1. Edges
2. Neighborhood

ACTIVITY

- A. Use the drawing of the neighborhood around the school from Lesson No. 1 in preparation for the neighborhood walk. The teacher compiles a list of the major landmarks, such as buildings and parks, to be seen on the walk. This list is included with each student's copy of the drawing for the student's reference during the walk. The teacher discusses the list with the students before the walk. The students mark these important features on their copy of the map.



Fourth Grade ♦ Lesson Two



MAJOR LANDMARKS

Family Dwelling	Religious Institution	Bank
School	Hospital	Post Office
Fire Department	Drugstore	Theaters
Grocery Store	Department Store	Toy Store
Gas Station	Restaurants	Music Store
Library	Bakery	Clubs (VFW, YMCA) Etc.

- B. The students indicate their walking route on the map as they take their walk. In addition to the teacher's list of landmarks, the students will list ten interesting features observed on the walk by marking their locations on their drawings and recording the items on their "My Neighborhood Walk Recording Chart" under Question No. 8.
- C. The students make a list of three things they find on their walk that need to be improved and identify these items on the "Community Improvement Chart."
- D. The teacher leads the students on their planned neighborhood walk, pointing out various aspects of the environment. Through discussion of the items listed below, the teacher guides the students through their observations, leading them to determine which elements are in good shape and which items need improvement. Students record their answers to the following questions on "My Neighborhood Walk Recording Chart":
1. What is found immediately around the school?
 - a. Is there a playground or a park?
 - b. Can it be used when school is not in session?
 - c. Is the school the center of the neighborhood?
 2. How are the buildings positioned on their sites?
 - a. Is there a front yard, or do the buildings come right to the sidewalk?
 - b. If there is a front yard, is there a lawn, a garden, flowers, trees, fences or pathways?
 - c. How far apart are the buildings?
 - d. Are there windows on the buildings' sides?
 - e. Are the buildings close to one another or far apart?
 - f. Is there enough space to allow natural light into the buildings? (Review Third Grade - Lesson Four.)



Fourth Grade ♦ Lesson Two



3. What types of buildings are found in the area?
 - a. Is there a variety of building types?
 - b. Are there residential buildings (houses, apartments, etc.)?
 - c. Is there a community center?
 - d. Are there stores or factories?
 4. Do the buildings all look similar, or are they different styles?
 - a. For example, within a single building type, such as residential, are the buildings of similar or of varying styles (recognize styles by their common characteristics, such as columns, sloped roofs, flat roofs, shutters, decorative or ornate woodwork or metal work)?
 5. Are the buildings old or new?
 - a. Are the old-style buildings old in years, or are they new buildings built in a historical style?
 6. What materials are some of the buildings made of?
 - a. Is there a diversity of materials, such as brick, stone, glass, wood siding, metal, etc.?
 - b. What about roof materials, such as metal, slate, wood or asphalt shingles?
 7. What colors are the buildings?
 - a. Are they similar colors or different colors?
 - b. Do different buildings have similar colors? Do similar buildings have different colors?
 8. Apart from the buildings, what other things did you see (such as parks, water towers, playgrounds, light poles, etc.)?
 - a. Ask students to mark these items on their drawings as part of Activity B.
- E. As the walk concludes, or in the classroom after the walk, ask the students what they think makes the area covered on the walk a neighborhood. Is it major streets that form its edges? Is it the types of buildings? Is it the people? Have the students identify what things can be improved in the neighborhood, as well as what things they can do to improve their neighborhood and community. The students record their answers on the second part of the "Community Improvement Chart."

TEACHER'S EVALUATION

- A. Check the students' maps. Compare their list of items on their "Neighborhood Walk Recording Chart" to the indications on their maps.



Fourth Grade ♦ Lesson Two



MY NEIGHBORHOOD WALK RECORDING CHART

Questions about important things I saw on my walk . . .

1. What is found immediately around the school?
2. How are the buildings positioned on their sites?
3. What types of buildings are there in the neighborhood?
4. Do the buildings all look similar, or are they different styles?
5. Are the buildings old or new?
6. What materials are some of the buildings made of?
7. What colors are the buildings?
8. Apart from the buildings, list other things you see, such as parks, water towers, playgrounds, light poles, etc.



Fourth Grade ♦ Lesson Two



COMMUNITY IMPROVEMENT CHART

Things I believe can be improved in my neighborhood . . .

1. _____

2. _____

3. _____

Things I can do to improve my neighborhood and community . . .

1. _____

2. _____

3. _____



Fourth Grade ♦ Lesson Three



**FOURTH GRADE
LESSON NO. 3**

BUILDING TYPES

LENGTH OF LESSON:

30 - 60 Minutes

ARCHITECTURAL PRINCIPLES:

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MATERIALS

1. The large aerial photograph or street map of the city from Lesson No. 1 for display
2. The neighborhood drawing from Lesson No. 1 for display
3. A "Downtown Neighborhood Street Layout" (included)
 - a. This street layout will form the base map for the enlarged "Ideal Downtown Neighborhood."
 - b. The liaison architect in your area can assist you in enlarging the "Downtown Neighborhood Street Layout." See Activity items C-3, a and b. The layout will be used by individual students or by small groups working together to create an "Ideal Downtown Neighborhood." In the enlargement, a city block should be approximately 4 inches wide x 8 inches long with a street width of 2 inches.
4. Letter to parents with a checklist (report card) for use in conjunction with visiting a building (included)



Fourth Grade ♦ Lesson Three



VOCABULARY (See glossary for definitions)

1. Dwelling
2. Function
3. Location
4. Proximity

ACTIVITY

A. Write the following list on the whiteboard (or chalkboard). Display the neighborhood drawing from Lesson No. 1. Help the students identify different types of buildings that make up their existing neighborhood.

Some of the building types should include:

1. Places that families live (house, apartment, etc.)
2. School
3. Fire Department
4. Police Department
5. Grocery store
6. Gas station
7. Library
8. Religious institution
9. Hospital or clinic
10. Supermarket
11. Drugstore
12. Large department store
13. Ice cream store
14. Sit-down restaurants
15. Bakery
16. Bank
17. Post Office
18. Theaters
19. Carry-out restaurants
20. Toy store
21. Music store
22. Clubs (Rotary, Boys, Girls, V.F.W., etc)

B. Ask the students if there is anything on the above list of building types that cannot be found in their existing neighborhood.



Fourth Grade ♦ Lesson Three



- C. Construct an "Ideal Downtown Neighborhood."
1. Ask the students what buildings are necessary for the downtown neighborhood (As students indicate necessary buildings, mark them on a new list).
 2. Discuss the function of each building, and which buildings need to be near one another and those that don't. What are the advantages of proximity? Which buildings should not be near one another due to noise and traffic (e.g., homes next to an airport)?
 3. Ask students where the buildings they listed should be located in relation to one another. Should some buildings be on a "main street"? Can some buildings be on side streets?
 - a. Have students make cutouts of the buildings and label them with the building name. Size the cutouts so six buildings will fit on a neighborhood block. They could be different colors to indicate different building functions.
 - b. Have the students (individually or in small groups) arrange the building cutouts on the "Downtown Neighborhood Street Layout" map.
 - c. Discuss with students how they might rearrange their "Ideal Downtown Neighborhood" to make it more friendly for community members (consider needs of handicapped and senior citizens).
 - d. Discuss with students what is missing in their "Ideal Downtown Neighborhood."
 4. Have the students eliminate buildings they believe are unnecessary.
- D. Send a letter home with students requesting parents to accompany their child to one of the establishments identified in Activity "A" above. The checklist provided in the letter can be used as a report card for the parent/student team to complete while visiting the building.

TEACHER'S EVALUATION

- A. Evaluate homework: The report card should be turned in on time with all questions answered in full sentences that make sense.



Fourth Grade ♦ Lesson Three



Date:

Dear Parents/Guardians:

Your child is currently studying building types and their placement and use. This homework is a part of our series of studies in architecture. Would you please take your child on a trip to a local establishment? It could be a place they have been to many times or somewhere new. This visit is intended to make them more aware of the role the building has in their neighborhood. Please help your child answer the questions below. To enhance the development of their language arts skills, please have them answer using full sentences. The homework will be used in your child's next class on architecture. Please send this report back to school with your child for the follow-up lesson plan on _____.

The building I analyzed is _____

1. Is this building a necessary one for the community?

2. What buildings are nearby?

3. Is it necessary for the nearby buildings to be in close proximity?

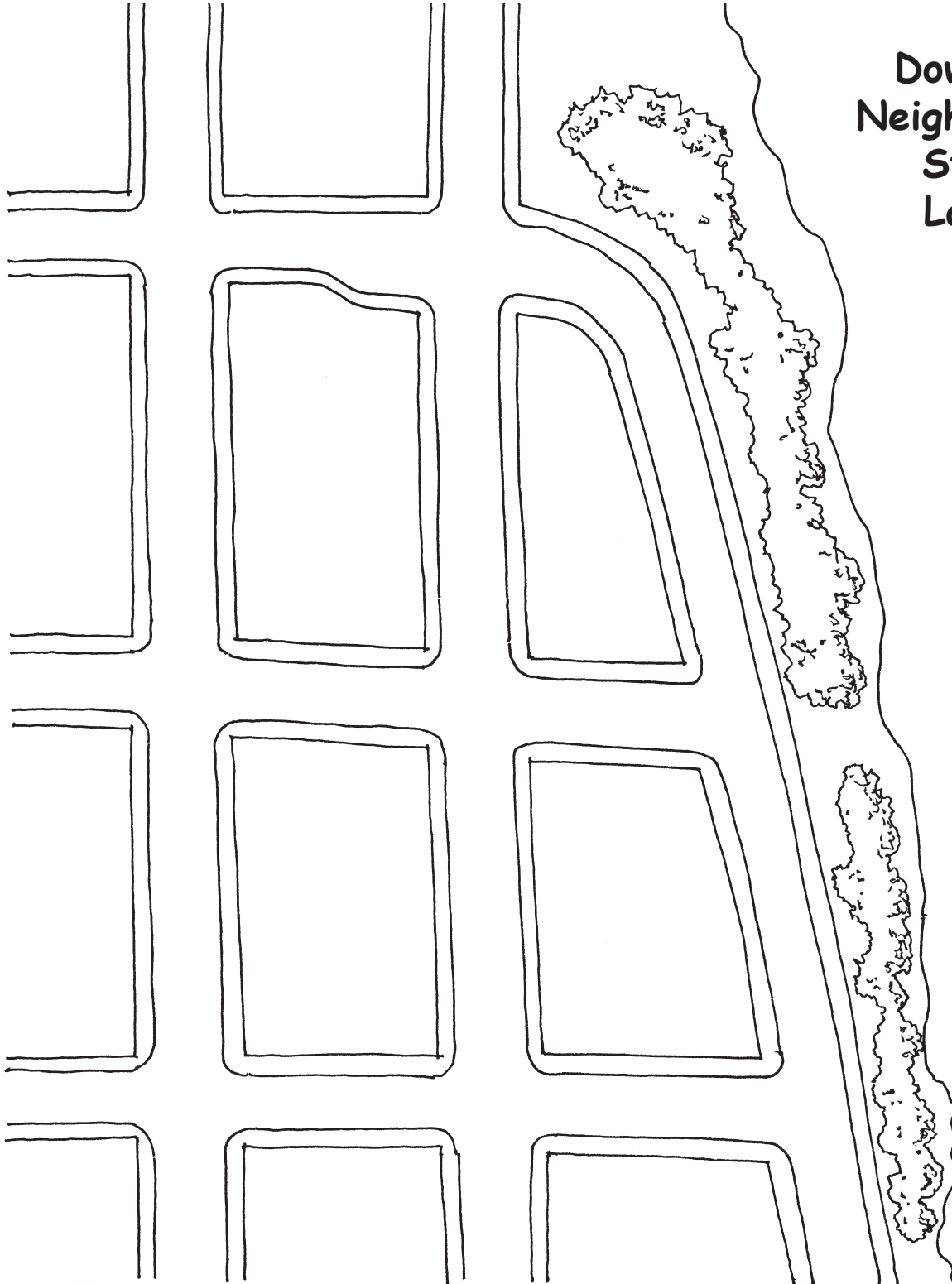
4. If you had made the decision about where to locate this building, would you have placed it in another area?



Fourth Grade ♦ Lesson Three



Downtown
Neighborhood
Street
Layout



Fourth Grade ♦ Lesson Four



FOURTH GRADE
LESSON NO. 4

BUILDING TYPES AND AESTHETICS

LENGTH OF LESSON: 30 - 60 Minutes

ARCHITECTURAL PRINCIPLES

Design is accomplished by composing the physical characteristics of size, shape, texture, proportion, scale, mass and color.

Order is the arrangement and organization of elements to help solve visual and functional problems.

Visual relationships are determined by light, shadow, edges and contrast.
Balance is the creation of visual harmony through the use of color and the manipulation of form.

Form follows function is a design approach where the form of the building is determined by the function of its spaces and its parts.

Nature is the model for architectural forms and shapes.

Mass creates form, which occupies space and brings into being a spatial articulation.

Symbolism is an important means of visual communication for architecture.

Visual thinking is a key to awareness of the built environment.

Design is experienced through human sensory perception.

Aesthetics is the artistic component of architecture.

Climate and the natural environment influence design decisions.

Architecture satisfies emotional and spiritual needs in addition to physical needs.

Past, current and future technologies influence design decisions.



Fourth Grade ♦ Lesson Four



MATERIALS

1. Photographs of various building types (included)

VOCABULARY (See glossary for definitions)

1. Aesthetics
2. Facade

ACTIVITY

- A. Discuss with students their homework assignment from Lesson No. 3. Review the functional aspects of the building visited.
- B. Select a variety of buildings from the list of neighborhood buildings in Lesson No. 3, Activity "A." Discuss the size (scale) of the building vs. its function. Use photos of local buildings when they are available. To further enhance this lesson, the teacher can take additional photographs of buildings located in the neighborhood.
- C. Display the included photographs of the different building types in combination with any photographs acquired in "B" above. Select a group of buildings and discuss the aesthetics relative to size and shape, and any distinguishing characteristics. See if the students can recognize the building's function just from its façade or shape (e.g., religious institutions, banks, gas stations, post office, municipal buildings). Compare the facades with one another. Ask the students if one particular façade would be practical for a different function (e.g., Would a grocery storefront work well for a hospital?).
- D. When examining the building and its function, explore whether the function of the building has any special requirements (parking, traffic routes, green areas, benches, drive-through, windows for display, outside areas, waiting areas or lobbies).



Fourth Grade ♦ Lesson Four



- E. Have the students list the main features of the building to help them recognize the building type (e.g., Does the church have a steeple; religious symbol, stained glass, arched or pointed windows? Does the gas station have gas pumps under a canopy, large garage doors, large gas station sign?).
- F. Conclude the activity by having the students create their own façade drawing. Using the photographs provided as a reference, have students choose a building type and draw their own version of the building. Have the students explain how the features of their building represent the building type. Have the aesthetics of the building improved in the students' version?

TEACHER'S EVALUATION

- A. Evaluate the students' understanding of the factors that affect the appearance of a building and their ability to differentiate between building types.



Fourth Grade ♦ Lesson Four



Fire Station



Fourth Grade ♦ Lesson Four



Police Station



Fourth Grade ♦ Lesson Four



Store



Fourth Grade ♦ Lesson Four



Library



Fourth Grade ♦ Lesson Four



School



Fourth Grade ♦ Lesson Four



House



Fourth Grade ♦ Lesson Five



**FOURTH GRADE
LESSON NO. 5**

NEIGHBORHOOD LANDMARKS

LENGTH OF LESSON: 30 - 60 Minutes

ARCHITECTURAL PRINCIPLES:

Symbolism is an important means of visual communication for architecture.

Visual thinking is a key to awareness of the built environment

Social structure, culture and the built environment have a direct influence on one another.

Design is experienced through human sensory perception.

Architecture satisfies emotional and spiritual needs in addition to physical needs.

MATERIALS

1. Crayons or markers
2. Pencils
3. Sketch paper
4. Examples of neighborhood landmarks (included)

VOCABULARY (See glossary for definitions)

1. Districts
2. Landmark
3. Montage
4. Neighborhood
5. Nodes
6. Paths
7. Spatial



Fourth Grade ♦ Lesson Five



ACTIVITY

- A. Begin with the question, "What is a neighborhood landmark?" In architectural language, a landmark is a building or prominent object that a community relates to in a given area. For example, when children relate to the location of their home relative to the location of their school, the school is a landmark. List examples of prominent city landmarks, such as the school, a statue, the water tower, the police station, etc. The teacher can use photos, drawings or a list on the blackboard for examples of landmarks. Discuss with the students the importance of landmarks. Landmarks "anchor" a neighborhood. Have students prepare a list indicating landmarks in their community. Discuss spatial prominence of these landmarks in terms of their size and visibility.
- B. Select a specific landmark and discuss the importance of the location of the landmark with respect to pathways, nodes, etc. A node is like a landmark, except it is an area used as a center of activity. An example of a node in a school could be the main office or entry lobby. Discuss the history, symbolism or meaning of the landmark.
- C. Discuss with students examples of the landmarks found within their neighborhoods. Discuss other landmarks the students are aware of beyond their neighborhoods. Through travel experiences, reading, television or movies, students may be aware of famous landmarks, such as the Eiffel Tower in Paris. Prepare a list of famous landmarks for comparison. How do landmarks make us feel? Safe and secure? Proud? Why?
 1. Safe and secure (e.g., neighborhood park shelter)
 2. Proud (e.g., Statue of Liberty)
- D. Discuss landmarks that may be "negative," such as burned-out or abandoned buildings. How do they make us feel about our neighborhood when we see them?
- E. Have students create a drawing of a landmark within their neighborhood or city area. The teacher may offer examples he or she has acquired. The students will choose one of the landmarks on the prepared list from Activity "A" and draw a picture of it, including surrounding features such as trees, etc.



Fourth Grade ♦ Lesson Five



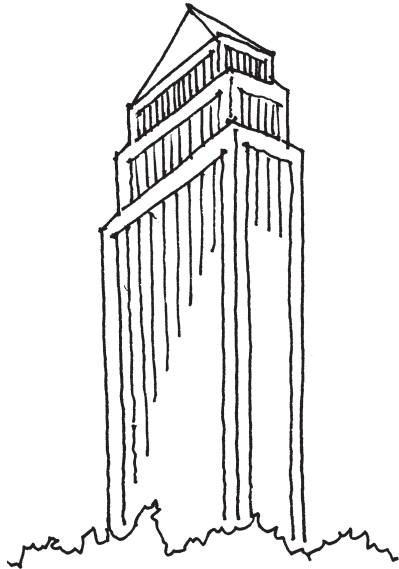
- F. Extracurricular activities may include photographic surveys of neighborhood landmarks. Class may assemble a "landmark" photographic montage superimposed on a community street map. This may aid in the understanding of how landmarks impact design, planning, social and cultural activities.
1. The drawings the students create will need to have an appropriate scale. Each drawing can then be added to an available map and assembled into the montage.

TEACHER'S EVALUATION

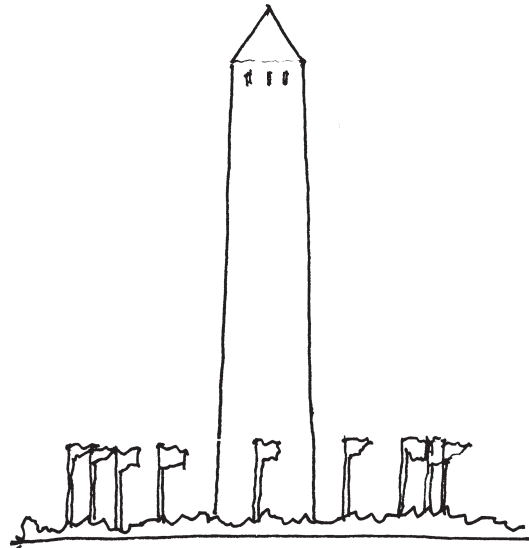
- A. Analyze the students' artwork for:
1. Drawing skills;
 2. Ability to recognize geometric shapes and elements;
 3. Use of artistic skills, including aesthetic use of color and drawing from observational techniques;
 4. Identification and understanding of how neighborhood landmarks affect the immediate environment.



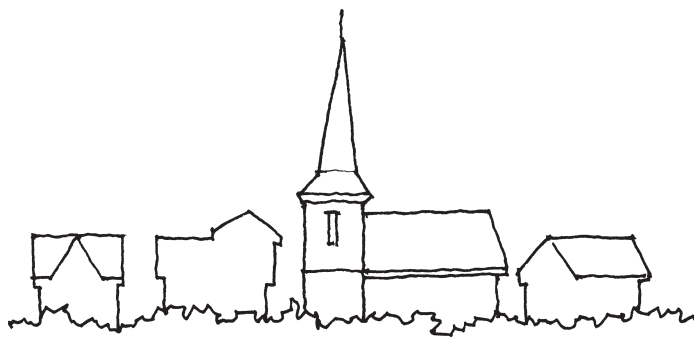
Fourth Grade ♦ Lesson Five



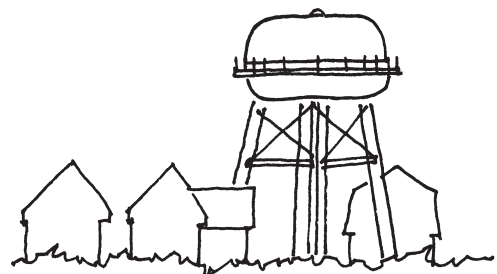
High-Rise Building



Monument



Church Steeple



Water Tower



Fourth Grade ♦ Lesson Six



**FOURTH GRADE
LESSON NO. 6**

NEIGHBORHOOD ACTIVITIES

LENGTH OF LESSON:

30 - 60 Minutes

ARCHITECTURAL PRINCIPLES:

Design is accomplished by combining the physical characteristics of size, shape, texture, proportion, scale, mass and color.

Order is the arrangement and organization of elements to help solve visual and functional problems.

Form follows function is a design approach where the form of the "building" is determined by the function of its spaces and its parts.

Sustainable design of the built environment protects the natural environment.

Social structure, culture and the built environment have a direct influence on one another.

Design is experienced through human sensory perception.

Climate and the natural environment influence design decisions.

Past, current and future technologies influence design decisions.

MATERIALS

1. Crayons or markers
2. Pencils
3. Sketching paper and/or construction paper in various colors
4. Large aerial photograph, city street map or drawing of your city (from Lesson No. 1)
5. "Sample Icon Sheet" (included)



Fourth Grade ♦ Lesson Six



VOCABULARY (See glossary for definitions)

1. Activity
2. Districts
3. Neighborhood
4. Nodes
5. Spatial

ACTIVITY

- A. Many activities may occur in a community. List the various activities that take place within a typical city and the areas available for these neighborhood activities. Examples include:
1. Playing sports
 2. Attending sporting events
 3. Bike riding
 4. Shopping
 5. Playing on playground equipment
 6. Holding private celebrations or parties
 7. Holiday activities (for example, Easter egg hunt, Christmas tree lighting, etc.)
 8. Attending art shows
- B. Discuss how and why spatial requirements vary for the different types of activities above. For example:
1. Some activities, such as football or baseball, require a playing field.
 2. Some activities, like roller-skating or skate-boarding, require a special surface.
 3. Some activities, such as ice-skating, require an enclosure.
 4. Some activities, like spectator sports, require large parking areas.
- C. Using the activity list in "A" above as a guide, develop an activity list specific to your community. Also discuss and note the spatial requirements specific to each activity. The list should include activities (nodes) at the neighborhood level up through the community level. Consider the needs of both the participants and the spectators of the activity, and discuss how much room is required to accommodate them. Mark the activity locations on the large aerial photograph, map or drawing of your city from Lesson No. 1.



Fourth Grade ♦ Lesson Six



- D. Add to the list an icon, or symbol, that relates to each activity area. For example: a simple drawing of a bicycle can symbolize an area that is safe for bike riding; a swing can symbolize a playground area. See examples of neighborhood icons on the "Sample Icon Sheet." Have the students use these examples and/or develop their own examples.
- E. Have students prepare an activity drawing for their own neighborhood, using icons. Together, locate the icons on the aerial photograph, street map or drawing to illustrate the variety of neighborhood activities within the students' community.

TEACHER'S EVALUATION

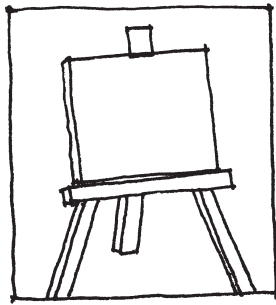
- A. Analyze the students' artwork for:
1. Drawing skills;
 2. Ability to recognize geometric shapes and elements;
 3. Use of artistic skills: aesthetic use of color and drawing from observational techniques;
 4. Identification of neighborhood activities.



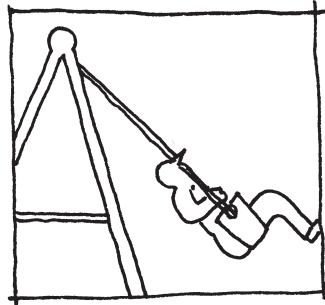
Fourth Grade ♦ Lesson Six



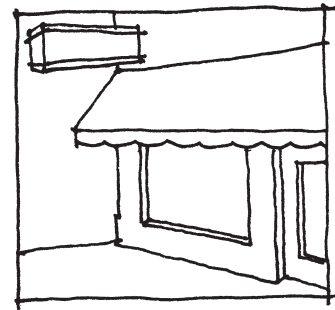
Sample Icon Sheet



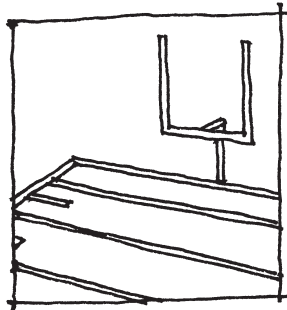
Art Show



Playground



Stores



Athletic
Field



Fourth Grade ♦ Lesson Seven



**FOURTH GRADE
LESSON NO. 7**

**ECOLOGY AND THE BUILT
ENVIRONMENT**

LENGTH OF LESSON:

30 - 60 Minutes

ARCHITECTURAL PRINCIPLES:

Visual thinking is a key to awareness of the built environment.

Sustainable design of the built environment protects the natural environment.

Social structure, culture and the built environment have a direct influence on one another.

Climate and the natural environment influence design decisions.

MATERIALS

1. Aerial photographs of a community showing different levels of development over time (included). Optional: Look at Google earth for the neighborhood or area of the school. Copy and share with the students.
2. Sample sketches of good ecological, environmentally friendly designs and sketch of project that negatively impacts the environment (included)
3. Drawing paper
4. Pencils, erasers and rulers

VOCABULARY (See glossary for definitions)

1. Ecology
2. Environment
3. Interrelate
4. Sustainable
5. Green Roofs



Fourth Grade ♦ Lesson Seven



ACTIVITY

- A. Show the students the two aerial photographs provided ("Undeveloped Farm Land" and "Developed Residential Subdivision"). Point out the changes in the built environment and the natural environment over time. As the built environment has grown, the natural environment has diminished because the amount of available land is unchanged. Some items to discuss relative to developing a site:
1. Building types, i.e. homes, apartments, businesses, factories, etc.
 2. Open natural environmental areas versus man-made built environment areas
 3. Other man-made structures (other than buildings) that affect the natural environment (e.g., roads, railroad tracks, bridges, tunnels, dams, power lines and other utilities, fences, signs/billboards).
- B. Develop a list of environmental programs that have an impact on the community and the environment. Discuss how these programs benefit the community and/or the environment.
1. Recycling
 2. Refuse collection
 3. Tree planting programs
 4. Adopt-a-roadway programs
 5. Public Transit
- C. Develop a list of good ecological man-made designs that have a positive impact on the natural environment. Examples of good ecological designs:
1. Housing layout that is harmonious with the landscape: Roads are curved or winding, following natural contours; houses are sited to take advantage of the views and/or topography of the site; wetlands have been respected and preserved to be enjoyed by the residents; development is sensitive to retaining as many of the existing trees and rock outcroppings as possible (see Attached Sketch: "Good Ecological Design - Residential #1).
 2. Roofs (including Green roofs) with overhangs that extend out far enough to shade the windows and keep sunlight out in the summer when the sun is high in the sky, yet still allow sunlight into the windows during the cold winter months when the sun is low in the sky. This design reduces the amount of heating required in winter and cooling required in summer and therefore reduces energy waste (see "Good Ecological Design - Residential #2").
 3. Buildings that collect energy from the sun for heating (e.g., solar panels).
 4. Buildings that generate electricity by using windmills or water wheels.
 5. Houses and stores placed close enough together so people can walk there.



Fourth Grade ♦ Lesson Seven



- D. Continue with a list of designs that have a negative impact on the environment. Examples of designs with negative impact:
1. Factories (or homes) that use fossil fuels as their main source of power for manufacturing or heating. These designs pollute the air and use up precious natural resources (see Attached Sketch: "Bad Ecological Design #1").
 2. Homes that use extra electricity because the design has too few windows for day lighting.
 3. Homes that use extra fuel for heating because the windows, walls and roof are not adequately insulated.
- E. Review how the built and natural environments interrelate. In particular, discuss how natural resources are used to build the built environment. For example, we might cut down trees to provide building materials but through good forest management, the forest is replenished. We might remove a stand of trees to build a subdivision but use those trees to produce building materials. We might build a dam across a river so the water flows at a greater rate (pressure); in turn, the flow drives a turbine engine that produces electricity (similar to the flowing river turning an old-fashioned waterwheel).
- F. Have each student select a man-made item that impacts or interrelates with the environment. It can be either a negative or a positive impact item. Some examples are:
1. Buildings with chimneys for burning fossil fuel
 2. Dam
 3. House with solar panels
 4. Refuse or recycle truck
 5. Sailboat
 6. Waterwheel
 7. Windmill
- Have students draw their selected item and explain how the item interacts with the environment.

TEACHER'S EVALUATION

- A. Analyze the students' understanding of the importance of the built environment's role within the natural environment, with feedback-type questions pertaining to building designs, site designs and the surrounding natural environment.



Fourth Grade ♦ Lesson Seven



Undeveloped Farm Land



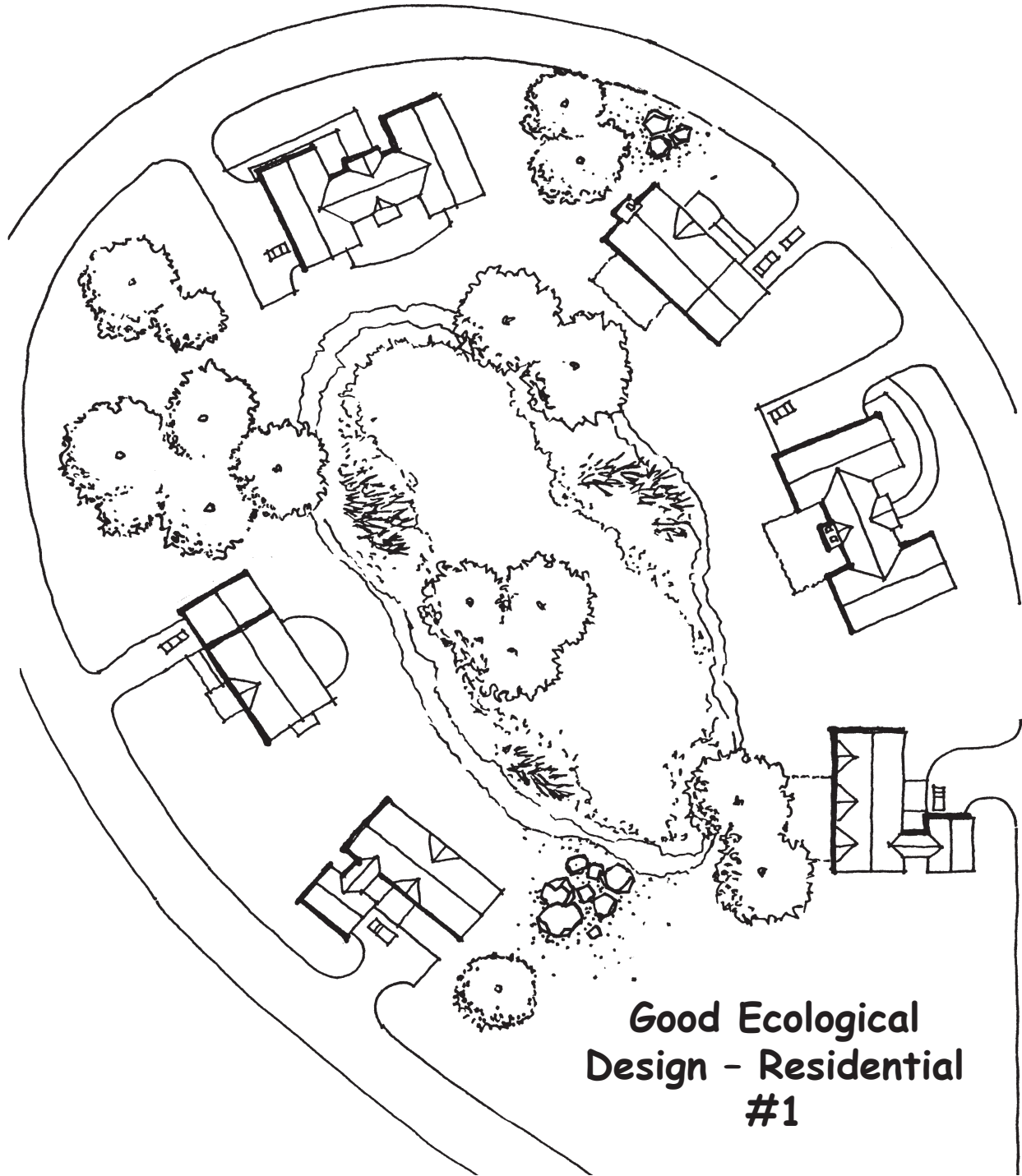
Fourth Grade ♦ Lesson Seven



Developed Residential Subdivision



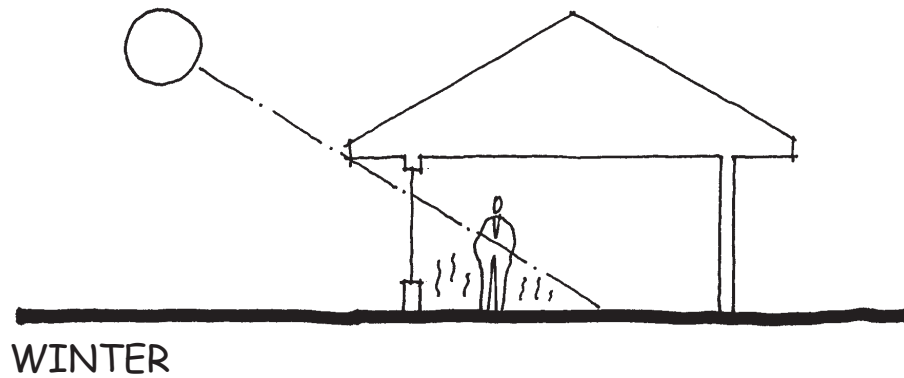
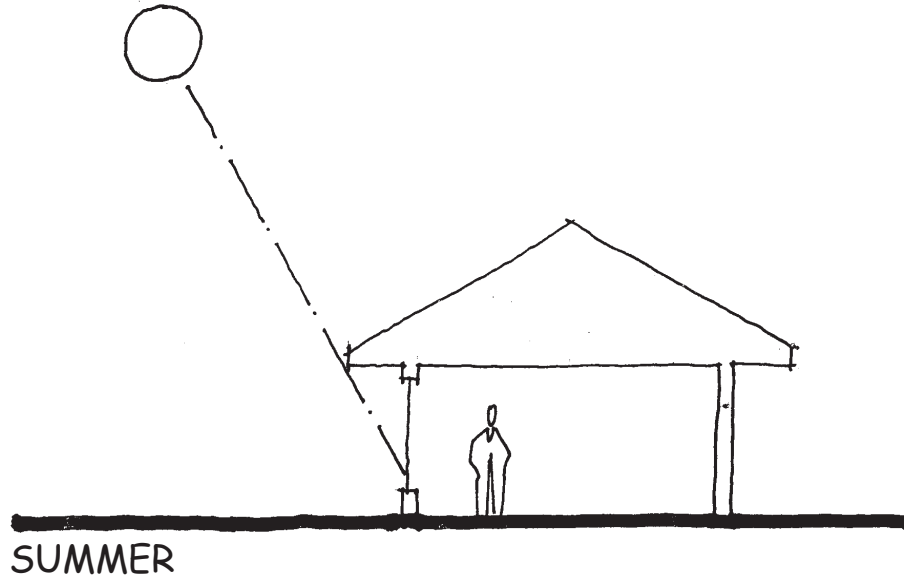
Fourth Grade ♦ Lesson Seven



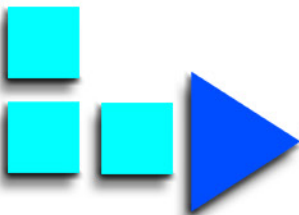
Good Ecological
Design - Residential
#1



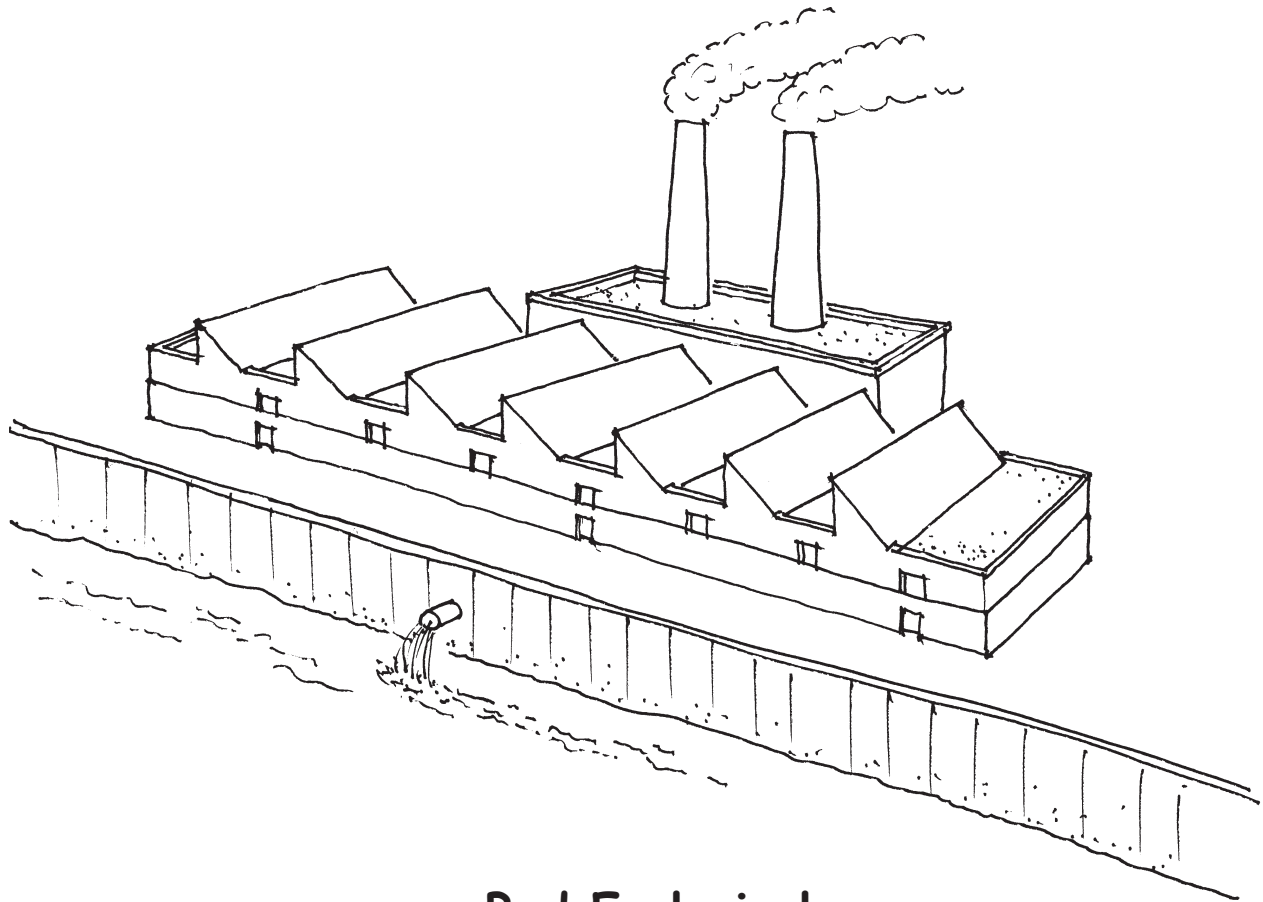
Fourth Grade ♦ Lesson Seven



Good Ecological Design - Residential #2



Fourth Grade ♦ Lesson Seven



**Bad Ecological
Design #1**



Fourth Grade ♦ Lesson Eight



**FOURTH GRADE
LESSON NO. 8**

**DESIGN A COMMUNITY
NEIGHBORHOOD - PART 1**

LENGTH OF LESSON:

60 Minutes

ARCHITECTURAL PRINCIPLES:

Order is the arrangement and organization of elements to help solve visual and functional problems.

Form follows function is a design approach where the form of the building is determined by the function of its spaces and its parts.

Symbolism is an important means of visual communication for architects.

Visual thinking is a key to awareness of the built environment.

Sustainable design of the built environment protects the natural environment.

Climate and the natural environment influence design decisions.

Architecture satisfies emotional and spiritual needs in addition to physical needs.

Past, current and future technologies influence design decisions.

MATERIALS

1. Site map of "Undeveloped Farm Land" from aerial photograph in Lesson No. 7 (included); enlarge or project the map for display (each group will need an enlarged version, to a 30-inch x 40-inch format, for preparation of its respective "Preliminary Planning Diagram")
2. "Example of a Preliminary Planning Diagram" for the "Community Neighborhood Map" (included)
3. A projector or large paper to create and display the "Component List" (see Activity "C") and the "Community Neighborhood Map" (from Lesson No. 1)



Fourth Grade ♦ Lesson Eight



VOCABULARY (See glossary for definitions)

1. Landmark
2. Map
3. Neighborhood

ACTIVITY

- A. Explain to students that as a class they will design their own "Ideal Community Neighborhood" and that it will be located on the "Undeveloped Farm Land" identified in Lesson No. 7.
1. Review neighborhood elements, such as building types, landmarks and neighborhood activities identified in the previous lessons.
 2. In discussion with students, recall the characteristics of these elements and their relationships to one another.
- B. Display "Site Map of Undeveloped Farm Land" (included).
1. Examine the geography: Is there a lake? A river? A mountain? From where will clean water come? Where will birds live?
 2. Using the "Community Neighborhood Map" example from Lesson No. 1, discuss the location of existing components of the students' own neighborhood and how the elements work together.
- C. The following list of components is a starting point for discussion. The teacher should use it to guide the students in the creation of a "Component List" for their "Ideal Community Neighborhood." The list of components the students create should be displayed throughout Lessons No. 8, 9 & 10. The students should be encouraged to be creative in designing a neighborhood that is usable by all members of their community.
1. Socializing centers: parks, senior citizens center, community house, playground, etc.
 2. Education: schools, continuing education, etc.
 3. Nature: hiking trails, dog park, nature center, etc.
 4. Homes: houses and apartments
 5. Sports: football field, soccer field, basketball court, tennis courts, rollerblading/skateboarding area, etc.
 6. Community services: police and fire departments, library, grocery store, dry cleaners, gas station, hardware store, etc.



Fourth Grade ♦ Lesson Eight



Decide where these components might best be located. Take into consideration such things as who uses, or needs to be near, certain services or buildings, and ask students to consider all the members of the community in making their suggestions. For example, what could their parents and grandparents make use of in an ideal community neighborhood?

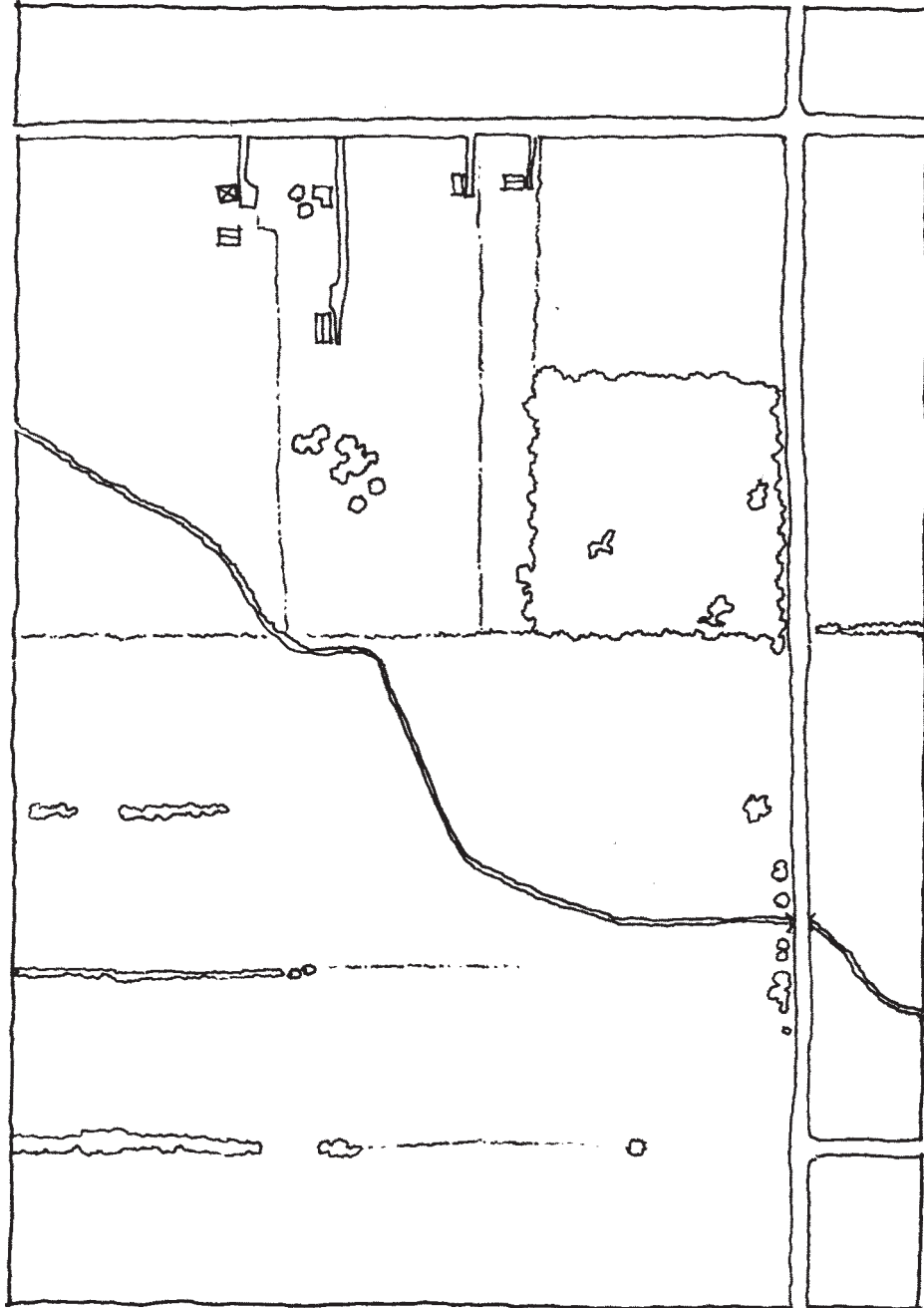
- D. Next, divide the class into small groups, ideally six students each. Have each group use the "Component List" to prepare a "Preliminary Planning Diagram" of their "Ideal Community Neighborhood." These "Preliminary Planning Diagrams" should be drawn approximately 30 inches x 40 inches and displayed next to the list of items in the "Ideal Community Neighborhood." The list and diagrams are the groundwork for Lessons No. 9 & 10. Each group's project is a "Preliminary Planning Diagram" version of the final "Community Neighborhood Map" that will be constructed in Lesson No. 9. Use the attached "Preliminary Planning Diagram" as an example for this exercise. The "Preliminary Planning Diagram" should show relationship zones, not detail.

TEACHER'S EVALUATION

- A. Students can be evaluated on the degree of their participation in the discussions and on the quantity and quality of their observations.



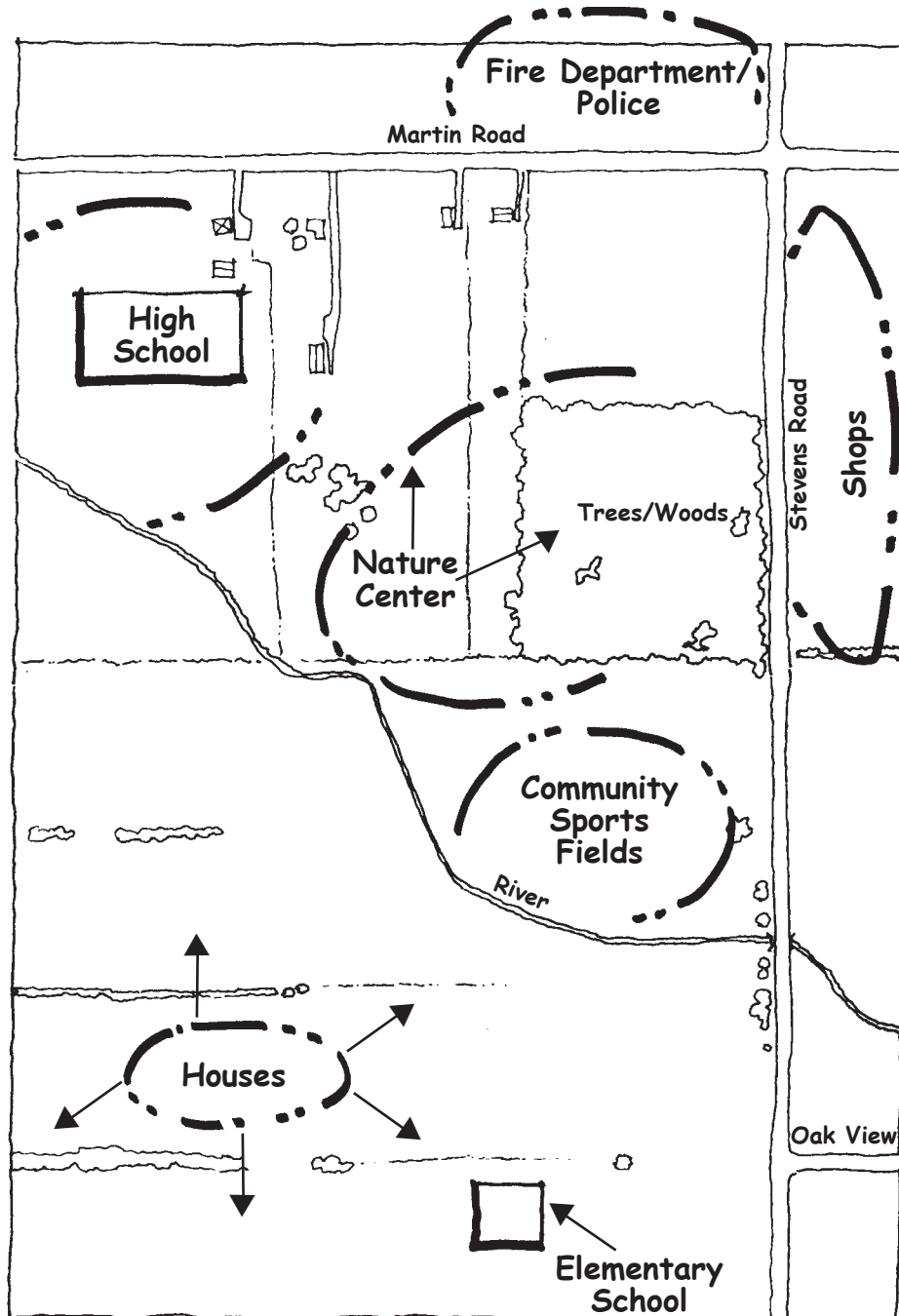
Fourth Grade ♦ Lesson Eight



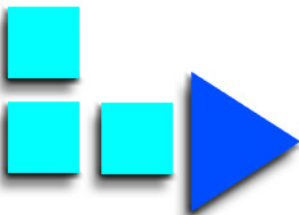
Site Map of
Undeveloped Farm Land



Fourth Grade ♦ Lesson Eight



Example of a Preliminary Planning Diagram



Fourth Grade ♦ Lesson Nine



FOURTH GRADE
LESSON NO. 9

DESIGN A COMMUNITY
NEIGHBORHOOD - PART 2

LENGTH OF LESSON:

60 Minutes

ARCHITECTURAL PRINCIPLES:

Design is accomplished by composing the physical characteristics of size, shape, texture, proportion, scale, mass and color.

Order is the arrangement and organization of elements to help solve visual and functional problems.

Nature is the model for architectural forms and shapes.

Symbolism is an important means of visual communication for architecture.

Sustainable design of the built environment protects the natural environment.

Design is experienced through human sensory perception.

MATERIALS

1. The class "Component List" and each group's "Preliminary Planning Diagram" created in Lesson No. 8
2. Lined writing paper for each committee to write down ideas and decisions
3. Pencils and erasers
4. A new copy of "Site Map of Undeveloped Farm Land" (enlarged to 30 inches x 40 inches) for each group to begin planning their "Ideal Community Neighborhood" in detail
5. A drawing illustrating an "Example of a Portion of a Community Neighborhood Map/Model" (included)
6. 30-inch x 40-inch rigid foam core board (found at artist supply shops), one for each group, to be used for the "Ideal Community Neighborhood" model



Fourth Grade ♦ Lesson Nine



7. White strips of paper to lay out streets
8. Glue
9. Scissors
10. Colored pencils

VOCABULARY (See glossary for definitions)

See Lesson No. 8

ACTIVITY

- A. Referencing the "Component List" and each group's "Preliminary Planning Diagram" created in Lesson No. 8, the students will continue to design their "Ideal Community Neighborhood."
- B. Have each student in the group to which they belong choose a different component from the list of six items below:
 1. Social
 2. Education
 3. Nature
 4. Homes
 5. Sports
 6. Community Services
- C. The students within each group will develop the details of their selected component to be added to their group's map. For example:
 1. The social representative decides if there will be a community house and what features it will include. Will there be an outdoor area for functions that occur in nice weather?
 2. The education representative decides what is needed at each school: The elementary school needs a playground; the middle and high schools need access to the sports area; the high school requires student parking, etc.
 3. The sports representative decides if there will be an enclosed arena and how the playing fields will be arranged, and if there will be one playing field that can be used for various sports.
 4. The nature representative decides if there will be hiking and bike trails, a building to house nature studies, a petting zoo, etc.
 5. The homes representative decides the street names, designs a welcome sign, makes sure people living in the houses or apartments have access to all areas, makes sure the streets have access to the park, sports center, etc.



Fourth Grade ♦ Lesson Nine



6. The community services representative will provide good access for these component elements, considering such factors as central location, transportation, public parking, service and deliveries, garage for vehicles, etc. The component representatives from each group may confer with their counterparts in the other groups to collaborate on ideas.

- D. Students are now ready to create their final project. Have them continue in their groups of six students each. The students paste their new copy of the enlarged "Site Map of Undeveloped Farm Land" onto the 30-inch x 40-inch foam core board. They will create new street layouts to accommodate their planning decisions from Activity "C" above and either draw the streets onto the map or cut out and glue paper strips to indicate them. They should be sure to leave room between the streets for the homes and other buildings that will be assembled and added to the project.

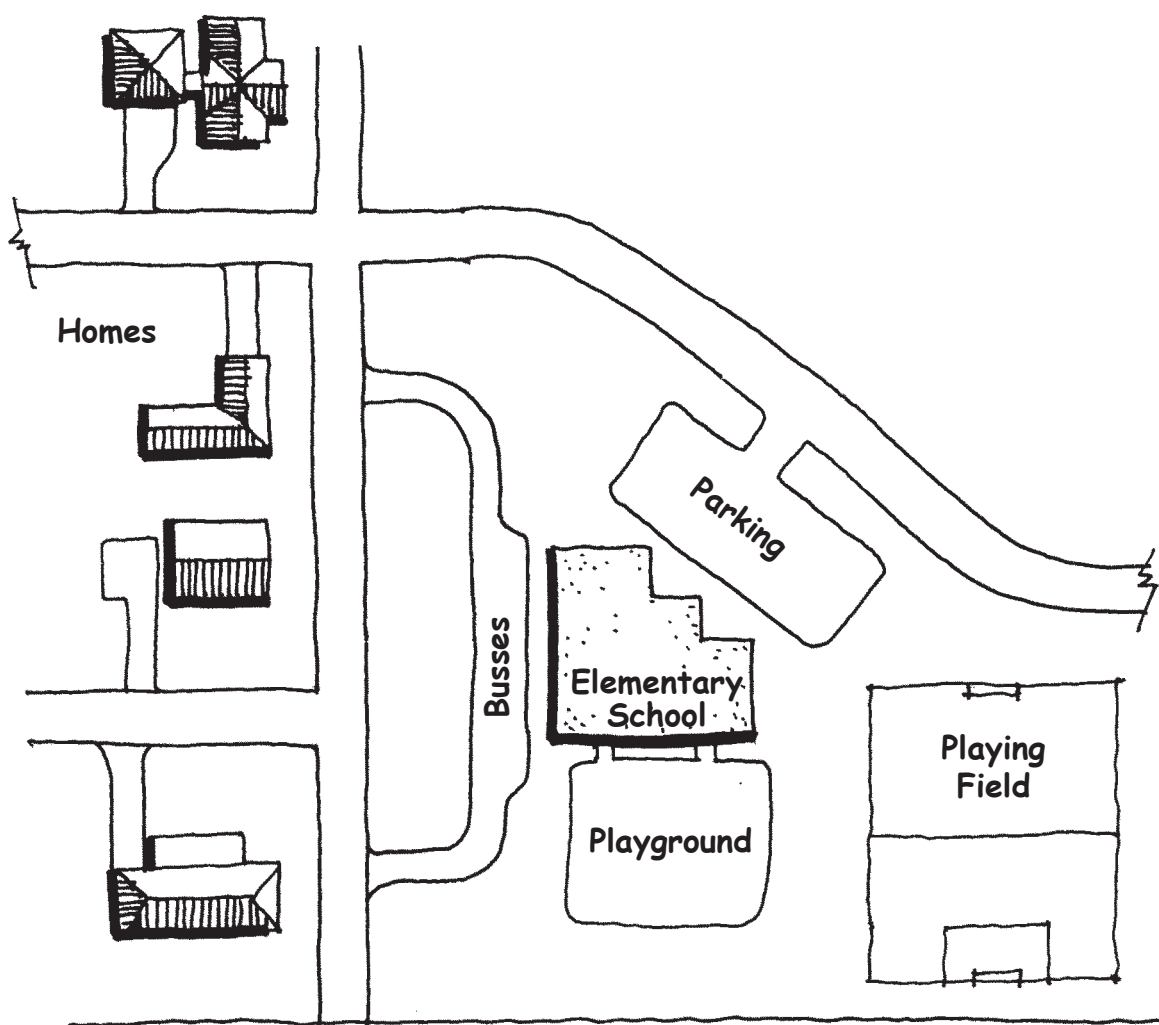
Note: See Lesson No. 10 for suggested sizes of the various building types.

TEACHER'S EVALUATION

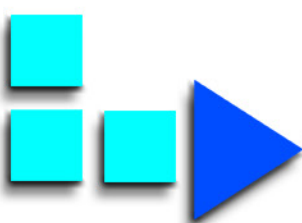
- A. Evaluate the students on the degree of their participation in the discussions and on the quality of their drawing and building layout.



Fourth Grade ♦ Lesson Nine



Example of a Portion of a Community Neighborhood Map/Model



Fourth Grade ♦ Lesson Ten



FOURTH GRADE
LESSON NO. 10

DESIGN A COMMUNITY
NEIGHBORHOOD - PART 3

LENGTH OF LESSON:

60 Minutes

ARCHITECTURAL PRINCIPLES:

Design is accomplished by composing the physical characteristics of size, shape, texture, proportion, scale, mass and color.

Order is the arrangement and organization of elements to help solve visual and functional problems.

Visual relationships are determined by light, shadow, edges and contrast.

Nature is the model for architectural forms and shapes.

Mass creates form, which occupies space and creates a spatial articulation.

Symbolism is an important means of visual communication for architecture.

Visual thinking is a key to awareness of the built environment.

Sustainable design of the built environment protects the natural environment.

Social structure, culture and the built environment have a direct influence on one another.

The creative process is basic to design.

Aesthetics is the artistic component of architecture.

Climate and the natural environment influence design decisions.

Past, current and future technologies influence design decisions.



Fourth Grade ♦ Lesson Ten



MATERIALS

1. 30-inch x 40-inch foam core board, with design and new street layouts as constructed in Lesson No. 9 (This is the base for the "Ideal Community Neighborhood" 3-D model.)
2. "Component List" from Lessons No. 8 & 9
3. Each group's "Preliminary Planning Diagram" from Lessons No. 8 & 9
4. Paper in various colors
5. Scissors
6. Masking tape
7. Glue
8. Copies of building cutout patterns (included)
9. Various discretionary materials for model enhancements, such as trees (made from matchsticks and green sponge), cars and other objects (made from modeling clay) and people (made from straight pins threaded with colored beads)

VOCABULARY (See glossary for definitions)

See Lesson No. 8

ACTIVITY

Note: As students continue the process of creating their "Ideal Community Neighborhood," pay attention to the distinction between "neighborhood" and "city." In Grade Five, students will be involved in lessons that investigate the city as a whole.

- A. As a class, begin with a review of all the components of the neighborhood developed in Lessons No. 8 & 9.
 1. Discuss the location of neighborhood components and their relationships and determine if there are any changes needed before the final neighborhood is assembled. Take into consideration such concerns as who uses or needs to be near certain services/buildings (playgrounds near school), referencing the "Component List" from Lesson No. 8.



Fourth Grade ♦ Lesson Ten



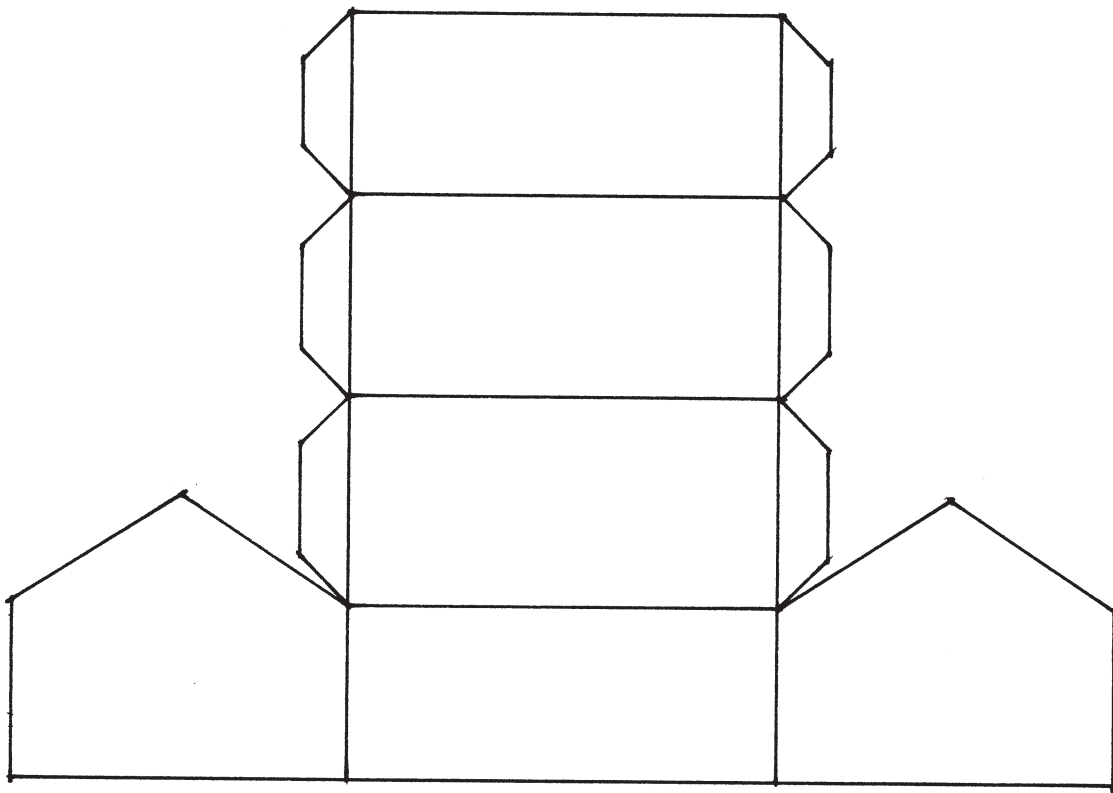
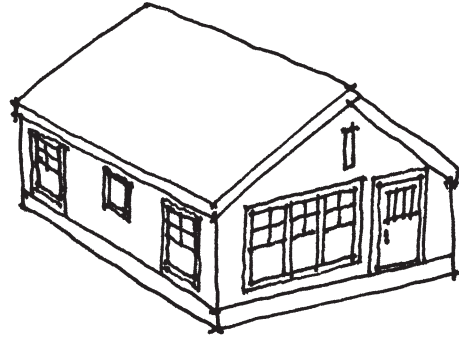
- B. Students then break out into their groups of six from Lesson No. 9. Students color and cut out building(s) appropriate to their chosen component.
1. Use the examples of patterns provided for building models. The students may choose to supplement these with their own variations of buildings. The included patterns are at a scale to suit the foam core model base.
- Note: The focus in this lesson should be on the neighborhood planning exercise and not on the design of the buildings. The 3-D buildings are included to enhance the full understanding of the relationships between components.
- C. Add the buildings to the 30-inch x 40-inch foam core model base with the grid of streets.
1. The students position their buildings but do not affix them at this point.
 2. The students cut out paper shapes to represent parking areas, driveways, service driveways for delivery trucks, playgrounds/playing fields and sidewalks/paths, as applicable to the various component building types.
- D. The students draw other enhancements to their neighborhoods, such as additional trees, road names, traffic lights, signs, etc. Be sure to include a large "Welcome to Our Neighborhood" sign.
1. The students can adjust their buildings at this time.
 2. Affix all buildings and enhancements.
- E. When the students have completed their "Ideal Community Neighborhood" 3-D model, have them explain what they did and how they arrived at their decisions. The class may choose to invite parents for a special evening where all of the final 3-D models are displayed. They may choose to present their individual parts of the project to their parents and/or the entire group.

TEACHER'S EVALUATION

- A. Orchestrate a group critique of the final project, asking questions such as the following: What elements work well together? What would you change to improve this design if you were to do it again? While doing this project, what did you notice about your neighborhood that you didn't notice before?



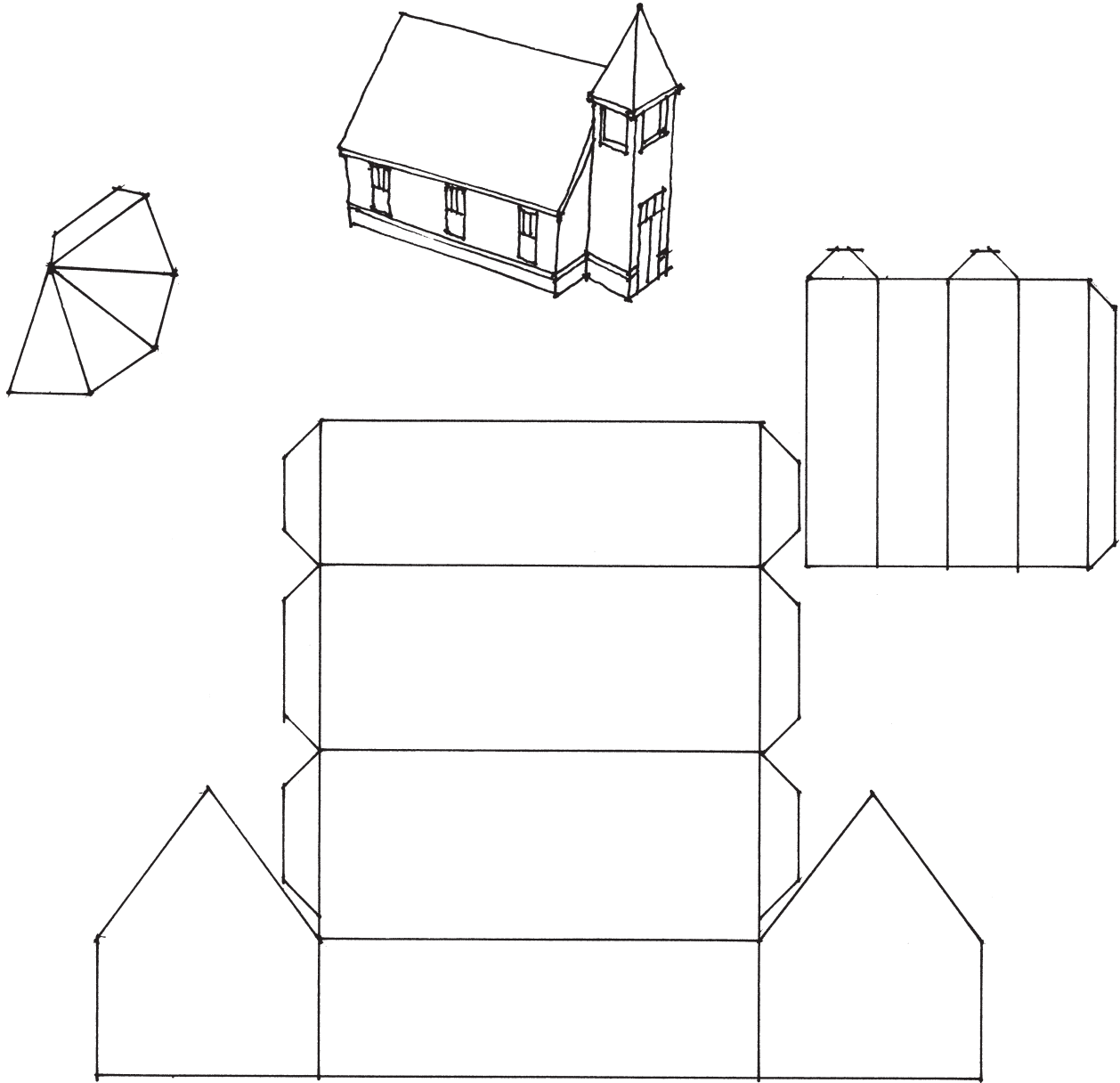
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Building Cutout Pattern #1 - A House



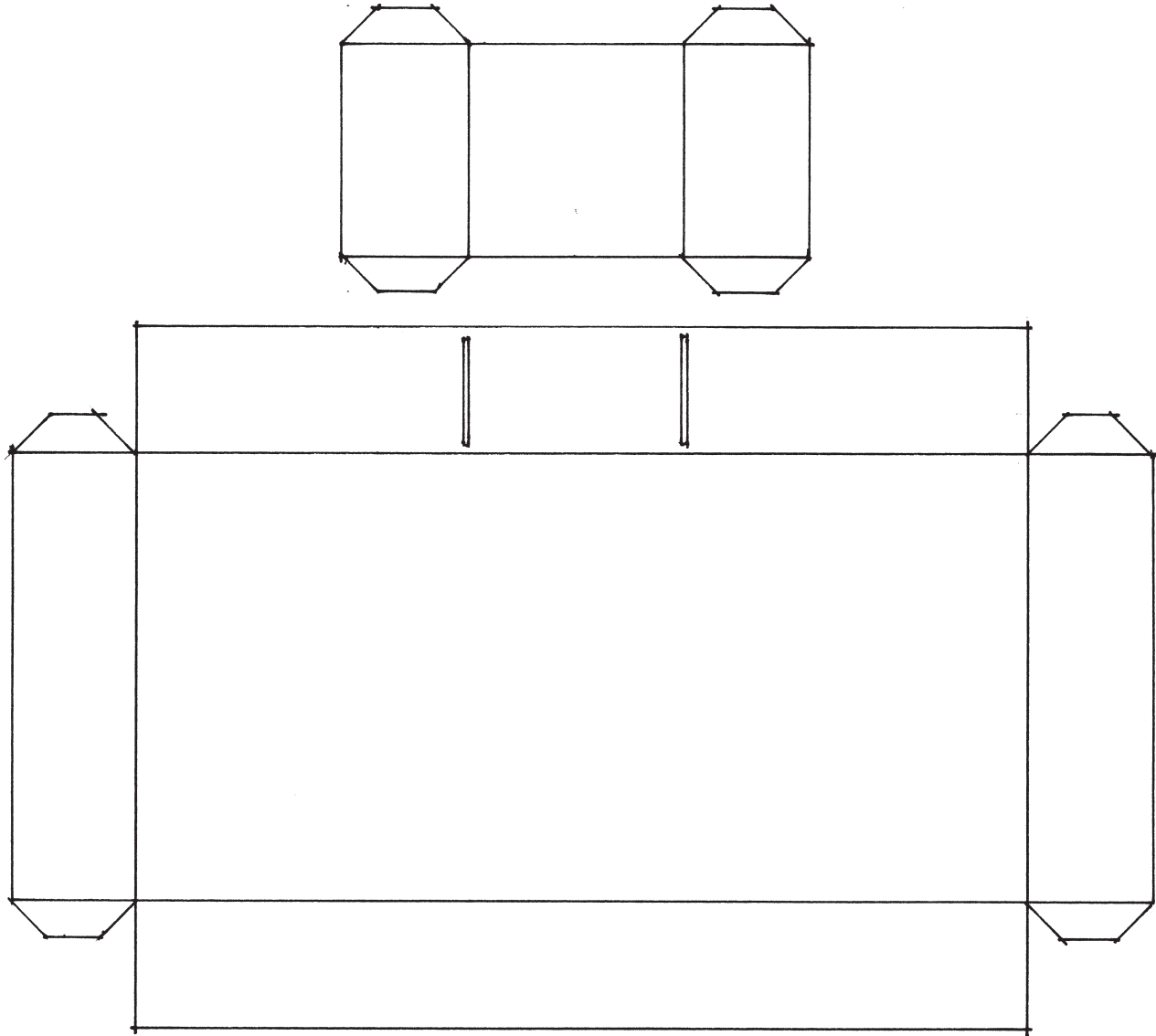
Fourth Grade ♦ Lesson Ten



Building Cutout Pattern #2 - A Church



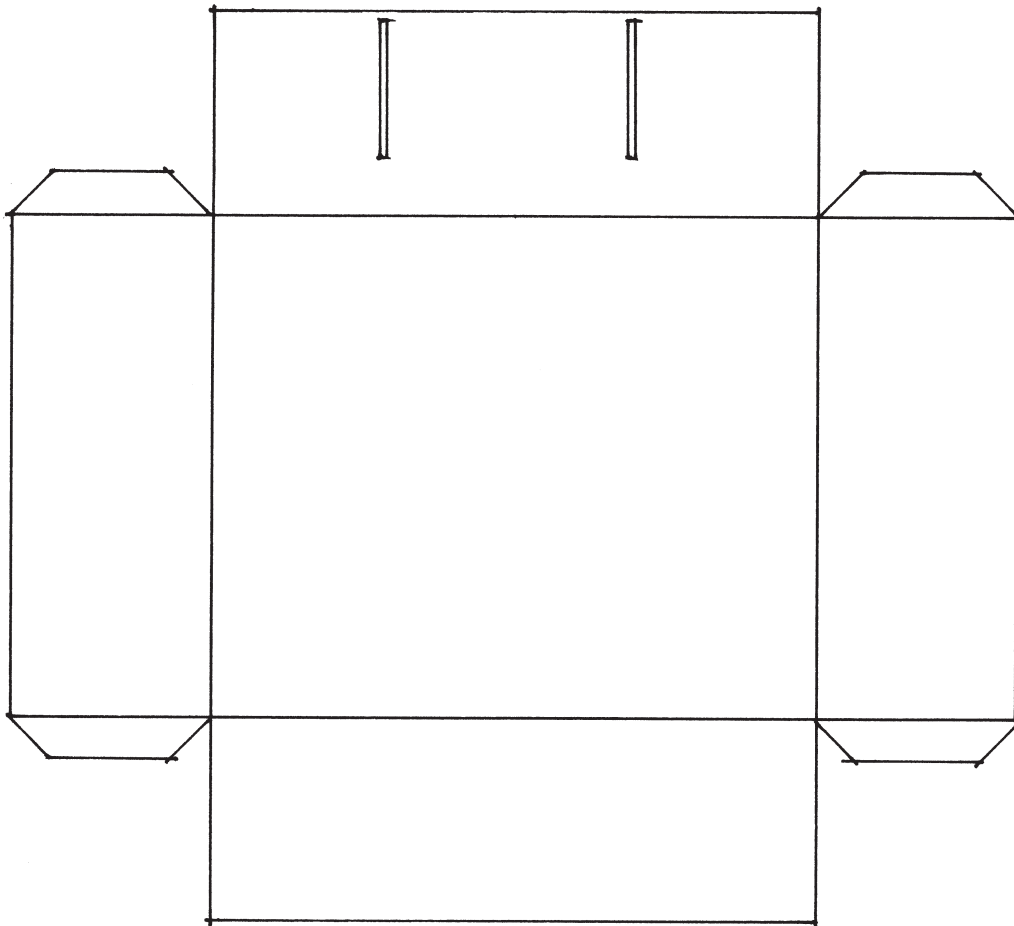
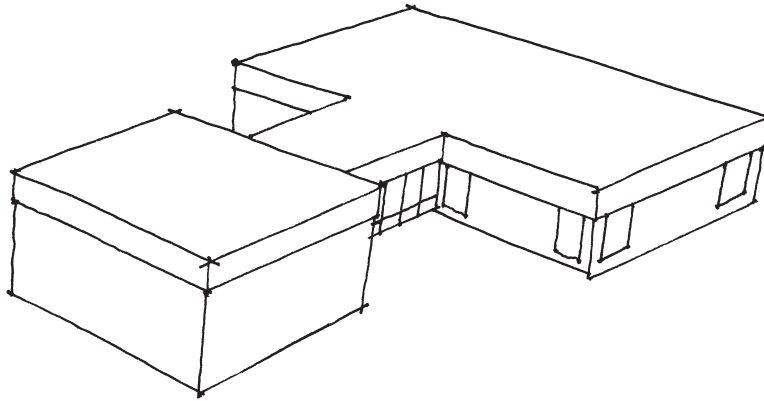
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Building Cutout Pattern #3 - An Elementary School
or Portion of a High School



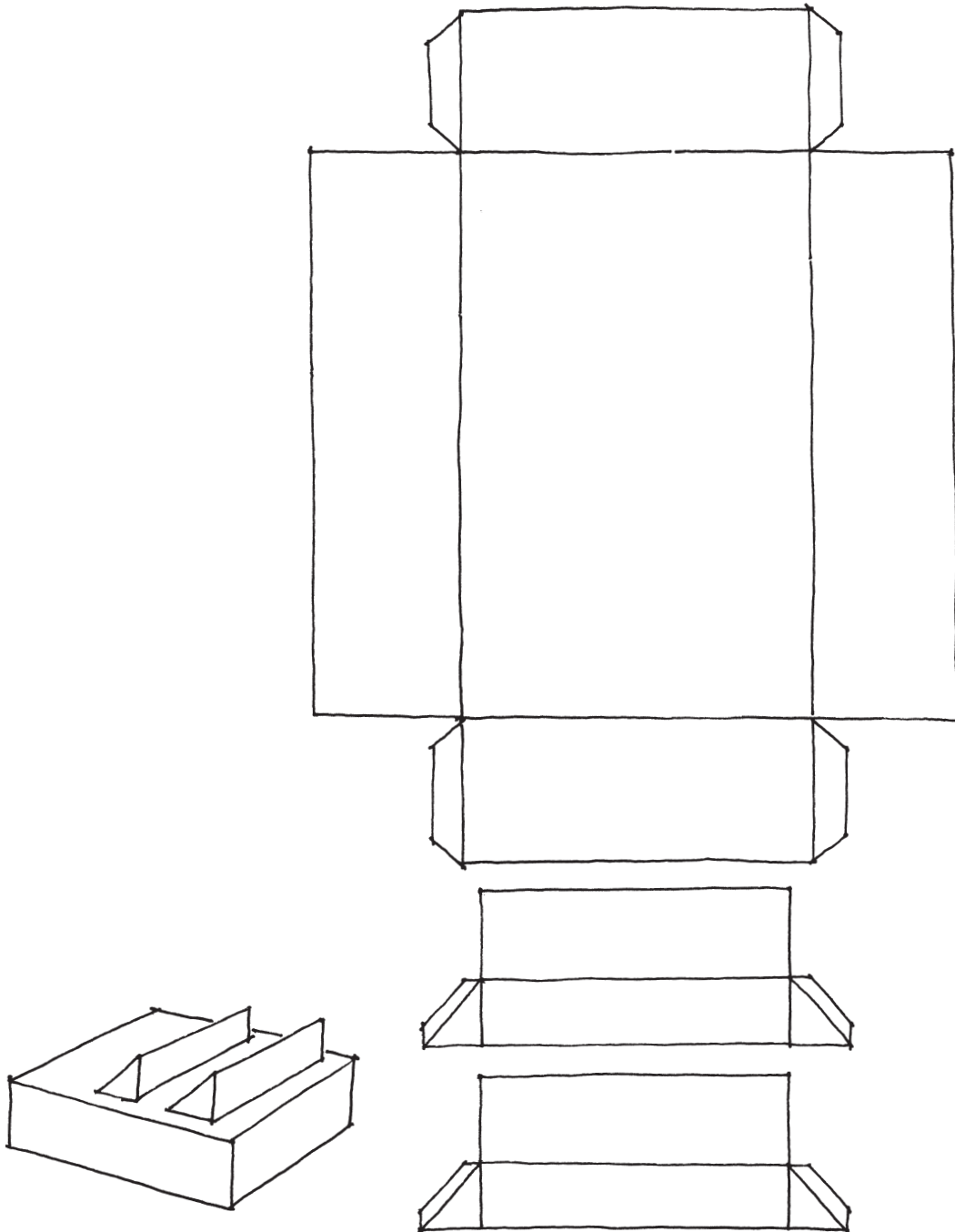
Fourth Grade ♦ Lesson Ten



Building Cutout Pattern #4 - A Gym, to be Added to an Elementary School to Make a High School



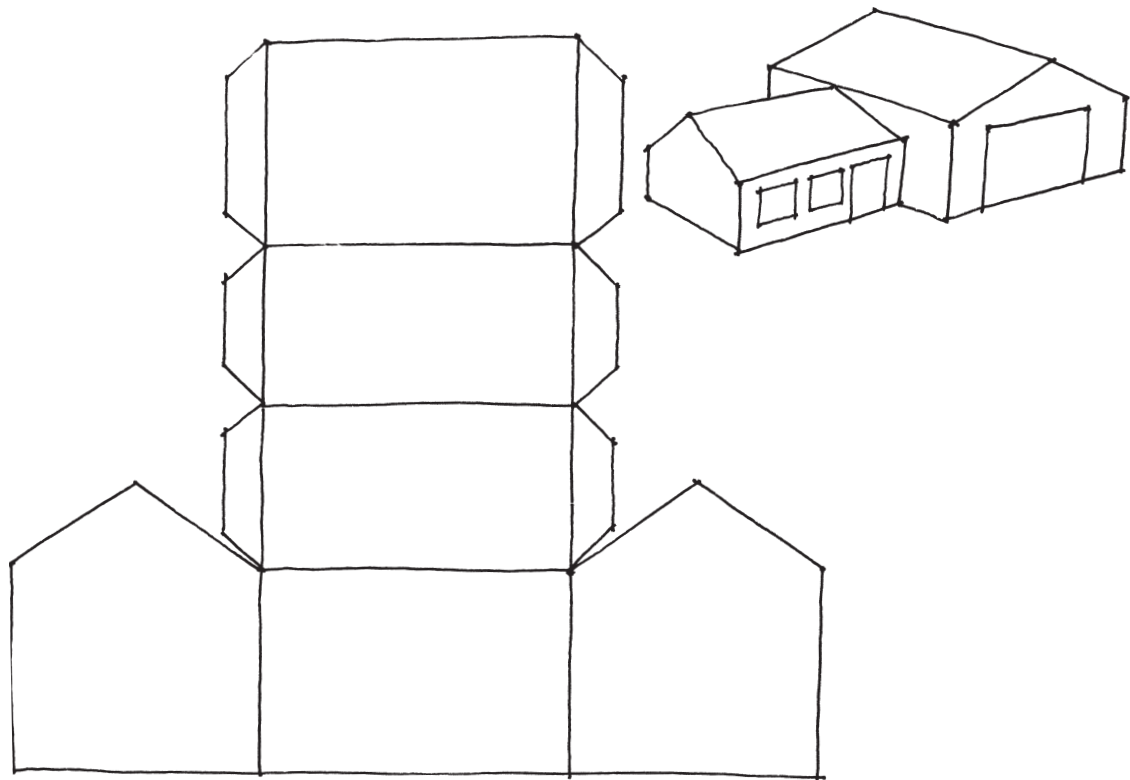
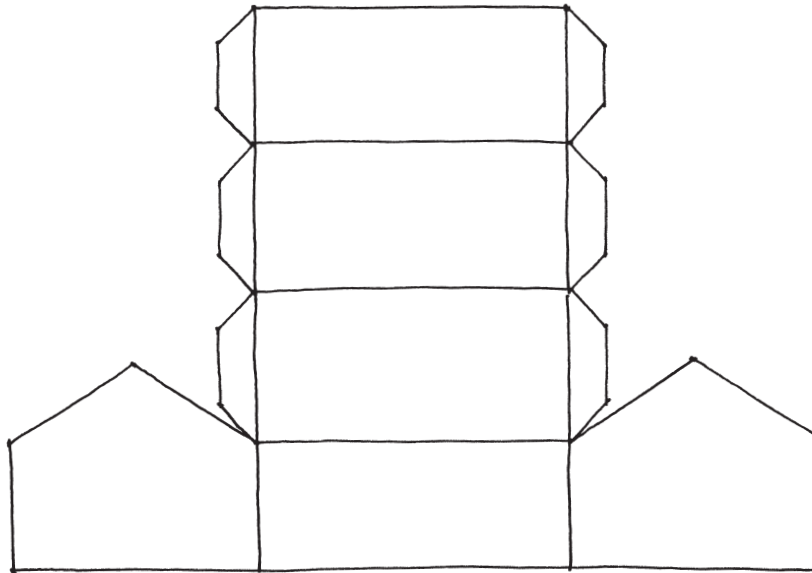
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Building Cutout Pattern #5 -
Commercial Buildings/Shops



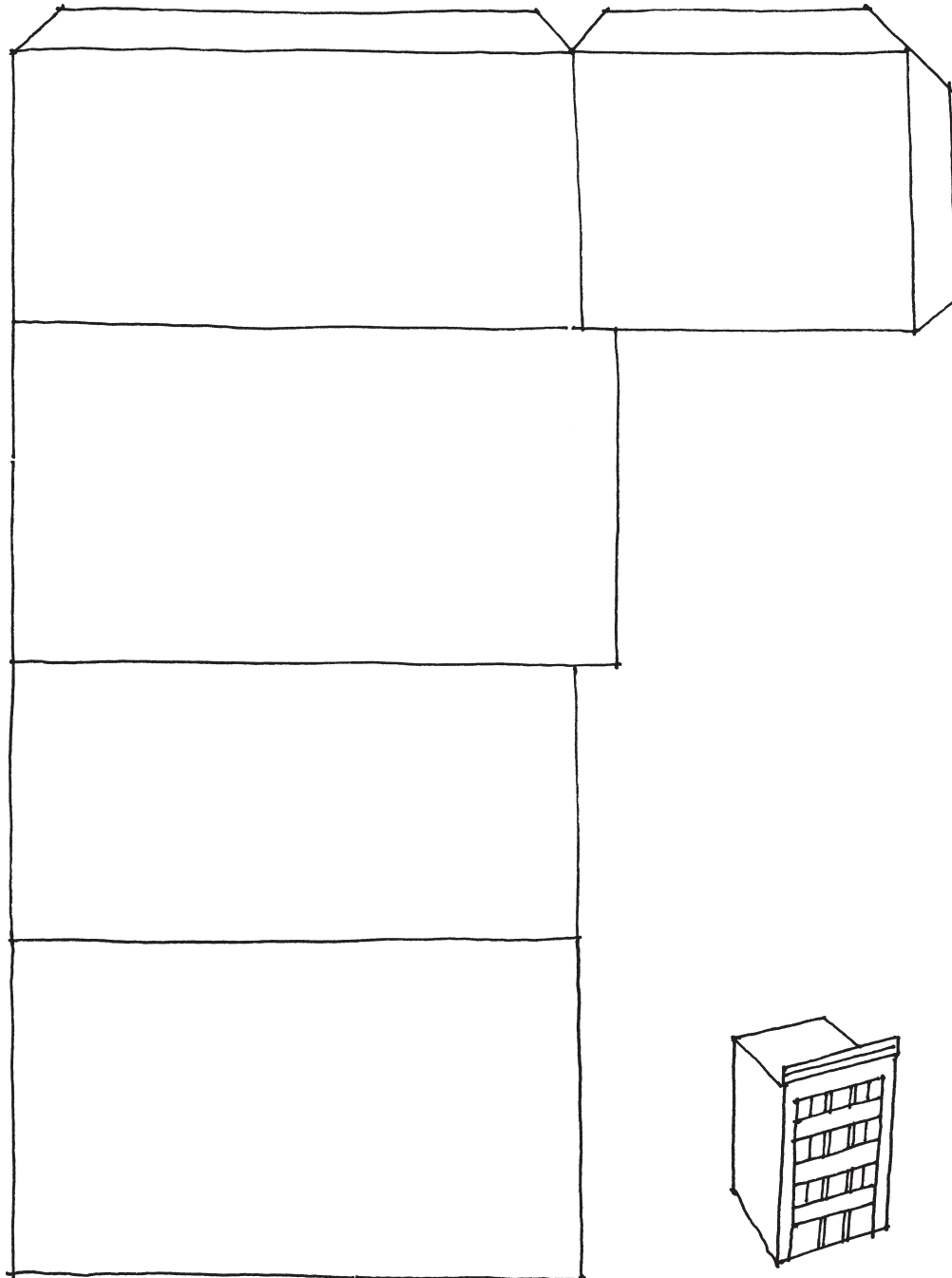
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Building Cutout Pattern #6 - A Library,
Police Station or Community Building



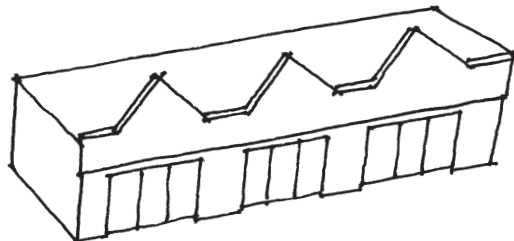
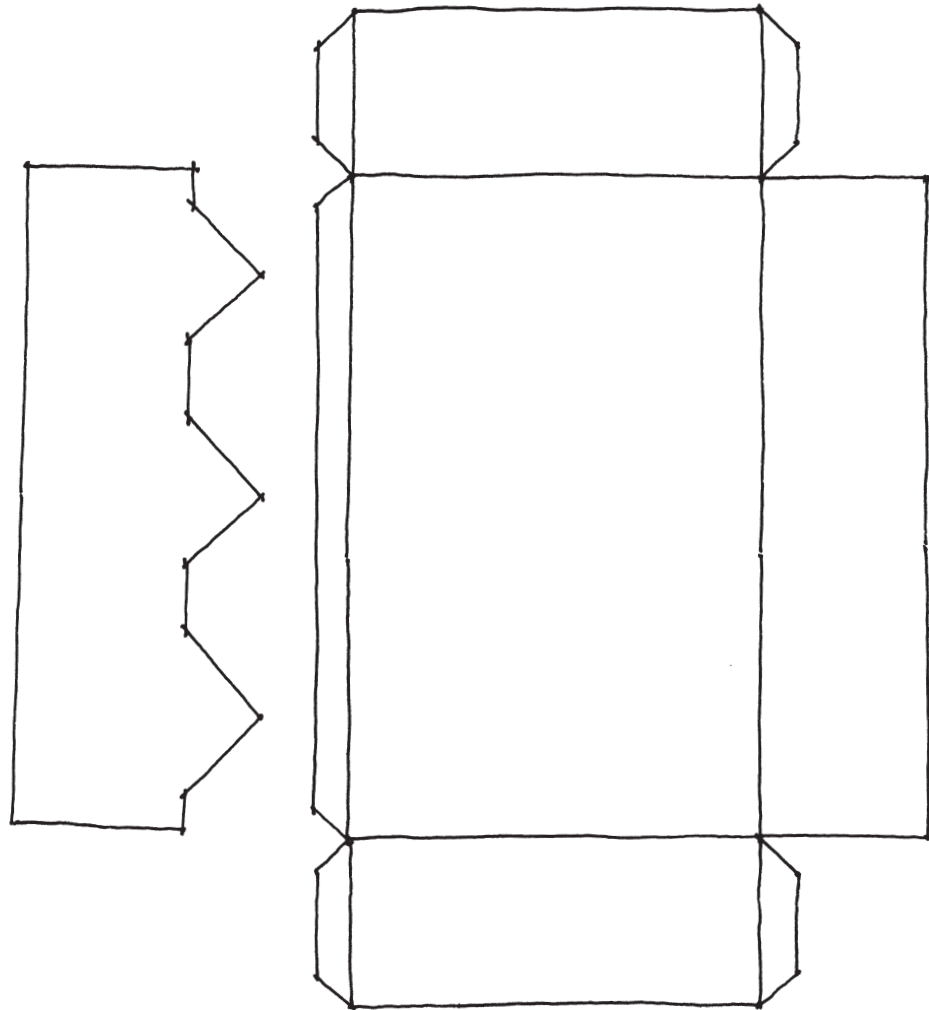
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Building Cutout Pattern #7 - Office Building



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Building Cutout Pattern #8 - Shopping Center



Curriculum Guide



Fifth Grade

Fifth Grade ♦ Lesson One



**FIFTH GRADE
LESSON NO. 1**

HISTORY OF CITIES

LENGTH OF LESSON:

30 - 60 Minutes

ARCHITECTURAL PRINCIPLES:

Order is the arrangement and organization of elements to help solve visual and functional problems.

Balance is the creation of visual harmony through the use of color and the manipulation of form.

Nature is a model for architectural forms and shapes.

Symbolism is an important means of visual communication for architecture.

Sustainable design of the built environment protects the natural environment.

Climate and the natural environment influence design decisions.

Social structure, culture and the built environment have a direct influence on one another.

Architecture satisfies emotional and spiritual needs in addition to physical needs.

Past, current and future technologies influence design decisions.

MATERIALS

1. Crayons or markers
2. Pencils
3. Aerial photograph of a city (included)
4. Photographs of cities - "Types of Land Uses" (included)
5. Sketching paper and/or colored construction paper



Fifth Grade ♦ Lesson One



VOCABULARY (See glossary for definitions)

1. City
2. Civilization
3. Domesticated
4. Land Use
5. Nomad

BACKGROUND INFORMATION

The social studies classes students have had prior to fifth grade will provide some of the background for this lesson plan, as will the following information for class discussion:

1. Human beings have lived on earth for about 2 million years but developed permanent settlements only 10,000 years ago. In the beginning, people were nomads wandering in search of food, living off the land in tents or in caves. They were able to eat by hunting for meat, fishing and gathering fruits and edible plants. When farming of the land began, wandering to look for food became unnecessary, and villages began to develop.
2. The four main characteristics required for the development of a city:
 - a. **Population Growth:** Increases in population and exposure to other people of different tribes, cultural groups and nationalities helped the city grow in size and complexity.
 - b. **Social Organization:** Early villages assigned people to be responsible for surplus food, city defense planning and other functions needed by the city as a whole. Initially, small tribes or groups organized these city functions, which later developed into a more formalized governmental system.
 - c. **Physical Environment:** Cities needed a location that offered availability of food and water, good surrounding soils for crops, access to materials to provide for shelter, waterways for transportation, raw materials for industry and, in later years, a good climate for recreation. All of these characteristics are not necessary, but all cities require some combinations of these to develop.



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- d. **Advances in Technology:** Improved farming skills and the domestication of animals led to a surplus in food produced on family farms, beyond the amount needed to feed the farmer's family. This led to some people taking on other jobs, producing products they could barter — including crafts, clothing, baskets and tools — in exchange for food. The subsequent development of power sources, such as steam and electricity, led to manufacturing. Transportation systems, such as railroads and then the automobile, also developed. The use of iron and then steel for construction allowed tall buildings to be constructed. With the invention of the elevator, buildings in cities grew even taller.
3. Ancient cities set aside areas for markets, worship, public buildings, etc. Athens and Rome became famous for their public buildings. During the Middle Ages (from about 500 to 1400), protective walls became a common way to protect cities from invaders. Religion also was important; large churches became the center of many cities. During the Renaissance in Europe (1400s, 1500s and 1600s), plazas were created, incorporating artistic treatment in many buildings as well as public sculptures. In the 1700s, the Industrial Revolution began, with a factory system in and around cities that drew more people to them. Eventually, cities spawned suburbs; these "satellites" surrounding the cities grew as people yearned to escape crowded city life.
4. Over time, the physical environments of our cities needed to be maintained, restored, rebuilt, and cleaned up after years of use. In addition to taking care of buildings, this often involves cleaning lakes and rivers, removing pollution from the air, rebuilding roads and bridges, and restoring parks and other areas for recreation. Cities are always changing due to shifts in population, economic factors, and many other influences. We need to monitor the impact of those changes and make improvements, as necessary, to keep our cities healthy and beautiful for everyone.



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ACTIVITY

- A. A city can be better understood by looking at its parts. Using examples from your own city, describe to the students the components of a city. These components are described as "land uses."
1. Road system - main roads, smaller secondary roads
 2. Open public areas - parks, plazas, playgrounds
 3. Shopping areas - malls, strip centers, downtown business district
 4. Residential areas - apartments, houses
 5. Schools
 6. Factories
 7. Recreation centers - stadiums and arenas
 8. Municipal buildings - city halls, libraries, police and fire stations
- B. Show an aerial photograph (included) of a city to indicate the different components in that city plan. Next, show photographs (included) of examples of land uses in a city as listed in item "A" above.
- C. Have students draw their own small plan of a city, showing all of the components listed in "A" above. These will be discussed in more detail in future lessons; a general understanding of the parts of a city is the goal of this exercise.

TEACHER'S EVALUATION

- A. Analyze student drawings for a basic understanding of the parts of a city and how one area might relate to another area.
- B. Analyze student art work for:
1. Drawing skills;
 2. Ability to express geometric shapes and elements;
 3. Use of artistic skills, including aesthetic use of color and drawing from the visualization of an idea.



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Aerial Photograph from the Sears Tower - Chicago



Fifth Grade ♦ Lesson One



Roads - Washington Blvd. in Detroit



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Playground - Clawson, Michigan



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Shopping Center - Troy, Michigan



Fifth Grade ♦ Lesson One



Residential - Apartment Building in
Royal Oak, Michigan



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Schools - Tecumseh High School in Tecumseh, Michigan



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Industrial - Small Factory in Troy, Michigan



Fifth Grade ♦ Lesson One



Recreation - Comerica Park Stadium
in Detroit, Michigan



Fifth Grade ♦ Lesson One



**Municipal Building - Waterford Public Works
Department in Waterford, Michigan**



Fifth Grade ♦ Lesson Two



FIFTH GRADE
LESSON NO. 2

POLITICS AND ECONOMICS OF A CITY

LENGTH OF LESSON: 30 - 60 Minutes

ARCHITECTURAL PRINCIPLES:

Order is the arrangement and organization of elements to help solve visual and functional problems.

Symbolism is an important means of visual communication for architecture.

Visual thinking is a key to awareness of the built environment.

Sustainable design of the built environment protects the natural environment.

Social structure, culture and the built environment have a direct influence on one another.

Climate and the natural environment influence design decisions.

Past, current and future technologies influence design decisions.

MATERIALS

1. City photographs used in Lesson No. 1 (for play prop)
2. Text for the play "Tale of How Cities Began" (included)
3. Costumes and props for plays (as desired)

VOCABULARY (See glossary for definitions)

- | | | |
|--------------|--------------|---------------|
| 1. Bartering | 4. Economics | 7. Population |
| 2. Commerce | 5. Kingdom | 8. Sewers |
| 3. Craftsman | 6. Politics | 9. Taxes |



Fifth Grade ♦ Lesson Two



BACKGROUND INFORMATION

1. Review Lesson No. 1:
 - a. Where and how did the first cities develop?
 1. Location: adjacent to water (along a river) or on a trade route
 2. Geography: flat land with soil that could grow food crops
 3. Climate: mild weather
 - b. Why did cities develop?
 1. An abundant food source that allowed the population to remain in one location
 2. Protection against animals and other groups of people
 3. Available building materials
2. General Discussion - Communities become trading centers and governmental centers:
 - a. The first cities date from around 6,000 B.C.E. and were located in the Middle East, in an area that is now Iraq. The cities were located near rivers that provided water for people and animals and for growing crops for food. When it was no longer necessary for everyone to work to provide food, some people became available to produce other goods and materials for living. Trade then developed between people within the city and among different cities.
 1. Skilled craftsman made better houses, tools, clothing, food, art, etc.
 2. A commerce system of bartering developed for the work of the skilled craftsman, and a money system developed to pay for work and goods.
 3. City living was not as difficult as when people had to wander over the land for sustenance. Therefore, the population increased. As it grew in an area, more cities developed, and the commerce created by trade among cities created wealth (and, therefore, power) for certain groups.
 - b. The marketplace was central to the city. Frequently, street patterns radiated from the marketplace. The marketplace allowed farmers from outlying areas to sell their goods inside the city.
 - c. As cities expanded, marketplaces, manufacturing and housing created the need for a more complex government. What began as tribal leaders and tribal councils expanded to form more complex governmental systems.
 1. Some became kingdoms with a king or queen.
 2. Sometimes, differences in ideas motivated some people to leave the group in power and create other political groups to challenge the ruling group.



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3. Sometimes, groups from outside the city tried to overtake the city, a factor that led to the walled cities of the Middle Ages, which developed for defensive purposes.
- d. City governments became more complicated as cities grew in size. A tribal chief became a mayor who was elected by the city's voters. Tribal councils became city councils that also were elected by voters. People living in the city needed services like water, sewers, police and fire protection. The city government expanded to appoint people whose job it was to provide these services. They were hired by the elected city mayor and city council, and paid through taxes that city residents paid to the city government. This entire process of electing and/or appointing governmental officials is called "politics."
- e. The manufacture of products and the central location for trading those products, as well the central area for selling farm crops, all became part of the economics of the city, the goal of which is increased prosperity.

ACTIVITY

- A. To illustrate this process, the teacher can ask the class to perform small plays, in which students assume the roles of mayor and city council members and vote on issues, such as the type of public services to provide for their city. These public services and issues can include roads, sewers, marketplace locations and the establishment of police and fire stations. Or, students can compete for office and develop a "platform" on how they would improve their city if elected. The students can use the aerial photography from Lesson No. 1 to use as a prop for their platform discussions. As an alternative, the students can act out the play "Tale of How Cities Began" (included).

TEACHER'S EVALUATION

- A. Analyze the student plays for an understanding of the most basic political and economic functions of a city.



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Tale of How Cities Began

As cities began, communities had practical reasons for their location. The first villages, towns and cities were located near fertile land and water sources, which also provided the easiest form of transportation before roads were built. River crossing points were particularly favored, and the first bridges were built. The proximity of established trade routes, and of natural resources such as coal and minerals, also have been key factors in the evolution of settlements.

Larger cities were prosperous enough to afford great buildings, such as palaces and temples, and to support an upper class liberated from the daily struggle for survival. Architecture became important, and the need for well-planned cities became a priority. Soon cities were developing independently in many parts of the world, creating distinct patterns of language, culture and architecture. Unlike hunter-gatherers before them, city dwellers quickly developed the diversity typical of human societies. As cities grew, their rulers became preoccupied with civic management.

Defense, religion and commerce often influenced the shapes of cities. In many of them, streets radiated outward from the central religious building or plaza, with the wealthy living in large houses on the main thoroughfares. In some cities the familiar grid pattern of cities was established.

Rome and other big cities were full of apartment buildings often built above shops in city centers; city centers were occupied by members of the mercantile, political and religious elite, surrounded by craftsmen such as metalworkers, weavers and potters.

The evolution of cities has taken place over a period of thousands of years, but our play examines what might have happened if a king of old had been open to the ideas of modern city government.



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Characters

King
Architect
Religious Leader
City Councilman #1
Farmer
City Manager
Citizen #1

Mayor
Tax Collector
Police Chief
City Councilman #2
Trader
Civil Engineer
Citizen #2

City Planner
Teacher
Fire Marshall
City Councilman #3
Merchant
King's Court Jester
Citizen #3

Scene #1 - A Day at the Castle

As the scene opens, the King sits on his throne, contemplating the state of his kingdom. The kingdom has grown greatly; it has attracted more subjects to the area in recent times (and thus put more tax dollars into the King's pocket), which pleases him.

Jester (to King): Your Highness, one of your subjects, the Mayor, is here to see you. He says he wants to discuss the growth of the kingdom with you.

King (puzzled, yet eager to hear more): The growth of the kingdom? Show him in.

The Jester shows the Mayor into the King's chambers. The Mayor bows to the King.

King (to Mayor): Mayor, what brings you here today?

Mayor: Your Highness, I come here today to discuss the growth of your kingdom. It is my belief that the Kingdom can continue to grow and prosper, especially if you enlist the aid of some of your subjects.

King: And who might these subjects be?

Mayor: A City Planner, who can advise on the layouts for our streets and on where certain buildings are best placed; and the City Councilmen, who can develop, implement and oversee enforcement of rules for the buildings and streets; an Architect, who can design buildings to make the kingdom beautiful and long-lasting and help others see how all of the elements of the kingdom can work together to form a city ... and the Citizens, including the merchants, craftsman and farmers, all of whom have an interest in making sure the trade routes and farmlands figure into the plan, so they can continue to make money and provide goods and services for the kingdom.



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The King rubs his head as he thinks about what the Mayor has said. At first, he feels that by listening to the input of all of these subjects, he will lose control over his kingdom, but he decides to listen to what the Mayor has to say.

King: And what would be the benefit of seeking the input of the subjects you've mentioned?

Mayor: By seeking their input, you don't have to worry about figuring out how to do all of it yourself, and you'll have more time to rule and to collect taxes from all of the new subjects that come to live here because they've heard it's such a great city. And with such a great city, you'll be the envy of other kings in the area.

The King smiles and nods his head. He likes the idea that he'll have more free time, can make more money and that he'll have the input from experts on building a truly great city if he takes the Mayor's advice — he does hate dealing with the day-to-day operations of his growing kingdom.

King: Fine, then. I will listen to what each of them has to say. I am putting you in charge of meeting with them, gathering their ideas and their plans, evaluating each and presenting what you find out to me. I'll send the tax collector to the meeting as my representative. You are excused.

Mayor: Thank you, Your Highness. I think you will be pleased with the input I will bring back. (He bows to the King and leaves the castle.)

As the Mayor walks down the road, he spots two people on the roadway that leads to the river — a Farmer and a Trader. He decides to approach them and tell them of his meeting with the King.

Mayor: Hello, Farmer and Trader. I wanted to let you know that I just had a great meeting with the King about the growth of the kingdom. I proposed to him that I gather input from several subjects on how to best help the kingdom grow in a smart way.

Farmer: That sounds like a great idea, Mayor. I came to this area to farm the land because it's close to the water, has rich soil and a mild climate. I want to make sure that as the kingdom grows larger, my farmland will not have houses built upon it and that I will be able to continue to use the river water to irrigate my crops.

Trader: And I want to make sure I can travel easily between our kingdom and the surrounding communities so that I can trade furs and other goods to support my family. This ability to trade has brought commerce to our kingdom.



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Mayor: Your input will be important in the development of the kingdom. Please come to a meeting that will be held next Wednesday at the commons area in town.

Trader and Farmer (together): Thank you, Mayor. We'll be at the meeting.

The mayor then enters the schoolhouse, where the Teacher is preparing her lesson plan for the next day.

Teacher: Hello, Mayor. What brings you to the schoolhouse today?

Mayor: Teacher, we are gathering our citizens together for a meeting regarding the growth of the kingdom. As the person who teaches our students important information, we'd like you to be there to talk about how the growing kingdom can serve our children.

Teacher: Thank you, Mayor. I'll be at the meeting.

As he leaves the schoolhouse, the Mayor runs into the Architect and the City Planner. Excited, he tells them about the upcoming meeting.

Architect: Based on the beautiful structures that have been designed in our community to date, I know that good architecture is important to all of our residents. I'll come to the meeting.

City Planner: And I will, too. I can offer input on how to lay out the plans for our growing community.

Mayor: Thank you. Please invite other citizens of the kingdom. The input of everyone will be important.

Scene #2 - The Meeting

The residents of the kingdom start to congregate in the town commons. As they start to take their seats for the meeting to begin, the Mayor is pleased and smiles. He shakes hands with many of the residents as they file into the area.

Mayor: If everyone could please take his or her seat, we'll begin our meeting. I'd like to welcome all of you to our first meeting regarding the growth of the kingdom.

Citizen #1: I propose that we have another system of governance instead of the rule of the King. The King has been good to us, but he only seems concerned with collecting taxes, and not with how we'll feed our families, trade our goods, have suitable roads, good buildings and are protected in our homes.



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Mayor: It is in the interest of our citizens to keep the King happy by continuing to let him oversee the ruling of the kingdom, even though our citizens will handle the day-to-day operations of our new community. We also need to make sure we continue to provide the King with the taxes he has come to expect.

Citizen #2: The concept of something called a city worked as far back as 6,000 B.C.E. The current state of the kingdom very much resembles that of a city, where the people have more input in the way the community is run and how it develops.

Teacher: Following those guidelines ensures that we get a kingdom that serves the needs of everyone.

Citizen #3: I say we take a vote on modeling the growing kingdom on the concept of a city. (To the gathered crowd): Who else is in favor?

Remainder of crowd (in unison): I am!

Mayor: Then let's develop a plan to model the growing kingdom in the form of a city. To do that, we should vote on a leader.

Citizen #1: Since it was you who convinced the King that it would be a good idea to develop a committee of subjects to provide direction on the continued growth of the kingdom, I think you should be the one to govern the community. Who else is in favor?

Remainder of crowd (in unison): I am!

Mayor: Thank you. I accept the role of the governor of the community. But to ensure that good decisions are made, I'll need a council to assist me, much like the tribal councils of our predecessors. Let's take a vote to elect three council members.

Citizen #3 distributes "ballots" to the crowd. The crowd pretends to check off names of those they consider the best candidates for the council, thus establishing the first political system in the newly formed city.

Mayor: The votes have been cast, and our new city council members are Councilman #1, Councilman #2 and Councilman #3. (The three councilmen stand up, and the crowd claps.)

Mayor: It will be the responsibility of the council to make decisions about how the city operates and what services will be needed. The residents are counting on you.

Councilman #2: I propose the first item we discuss is the economics of the city. To make sure citizens can provide for themselves, we should establish a central area in the city where everyone can come to sell surplus farm crops, barter and trade products.



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Merchant: Why don't we set up this very area as a central marketplace for doing so? We could call it the "Town Square." It could also serve as the common gathering place for council meetings and for community interaction.

Mayor: Let's take a vote. Who is in favor?

Remainder of crowd (in unison): I am.

Mayor: Next, I'd like to introduce the City Planner.

The planner stands up and approaches the podium to address the crowd.

City Planner: To make the central marketplace and the development of the city beneficial to all, we need to build a system of roadways that will suit the needs of the residents. (The City Planner holds up a drawing that resembles a "wagon wheel" with a central area and spirals that radiate out, and shows it to the crowd.) By building a street pattern that radiates from the central marketplace, it will be easier to deliver goods to town and to travel from one place to the next.

The mayor and the three city council members nod.

Mayor: Please draw up a more complete plan, City Planner, and we'll vote on it at the next City Council meeting.

The City Planner nods in agreement and sits down. Citizen #1 raises his hand and is called on by the Mayor.

Mayor (to Citizen #1): It is your turn to address the crowd.

Citizen #1: We need a system to keep waste from running into our streets and contaminating our land and water supply. How will we address this important issue?

Civil Engineer: I can design a sewer system that will allow waste to run into an underground tank and keep our land and drinking water clean and our citizens healthy.

Tax Collector: We can set up an appropriate system of taxation that will bring income to the King, but also will provide a source of funding to pay our teachers, maintain our new roads and pay for police and fire services to protect our new city.

The Citizens (in unison): We don't mind paying taxes that will protect our people.

City Councilman #3: What about controlling crime and putting out fires?



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Policeman: We'll add members to our police force, using some of the new taxes to pay for them.

Fireman: And we can use tax money to add more firefighters to protect our citizens as well.

Tax Collector: Using tax money instead of the King's money for these services would make him happy as well.

Mayor: Next, I'd like to introduce our Architect. Not only does our Architect design beautiful, functional buildings, she can tell us how we can design cities that will live on for our descendants to enjoy and how all of the elements of the city we've discussed so far can work together to form a better built environment.

The architect stands and approaches the podium.

Architect: We've had some great ideas presented today, and a big part of making the ideas work — building our new city into a place where people want to live and that will last — is making sure they work together.

The Architect takes out a plan showing a drawing of several buildings making up a city.

Architect: By taking the suggestions of the City Planner and plotting a grid marking out lots of land — as well as building a road system that brings traffic into the central marketplace from the farmlands — we can ensure that farmers and others can come into the city to sell and trade, while protecting their land from being built upon. In other words, if we use responsibility in our built environment, we'll be able to protect our natural environment and make it sustainable.

City Planner: And establish a city that is beautiful and timeless, and will last for generations to come.

Religious Leader: The Architect is right — good buildings with meaning are important to our citizens. Our church is designed to make people feel spiritual and is an important part of our new city.

Teacher: And good buildings, like schools, provide a great place for children to learn.

Mayor: Then it is decided - we will begin our city, using the input of everyone we heard today. We will gather again tomorrow to start planning our new city. All in favor say "yes."



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Citizens (in unison): Yes!

Mayor: I will let the King know about our ideas and inform him we will start the planning for our city tomorrow.

Scene #3 - Back at the Castle

The Mayor leaves the meeting and heads towards the King's castle. The King's Court Jester shows the Mayor into the castle.

Mayor (to King): Your Highness, I just finished meeting with many of your subjects regarding the growth of the Kingdom - an Architect, a City Planner, a Teacher, and others. We think that by forming a city, and a city council to manage information and make decisions, it leaves you time to enjoy your kingdom. The new city also will generate additional taxes to pay for its operation, as well as make additional tax money for you to keep. Do you approve of our plan to go forward with forming the city?

King: What a great idea! Go ahead and start the plans for the city, and keep me informed on the decisions that are made.

Mayor: Thank you, Your Highness.

The End



Fifth Grade ♦ Lesson Three



FIFTH GRADE
LESSON NO. 3

CITY PLANNING

LENGTH OF LESSON:

30 - 60 Minutes

ARCHITECTURAL PRINCIPLES:

Form follows function is a design approach whereby the form of a building is determined by the function of its spaces and its parts.

Mass creates form, which occupies space and brings into being a spatial articulation.

Social structure, culture and the built environment have a direct influence on one another.

Order is the arrangement and organization of elements to help solve visual and functional problems.

Balance is the creation of visual harmony through the use of color and the manipulation of form.

Symbolism is an important means of visual communication for architecture.

Sustainable design of the built environment protects the natural environment.

Climate and the natural environment influence design decisions.

Nature is a model for architectural forms and shapes.

Social structure, culture and the built environment have a direct influence on each other.

Past, current and future technologies influence design decisions.



Fifth Grade ♦ Lesson Three



MATERIALS

1. Visual aids for "city planner" presentation (provided by your local planning official)
2. 8 1/2 x 11-inch "Undeveloped Land Use Map" (included - teacher will need to enlarge to 11" x 17" format) for each student
3. Pencils and eraser

VOCABULARY (See glossary for definitions)

- | | | |
|-----------------|-------------------|---------------------|
| 1. City planner | 4. Infrastructure | 6. Master Plan |
| 2. Demographer | 5. Land Use | 7. Zoning Ordinance |
| 3. Geographer | | |

BACKGROUND INFORMATION

1. City planning is the process for guiding the development of cities. City planners are people who advise local governmental officials about how to improve their city. City planners generally are involved in the physical layout of the city, and sometimes they are also specialists in economics and finance or social programs as well.
2. Frequently, city planners develop master plans that reflect the desired goals for the community's physical plan. The master plan is a map that shows where various land uses should be located within the city. These uses include streets, parks, governmental facilities, residential structures, shopping areas, offices, schools, religious institutions, factories and other types of buildings.
3. To prepare a master plan, many experts work with the city planner as part of the city-planning process:
 - a. Engineers study roads, underground utilities and above ground utilities.
 - b. Finance specialists advise on paying for changes.
 - c. Geographers study natural land features.
 - d. Demographers study population characteristics.
 - e. Wetlands and woodlands specialists advise on the impact the development will have on lakes, streams, forest and wildlife.
 - f. Environmental consultants advise on other impacts to the natural environment, such as soil contamination and soil erosion.



Fifth Grade ♦ Lesson Three



4. Master plans are implemented after being adopted by the city council. They are implemented with a document called a "zoning ordinance," which gives development guidelines for all land in the city.

ACTIVITY

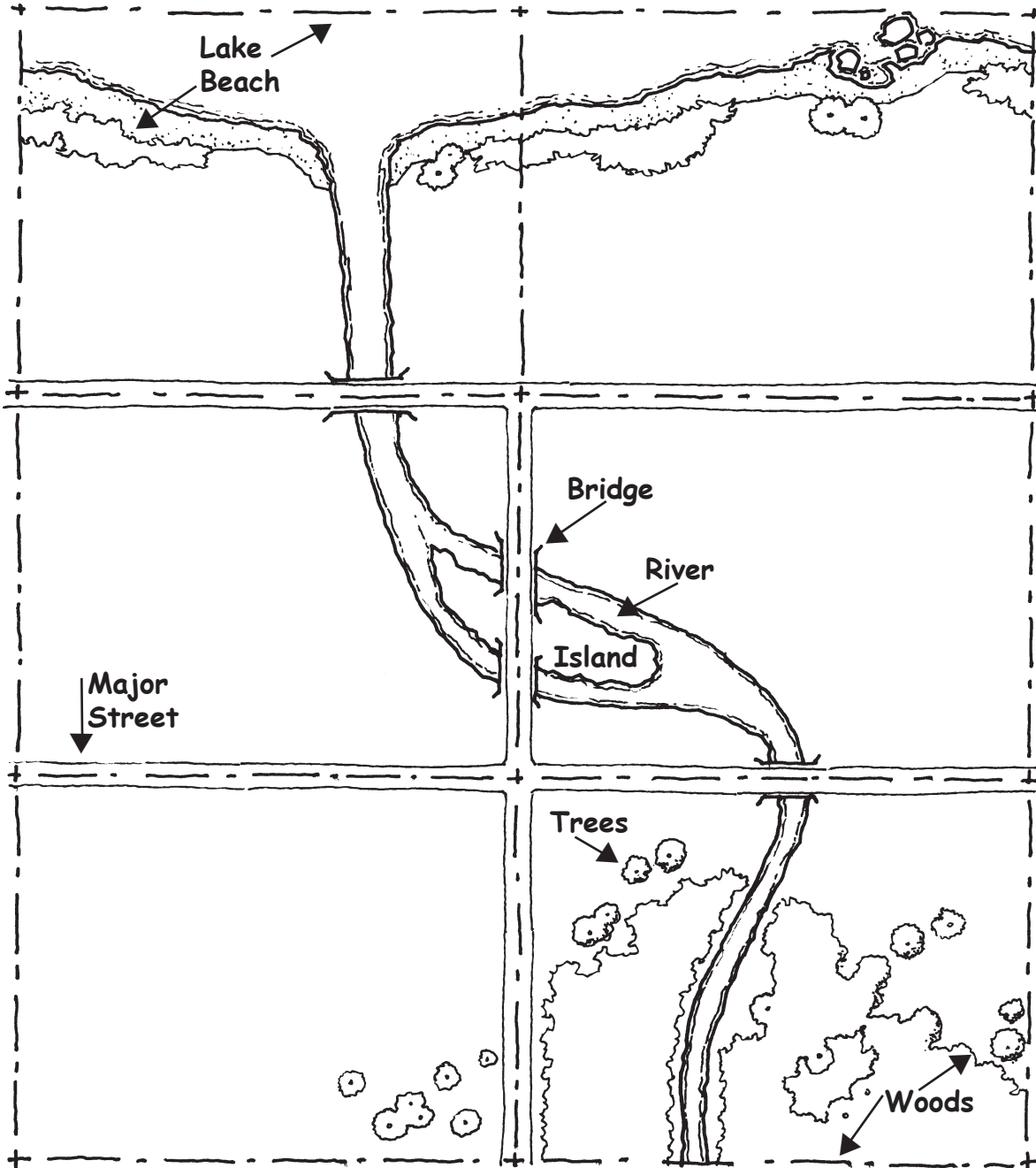
- A. Contact the local planning official to have him/her meet with the class to discuss city planning in the students' own community. The city planner may have visual aids available to illustrate the discussion.
- B. Provide each student with a copy of the "Undeveloped Land Use Map" in an 11 x 17-inch format. The edge of the paper will be the boundary of each student's city. Using the land uses from Lesson No. 1, have the students locate all the land-use components on their map. They should locate land uses that relate to one another in an organized manner. For example, residences should be near shopping. Use a dotted line to identify the edges of each land use area. Label each area with a pencil. The labels may be erased and relocated in the final layout in Lesson No. 4. Save this "Land Use Map" for use with Lesson No. 4.

TEACHER'S EVALUATION

- A. Utilize class discussion to analyze students' awareness and understanding of planning processes and requirements.
- B. Evaluate their "Land Use Maps" to see if each student understands the concepts of city planning.



Fifth Grade ♦ Lesson Three



Undeveloped Land Use Map for City Model

Note Scale: FIFTH GRADE



Fifth Grade ♦ Lesson Four



**FIFTH GRADE
LESSON NO. 4**

INFRASTRUCTURES

LENGTH OF LESSON:

30 - 60 Minutes

ARCHITECTURAL PRINCIPLES:

Design is accomplished by composing the physical characteristics of size, shape, texture, proportion, scale, mass and color.

Order is the arrangement and organization of elements to help solve visual and functional problems.

Visual thinking is a key to awareness of the built environment.

Nature is a model for architectural forms and shape.

Sustainable design of the built environment protects the natural environment.

Social structure, culture and the built environment have a direct influence on one another.

Climate and the natural environment influence design decisions

Past, current and future technologies influence design decisions.

MATERIALS

1. "Land Use Map" (11 x 17-inch size) made in Lesson No. 3
2. Erasers, colored pencils and markers
3. Three-Dimensional Cut-Away View of an Infrastructure (included)



Fifth Grade ♦ Lesson Four



VOCABULARY (See glossary for definitions)

1. Infrastructure
2. Sanitary
3. Sewer
4. Utilities

BACKGROUND INFORMATION

1. Infrastructure is the organization of utility systems, road systems and public services in a city or a region. These include the following:
 - a. Roads, bridges, highways, sidewalks and bikepaths
 - b. Sanitary and storm-water sewers
 - c. Water, electric and gas supplies
 - d. Telecommunications, telephone and cable TV
 - e. Cell phone, radio, TV and internet
 - f. Police, fire and ambulance systems
 - g. Garbage and recycling services
 - h. Recreational services like parks and golf courses
 - i. Natural infrastructure such as lakes and streams

These elements have distribution systems that reach every place (or nearly every place) in a community. It is what people have come to expect as part of the services that every community provides.

ACTIVITY

- A. Using the Three-Dimensional Cut-Away View of an Infrastructure, discuss with students how each of these elements has a component that must be distributed throughout the city. Some are visible and some are not. Examples:
 1. Transportation System: Including streets and sidewalks as well as parking facilities, bus services, light rail systems, etc. Development of residences and businesses often follow available transportation routes and capabilities. Streets may be paved, or may be dirt or gravel.



Fifth Grade ♦ Lesson Four



2. Sanitary and storm-water sewers: Underground pipes that carry away the wastewater from our homes and businesses are sanitary sewers. Rainwater that is not absorbed into the ground is carried away in storm water pipes. The sanitary sewers lead to water treatment plants that clean the water before it is allowed to go into lakes and streams. Storm water also flows into the lakes and streams, but since it is rainwater, it often does not need treating. Old communities, however, may have combined sanitary and storm sewers that all lead to a water treatment plant.
3. Water supply pipes: These are underground pipes that bring fresh water to our buildings. In cities they usually come from a water plant that takes water from lakes or from under the ground, uses chemicals to treat impurities, and then distributes the purified water through the underground pipes. In rural areas, the water may come from a well which is fed by underground aquifers, and the water supply comes from the rainwater absorbed by the ground.
4. Natural gas can be piped long distances through pipelines that lead to buildings in order to provide heat. Many changes will be made in the near future as communities prepare for the incorporation of newer technologies like solar panels and electric cars.
5. Electrical Power: Whether overhead on poles or buried underground, wires bring electricity from large electrical generators to our buildings. Generators can be powered by burning coal or gas, the water pressure of dams, wind turbines, and nuclear fuel.
6. Telecommunication: Includes TV, phone and internet. These typically include a combination of wired and wireless connections.
7. Cell-phone towers and broadcast radio and television towers: These towers are spread throughout the area and distribute their signals through invisible waves in the air. The towers are connected by wires to the power and communication grids.
8. Police, fire and ambulance systems: Using the street systems, these are the people and vehicles that help to keep order, ensure safety, and provide assistance to people who have emergencies.



Fifth Grade ♦ Lesson Four



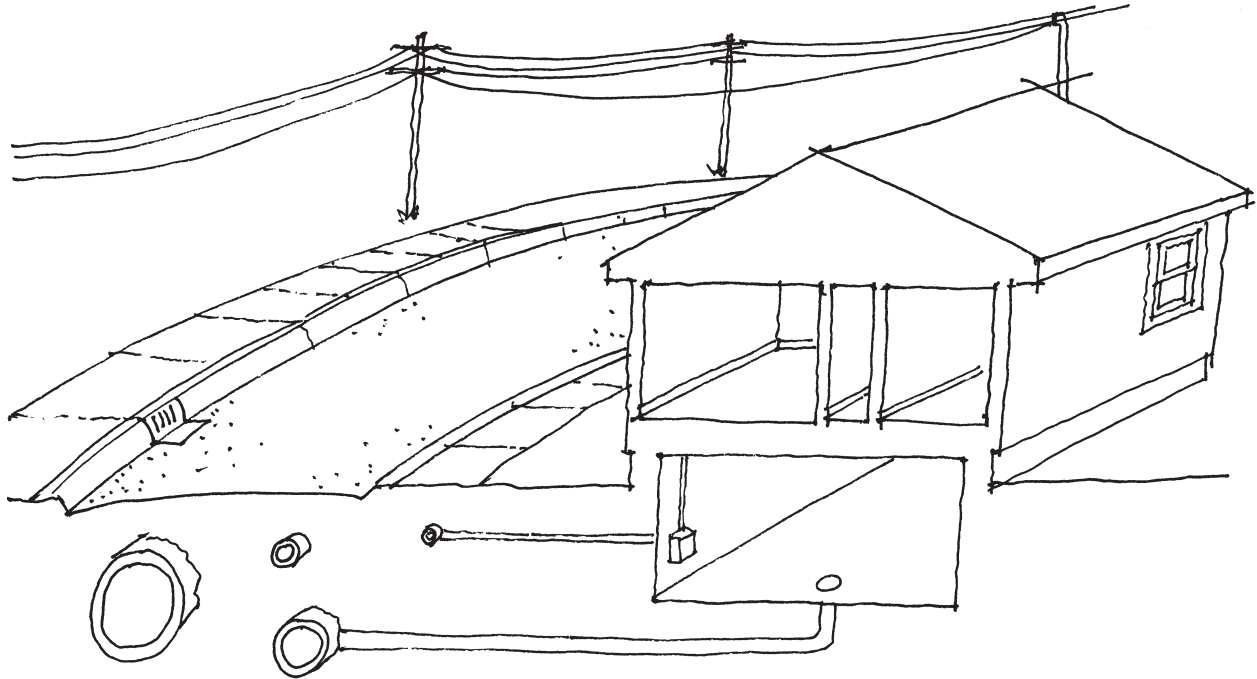
- B. Explain that infrastructure items — such as water and sewer lines, electrical, telephone and cable-television lines — often are located near the street and follow the direction of the streets. Once the street network has been designed, all the other infrastructure elements follow the same layout (either above or below ground), in accordance with the relationship indicated in the three-dimensional cut-away view (Activity "A"). Therefore, the street layout is the primary infrastructure element in city planning, ensuring access to both utility and emergency service infrastructure for all properties.
- C. Discuss which changing technologies allow services that are not limited by street layout, such as wireless (Wi-Fi) internet.
- D. Discuss which infrastructure and infrastructure services can help support the environmental sustainability of a community, such as recycling.
- E. To demonstrate their understanding of how infrastructure needs to reach all parts of the city, have students lay out the transportation systems, as described in Paragraph "A-1" above, on their Land Use Map (11 x 17-inch size) prepared in Lesson No. 3.

TEACHER'S EVALUATION

- A. Analyze students' drawing work on their "Land Use Map." Does their infrastructure show a basic understanding of the concepts?
- B. Analyze the students' art work for:
 - 1. Drawing skills;
 - 2. Use of artistic skills, including aesthetic use of color and drawing from observation techniques.



Fifth Grade ♦ Lesson Four



Three-Dimensional Cut-Away View
of an Infrastructure



Fifth Grade ♦ Lesson Five



**FIFTH GRADE
LESSON NO. 5**

PRESERVATION

LENGTH OF LESSON:

30 - 60 Minutes

ARCHITECTURAL PRINCIPLES:

Order is the arrangement and organization of elements to help solve visual and functional problems.

Balance is the creation of visual harmony through the use of color and the manipulation of form.

Nature is a model for architectural forms and shapes.

Visual thinking is a key to awareness of the built environment.

Sustainable design of the built environment protects the natural environment.

Social structure, culture and the built environment have a direct influence on one another.

Climate and the natural environment influence design decisions.

Past, current and future technologies influence design decisions.

MATERIALS

1. Sketch of "Old Town Streetscape" (included) for each student
2. Copy of "Background Information" (make a copy for each student from Lesson No. 5)
3. Photographs of historic building types (included - for Optional Activity "C")



Fifth Grade ♦ Lesson Five



VOCABULARY (See glossary for definitions)

- | | | |
|--------------------|-----------------|-----------------|
| 1. Adaptive re-use | 3. Dilapidation | 5. Preservation |
| 2. Demolish | 4. Historic | 6. Restoration |

BACKGROUND INFORMATION

1. What makes buildings or neighborhoods "historic" and therefore worth preserving? This can be a complicated question, but in simple terms, historic preservation is essentially about saving and maintaining old buildings and places because they have value to us today, in one way or another.
 - a. In some cases, old buildings may be aesthetically pleasing to look at and therefore provide visual enhancement to an area.
 - b. Old buildings are worth preserving if they have sound structure and can be adapted to a new use. This is known as "adaptive re-use" and is a form of recycling, avoiding unnecessary demolition and new construction. This contributes to a reduction in landfill use and therefore aids in preserving the environment.
 - c. In other cases, old buildings have played an important role in history and are worth preserving because they provide a link to the past or to some historical event. They provide a place for people to visit, remember and learn about their history. In some instances, it may be appropriate to restore these buildings to their original condition, perhaps to serve as a museum. Their value may be as a record of a historic architectural style, of which there are few remaining examples.
2. What should we preserve? Any kind of building, from factories to mansions, can be considered worth preserving, as can any size or scale of building, structure or neighborhood.
3. What are the advantages of historic preservation?
 - a. Old buildings enhance the appearance of the streetscape by introducing character through their variety of styles and texture of materials.
 - b. "Adaptive re-use" of suitable old buildings into new functions is usually more economical than demolishing them and constructing new buildings.
 - c. Successful historic preservations can often draw visitors to an area, enhancing tourism and contributing to the local economy.
 - d. Historic places inform communities about their roots and their past. They also can be a means of passing memories from one generation to the next.



Fifth Grade ♦ Lesson Five



ACTIVITY

A. Divide the class into groups of 4-6 students each to represent the members of several city-planning boards. Present them with the "Old Town Streetscape" drawing, which shows a series of different buildings in elevation. Below each building is a brief description of some of its characteristics, relating to all or some of the following:

- Age/date of construction
- Association with historic events
- Condition
- Internal planning configuration and use
- Property size and site characteristics

Also give students a copy of the "Background Information" for this lesson plan to use as a reference for Activity "B."

B. The "Old Town Streetscape" is in the process of being redeveloped, and the planning board has to make a decision for each building about whether it should be demolished for new development, preserved and restored as a museum, preserved for "adaptive re-use," or preserved for its architectural or historical significance. Have the students on each planning board come to a consensus about each building's fate, and giving their reason(s), have a member from each group present their group's decision to the class.

C. Optional activity: Most communities have a local preservation group. Contact a speaker from the local historical society or a preservation architect. If your community has an area with historic buildings, a field trip with a speaker could help the students develop an awareness of the history of their community and its buildings.

1. Discuss specific old buildings that the students saw on the field trip, or find photographs of old buildings in your community that still exist today and show them to the class. Example photographs of old buildings are included.

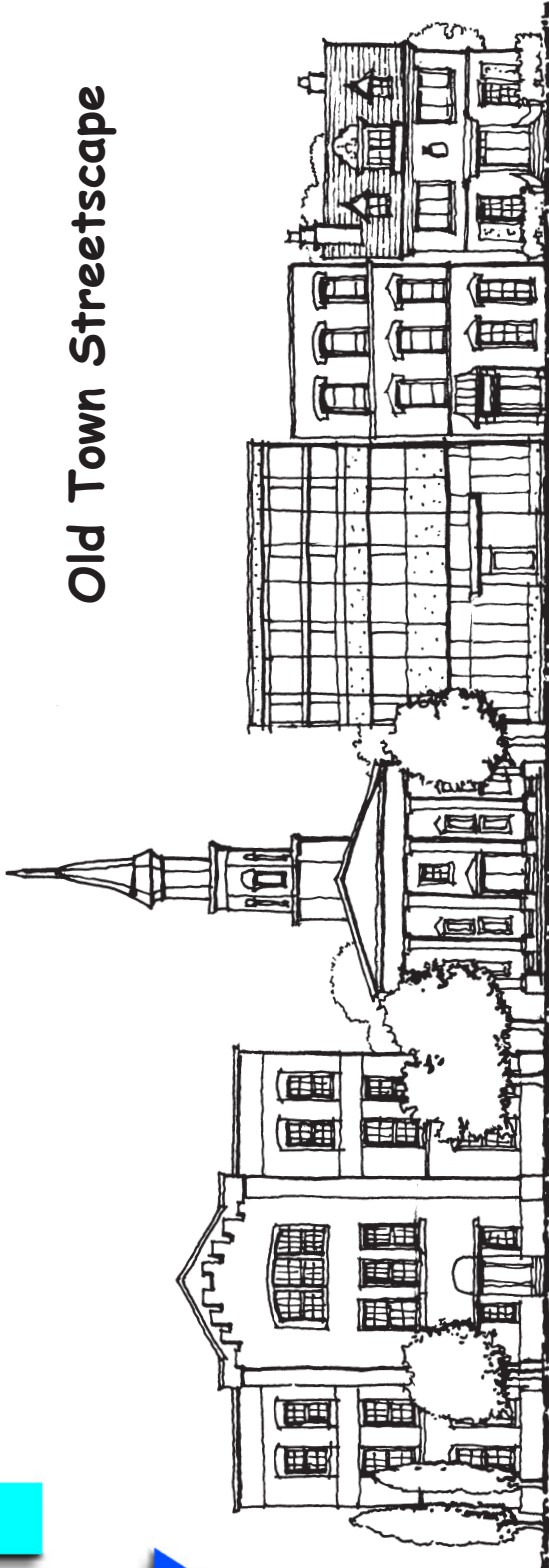
TEACHER'S EVALUATION

A. Compare and contrast the planning boards' decisions, noting any differences, and discuss the validity of the decisions to gain an understanding of the students' grasp of the material.



Fifth Grade ♦ Lesson Five

Old Town Streetscape



- Traditional old mill building
- Built in early 1900s
- Masonry construction, using brick made from local clay quarries
- Structure is sound and sturdy
- Large interior spaces
- Mill is no longer in operation and building is vacant

- Traditional style community church building
- Built in late 1800s
- Wooden structure and siding is in sound condition
- Paint and finishes are peeling and flaking, and need maintenance
- Church is currently used by a local congregation
- Attached to the rear of the church is a large garden with mature trees

- Modern office building
- Built in the 1950s
- Steel frame sound
- Exterior building cladding is in disrepair and has degraded as a result of moisture damage
- Many roof leaks
- Exterior glazing and cladding has poor insulation, contributing to high energy usage

- Historic style house
- Built in mid 1800s
- Wood frame structure with brick exterior in good condition except for isolated patches of deterioration due to age
- Interior finishes are worn
- One of a few remaining examples of this architectural style in the town
- Site of the inaugural speech of the first elected mayor

- Traditional style single family house
- Built in late 1800s
- Wood frame structure with wood siding in poor and deteriorated condition
- Shingle roof with many leaks
- Interior is severely damaged
- Broken windows allow in the weather
- Large overgrown yard at rear
- Dwelling is uninhabited/abandoned

Fifth Grade ♦ Lesson Five



Dilapidation

Fifth Grade ♦ Lesson Five



Historic - Victorian Hackley House



Fifth Grade ♦ Lesson Five



**Preservation of a House -
Clawson Historical Society
(Museum That Needs Restoration)**



Fifth Grade ♦ Lesson Five



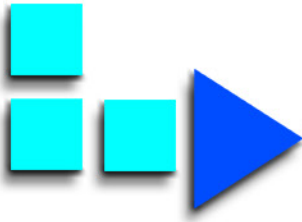
**Adaptive Re-Use - Schoolhouse
Converted into a Home (Restored)**



Fifth Grade ♦ Lesson Five



Preservation - Victorian House Restored into Apartments



Fifth Grade ♦ Lesson Six



FIFTH GRADE
LESSON NO. 6

BUILDING MATERIALS

LENGTH OF LESSON

30 - 60 Minutes

ARCHITECTURAL PRINCIPLES:

Design is accomplished by composing the physical characteristics of size, shape, texture, proportion, scale, mass and color.

Order is the arrangement and organization of elements to help solve visual and functional problems.

Balance is the creation of visual harmony by light, shadow, edges and contrast.

Symbolism is an important means of visual communication for architecture.

Visual thinking is a key to awareness of the built environment.

Sustainable design of the built environment protects the natural environment.

Aesthetics is the artistic component of architecture.

Climate and the natural environment influence design decisions.

Past, current and future technologies influence design decisions.

MATERIALS

1. "Building Materials Definitions" (included). Make copies for student teams.
2. "Building Materials" worksheet (included). Make copies for student teams.



Fifth Grade ♦ Lesson Six



VOCABULARY (See glossary for definitions)

- A. Recycle
- B. Renewable Materials
- C. Building Materials Vocabulary:
 1. Acoustical ceiling tile
 2. Aluminum
 3. Asphalt
 7. Drywall
 8. Glass
 9. Insulation
 10. Plaster
 11. Steel
 4. Brick
 5. Ceramic tile
 6. Concrete
 12. Stone
 13. Vinyl composition tile
 14. Waterproofing
 15. Wood

ACTIVITY

- A. Briefly review Lesson No. 1, "History of Cities." When people started to live together in groups, they required housing and/or buildings that were portable and made from light materials (like a teepee) for their nomadic life. These buildings were temporary and did not have a long life. Permanent cities required stronger building materials like wood, brick and stone. Are some materials used more than others for particular types of buildings?
- B. Divide the class into pairs to study the "Building Materials Definitions" (included). Assign a building material to each pair for study. The students' understanding should include where the material comes from and how it is produced. Each team will next answer the questions on the "Building Materials" worksheet (included). The following list encompasses some important building materials for study:

- | | | |
|-------------------------|------------|------------------------|
| Acoustical ceiling tile | Concrete | Steel |
| Aluminum | Drywall | Stone |
| Asphalt | Glass | Vinyl composition tile |
| Brick | Insulation | Waterproofing |
| Ceramic tile | Plaster | Wood |



Fifth Grade ♦ Lesson Six



- C. The groups should present what they've learned about their building material to the class. Each oral presentation should be brief, so the entire class can learn about all the building materials.

TEACHER'S EVALUATION

- A. Check student worksheets
- B. Utilize question-and-answer period to analyze student awareness and understanding of building materials and their use.



Fifth Grade ♦ Lesson Six



BUILDING MATERIALS

Team Members: _____

Material Researched: _____

1. Source: Where does it come from? (For example, bricks are made from clay, which comes from the ground).

2. Production: How is it shaped or formed for use as a building material?

3. Life span: How long can it be expected to last?

4. Recycling: Is it reusable? If so, how is it recycled?

5. Use: How is it used as a building material (for decoration, to support the structure, etc.)?



Fifth Grade ♦ Lesson Six



BUILDING MATERIAL DEFINITIONS

ACOUSTICAL CEILING TILE

The tile itself is made from gypsum or mineral fiber. Gypsum is a mineral that is mined from the earth. Mineral fiber is a wood fiber infused with a mineral called slag, which is a by-product of the steel process. The gypsum or mineral fiber is formed into boards and cut into tiles. Acoustical ceiling tiles can also be made from recycling old ceiling tiles. Reclaiming waste can help preserve natural resources. Another environmentally sound alternative includes manufacturing ceiling tiles with recycled paper and corn or wheat binders. Corn and wheat binders are renewable agricultural materials that differ from traditional binders because they aren't made from petroleum-based chemicals. Small holes are then punched into the tiles to help absorb sound. This helps prevent the sound waves from bouncing off hard surfaces, creating echoes. Acoustical tile is generally used on ceilings of rooms where the control of noise is important. It can also be used on walls with special acoustical requirements, such as in recording studios.

ALUMINUM

Aluminum is a metallic element found in silicate compounds in clay and feldspar. It is often combined with other metals to form alloys, which have greater strength than pure aluminum. Alloys are formed by combining the metals in appropriate proportions, then heating the mixture to a high temperature, where it becomes a molten substance that is formed into shapes by being forced through a mold and then rapidly cooled. This is called extrusion. Aluminum also can be formed into sheets. It resists rusting and is very lightweight.

Aluminum can be used as a structural component or as the outer covering of a building. It is widely used in the automotive industry, as well as for sports equipment (baseball bats) and recreational equipment (boats, planes, bleacher seating). It is popular in home use, for outdoor furniture and cooking utensils, as well as in packaging (aluminum cans).

It is highly recyclable in its original form or can be re-melted to make new items.



Fifth Grade ♦ Lesson Six



ASPHALT

Asphalt is a tar-like substance, found in the earth in a natural state or produced by evaporating petroleum. Petroleum is an oil liquid solution of hydrocarbons. When the liquid is removed (through evaporation), what is left is the tarry substance called asphalt.

Asphalt is used primarily as a surface for roads and playground areas.

Asphalt can last for up to 30 years or so, depending on its use. It can be recycled by grinding it up and reforming it.

BRICK

Brick is made from clay, which comes from the earth. The clay is molded into shapes and then baked in a kiln at a very high temperature, until it is dry and hard.

Bricks come in many different colors and often are used for the exterior finish of buildings. Bricks also are used for the interior walls of buildings, for fireplaces and even as pavers in walkways and for streets. Brick has been known to last for hundreds of years on buildings and about half that when used for roads, where they are subjected to heavy traffic and wear.

When brick buildings are demolished, the bricks can be reclaimed for reuse in other buildings, if properly cleaned by removing the old mortar from their surface. They also can be crushed and used as material for drainage.

CERAMIC TILE

Ceramic tile is made from clay and/or porcelain minerals. The material is fired into various tile shapes and sizes. Some tiles have a glazed finish. Glazing the tile provides a hard, shiny surface that is fused to the clay by using a silicate (sand that is melted to a liquid state).

Ceramic tiles are used for decoration on walls and floors, as well as for countertops and tabletops. The addition of certain metallic ores can create a variety of colors and finishes.

Ceramic tile may be recycled by breaking it into pieces and creating mosaics for art works.



Fifth Grade ♦ Lesson Six



CONCRETE

Concrete is a mixture of sand, aggregate (stone or gravel), cement and water. When the ingredients are mixed in the proper proportions, the result is concrete, which is in a liquid form that is poured, then cured until the water has evaporated and it becomes a solid, strong material.

Concrete can be poured to create roads, driveways, sidewalks, floors and roofs. In its liquid state, it also can be poured in types of molds that form concrete blocks. It can be used to make columns and beams, as well as walls that support a building. Concrete can be formed into many different shapes, including arches and domes. It can be used to make stairs or swimming pools.

Concrete can last for an average of 60 years, if not exposed to great amounts of salt or environmental cycles of freezing and thawing. The older concrete gets, the stronger it becomes. If crushed, concrete can be reused as a base for road and utility construction. Recycling concrete can save energy and landfill costs from construction debris.

DRYWALL

Drywall is made from the mineral gypsum, which is mined from the earth as a powdery substance. It is mixed, compressed and dried into a sheet. Then a thin layer of dense cardboard, made from wood, is placed on both sides of the gypsum. These three layers together make up the final product called "drywall." This process does not use plaster, which requires water; therefore, the term "drywall."

Drywall board is used as a finishing material for ceilings and walls. Drywall is usually nailed or screwed into place. Then drywall cement (putty) is placed over the nail heads and joints between adjacent drywall boards. After the cement is sanded smooth, the surfaces are usually painted. Used drywall can be recycled.

GLASS

Glass: A hard, brittle, transparent substance, sometimes translucent, not too often opaque, that is made by fusing silicates (usually sand), potash (potassium carbonate) and lime; all the elements in glass come from the earth.

Fusing: To melt, to liquefy by heat, to make fluid.



Fifth Grade ♦ Lesson Six



Silica: Silicon dioxide, a hard mineral found in the form of sand, quartz, opal.

Potash: Potassium carbonate, a hard, white, brittle crystalline compound.

Lime: A hard, white substance, calcium oxide, obtained by applying heat to limestone, which is a rock composed of the minerals calcite or dolomite or both.

Glass comes in many forms, such as plate glass for windows and mirrors. When heated, it becomes very supple and can be blown into vases and bottles, and rolled or molded to create other forms. Depending on what is added to the heating process (metallic oxides or pigments), glass can take on different colors and characteristics. It often is used, for example, to create stained glass.

Glass can last forever, but it is always in a liquid state, a very slow, thick, liquid state. Glass can be reheated and reused to make more glass, or it can be broken up and used as mosaics in art work.

INSULATION

Insulation comes in a variety of forms. It can be a "cementitious" (hard but very porous) material made from concrete that can be attached to other materials with nails, or it can be a fibrous material "blown" into an attic or wall. Insulation also comes in batt form, which is usually made from fiberglass (fine threads of glass) with a paper or foil backing. Batt insulation comes in rolls for easy installation. Another form of insulation is styrofoam, a lightweight plastic-like material that comes in solid sheets or balls.

As a building material, insulation is used to keep hot air out during the summer and cold air out during the winter. It is used in walls, ceilings and roofs. Styrofoam insulation is used as an insulator against impact during shipping of breakable or delicate items. It absorbs the energy of impact that could dent, bend or break items being transported. Insulation material also is used for coolers; it helps retain the cold inside the cooler for food or drinks. Some insulation helps absorb sound waves from penetrating through walls or roofs. This is important in theaters and auditoriums.

Most insulation will last as long as the building in which it is found, unless damaged by water.



Fifth Grade ♦ Lesson Six



PLASTER

Plaster is a pasty mixture of lime, sand and water that is spread on a base form. This base form is called "lath," and can be either a special gypsum board lath or a metal lath that looks like chicken-wire fencing. The plaster is smoothed out and, when dry, is sanded to a smooth finish. This surface forms the wall or ceiling of a room. It is usually painted for the final finish.

As a surface material, plaster has generally been replaced with drywall. Traditional plaster, more often found in older buildings, is now typically used to create fancier finishes like archways or coves in ceilings and walls.

Plaster can also be used to create sculptures in art.

STEEL

Steel is made from natural materials of iron ore, carbon and nickel. These materials are mixed together in appropriate proportions and then heated together until they become a red-hot molten liquid, which is then cooled down to a solid. During cooling, the steel can be pushed through forms (extruded) to create different shapes of steel.

These shapes are used to form the steel frame structure of buildings. The shapes can be in the form of a beam that looks like an "I," known as an "I-beam," or in square "L" shapes, known as angles. They also can be square, rectangular and round shapes. These shapes are used to support buildings. They become the beams and columns of a building.

Steel has strength and durability. It can be used in buildings, cars, furniture and as a material for sculptures (art work). Existing steel can be melted down and re-used to make new steel.

Steel can last hundreds of years if protected from the elements and from the process called oxidation, which causes rust. Rust can slowly eat away (erode) the steel and make it weak.



Fifth Grade ♦ Lesson Six



STONE

Stone is a natural material found in the earth. It is formed from the earth's pressure, which makes it hard and durable.

Stone, in its natural state, is excavated or removed from the ground. Usually, it is in a very large three-dimensional form of irregular shape. A stone cutter can cut stone into a variety of shapes. Some stone shapes can be cut with the same thickness, like slices of bread, and used as a decorative pattern for walls and floors. Some stones, when used as a decorative finish for a wall or floor, can be polished and given a very smooth, shiny surface. Stone also can be left as a natural "boulder" and used to form a "retaining wall" for holding the earth back on one side of an area.

Stone can last for hundreds of years. When crushed to pebble size, it can be re-used for drainage material.

VINYL COMPOSITION TILE

Vinyl composition tile is a mix of special plastic binder, fillers and colored pigments, and is used primarily for floor covering. It is usually cut into uniform squares of 12 x 12 inches. The vinyl is made from polyvinyl chloride, which is formed by the joining of two or more like molecules to form a more complex molecule. This special plastic in its liquid state is dried by heat that fuses the raw materials into a durable sheet. The durable sheet is then bonded to a felt backing. A clear layer of polyvinyl chloride is then added to the top of the colored durable sheet to protect the coloring.

Vinyl composition tile can last for 30 years, but often is replaced sooner because of new colors and patterns. It can be recycled to make more vinyl composition tile.

WATERPROOFING

Waterproofing prevents water from entering and damaging the exterior and interior of buildings.



Fifth Grade ♦ Lesson Six



One type of waterproofing is sheet waterproofing; it is usually a fused plastic called polyvinyl that is attached to the outside of a wall or under a floor. Another type of waterproofing is a rubberized liquid or an oil-tar type substance that is rolled onto outside surfaces.

Waterproofing is attached to the exterior of basement walls, underneath concrete floor slabs, under showers in a bathroom and in other areas where water damage could be a problem.

WOOD

Wood comes from trees. Wood is used for framing buildings and for supporting the building itself. It also is used for flooring, decking, doors, stairways, furniture, window frames, bridges, artwork, boats and trim work around windows, doors and baseboards. Some of the species of trees that are used for constructing the framework of a building are Southern pine, Douglas fir and white pine. Species of trees that are employed for decorative use include maple, oak, birch, redwood and cedar.

Trees are cut down in the forest and sent to the sawmill as cylinder-shaped logs. There they are stripped of their bark and cut into uniform planks. The most common plank size is a "2 by 4" or a "2 by 6." Planks can come in a variety of widths and lengths.

Wood lasts for an average of 80 years, depending on if it is protected from repetitive wetting and drying cycles and from insects such as termites.

The bark of wood can be used in landscaping as wood chips to give a finished look around plants and trees. It also helps to keep moisture in the ground around plants, so less watering is needed. Wood can be recycled as fiber for making composite board.

Sustainable wood comes from forests that are managed so that we don't deplete our wood supply.



Fifth Grade ♦ Lesson Seven



FIFTH GRADE
LESSON NO. 7

OUR ENVIRONMENT

LENGTH OF LESSON:

30 - 60 Minutes

ARCHITECTURAL PRINCIPLES:

Design is accomplished by composing the physical characteristics of size, shape, texture, proportion, scale, mass and color.

Order is the arrangement and organization of elements to help solve visual and functional problems.

Balance is the creation of visual harmony through the use of color and the manipulation of form.

Visual thinking is a key to awareness of the built environment.

Sustainable design of the built environment protects the natural environment.

Climate and the natural environment influence design decisions.

Past, current and future technologies influence design decisions.

Nature is a model for architectural forms and shapes.

Social structure, culture and the built environment have a direct influence on one another.



Fifth Grade ♦ Lesson Seven



MATERIALS

1. A copy of the "Community Care for our Environment" chart (included) for each student
2. A copy of the "Personal/Family Care for our Environment" chart (included) for each student
3. Eight standard poster boards, titled as follows:
 1. "Community Land Use"
 2. "Community Water Use"
 3. "Community Air Supply"
 4. "Community Energy Supply"
 5. "Personal Land Use"
 6. "Personal Water Use"
 7. "Personal Air Supply"
 8. "Personal Energy Supply"
4. Pencils and paper
5. Glue

VOCABULARY (See glossary for definitions)

- | | | |
|----------------------|-------------------|-------------------|
| 1. Environment | 3. Overpopulation | 5. Wilderness |
| 2. Natural Resources | 4. Pollution | 6. Sustainability |

BACKGROUND INFORMATION

1. As our nation developed and our cities grew, we have relied on our natural resources. Natural resources are things that are made by nature, not manufactured by people. They include:
 - a. Water
 - b. Trees
 - c. Rocks
 - d. Air
 - e. Oil
 - f. Coal
 - g. Iron Ore
 - h. Other minerals in the ground (diamonds, gold, silver, copper, etc.)



Fifth Grade ♦ Lesson Seven



2. As we have built our cities, some of these natural resources have been depleted more quickly than they can be reproduced by nature. Forests have been cleared for construction of cities. Mining has produced large open pits in the ground. Some resources, like oil, are available in great quantity only from distant areas that make their transportation costs very expensive. With the development of manufacturing plants, industrial processes have produced byproducts that have escaped into the air, making it unsafe to breathe, and entered the water, making it unsafe for drinking and/or use for recreation. This is called "pollution," and it damages the environment.

ACTIVITY

- A. Hand out copies of the "Community Care for our Environment" chart to each student. Discuss how we can preserve and make more efficient use of our land, water, air and energy. This is called Sustainability. Students should be aware of environmental issues and have some of their own ideas to add to the following lists.
 1. Land use:
 - a. Control suburban sprawl with less destruction of our wilderness and wild-life areas;
 - b. Alternate means of transportation. Allow for mass transit to cut down on parking lots for cars.
 - c. More efficient land-use planning for residential, shopping, office, manufacturing, school and park areas.
 - d. Combine areas and mix uses so that people can easily walk from home to shopping and work.
 2. Water use:
 - a. Stop pollution into rivers and lakes;
 - b. Recycle water by filtration; use rainwater for irrigation and flushing toilets;
 - c. Less water use by private citizens and industry by using water-efficient fixtures;
 3. Air supply:
 - a. Stop air pollution caused by building waste and vehicle emissions. Recycle and promote clean sources of energy;
 - b. Use of equipment that reduces air pollution;
 - c. Develop materials that do not pollute the air when used.



Fifth Grade ♦ Lesson Seven



4. Energy supply:
 - a. Build more energy-efficient buildings;
 - b. Design more fuel-efficient transportation vehicles;
 - c. Promote renewable energy sources like the wind and sun;
 - d. Develop more efficient industrial production.

- B. On their student handout of the "Community Care for our Environment" chart, have students write their ideas under each of the four categories in the space provided.

- C. Hand out copies of the "Personal/Family Care for our Environment" chart to students. Ask them what they personally can do to assist in energy conservation and air and water pollution control in their homes and everyday lives. Have each student discuss his/her ideas and write them in the space provided for each category.

- D. Have the class prepare 8 individual poster boards, one for each category on the two charts. The students should transpose their comments from their hand-out charts to the appropriate poster boards, for display. The boards should be titled for each category, and they can be enhanced by the students with art-work and graphics, based on the graphic ideas illustrated on the handouts.

TEACHER'S EVALUATION

- A. Analyze each student's awareness and understanding of the environmental issues that affect cities and the way we live.



Fifth Grade ♦ Lesson Seven



Community Care For Our Environment

Land Use



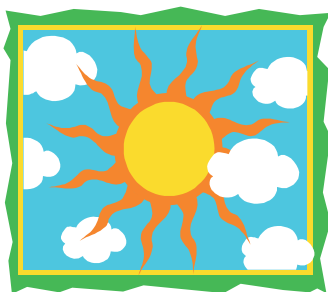
- Control suburban sprawl
- Fewer roads

Water Use



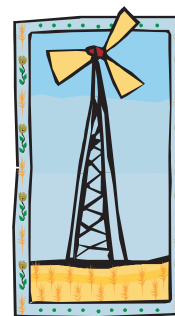
- Stop 'dumping' in rivers and lakes
- Recycle water by filtration

Air Supply



- Stop air pollution
- Use equipment to clean the air

Energy Supply



- Build energy efficient buildings
- Design energy efficient vehicles
- Develop new energy sources, like the wind and sun



Fifth Grade ♦ Lesson Seven



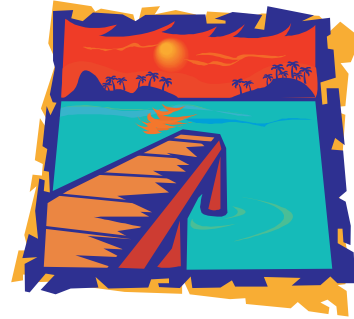
Personal/Family Care For Our Environment

Land Use



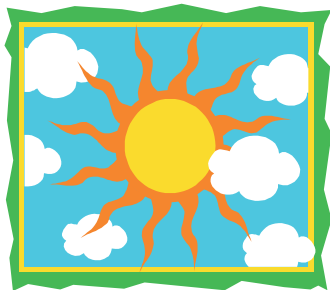
- Reduce littering
- Recycle household items (to reduce landfill)
- Careful use of fertilizers to reduce chemical run-off into waterways
- Cultivate lawn to reduce rainwater run-off

Water Use



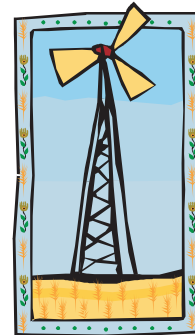
- Turn off faucet; do not leave running when not in use
- Replace leaky washers
- Shower in preference to a bath, and limit the length of time

Air Supply



- Do not refuel vehicles in very hot temperatures to reduce ozone
- Do not use gas lawn mowers in very high temperatures

Energy Supply



- Switch off lights when leaving a room
- Reduce winter furnace temperatures in the home
- Reduce air conditioning use in summer
- Use hot water only when necessary
- Do not shower longer than necessary



Fifth Grade ♦ Lesson Eight



FIFTH GRADE
LESSON NO. 8

DESIGN A CITY - PART 1

LENGTH OF LESSON

60 Minutes

ARCHITECTURAL PRINCIPLES:

Design is accomplished by composing the physical characteristics of size, shape, texture, proportion, scale, mass and color.

Order is the arrangement and organization of elements to help solve visual and functional problems.

Balance is the creation of visual harmony through the use of color and the manipulation of form.

Form follows function is a design approach where the form of the building is determined by the function of its spaces and its parts.

Symbolism is an important means of visual communication for architecture.

Visual thinking is a key to awareness of the built environment.

Sustainable design of the built environment protects the natural environment.

Climate and the natural environment influence design decisions.

Sustainable design of the built environment protects the natural environment.

Nature is a model for architectural forms and shapes.

Social structure, culture and the built environment have a direct influence on one another.

The creative process is basic to design.

Architecture satisfies emotional and spiritual needs in addition to physical needs.

Past, current and future technologies influence design decisions.



Fifth Grade ♦ Lesson Eight



MATERIALS

1. "Undeveloped Land Use Map" for city model (included)
2. "Sample Poster Board of One Major City Block"
3. Standard poster boards (approximately 18 x 24 inches) (See Activity "C" for quantity of poster boards)
4. Colored pencils or markers

VOCABULARY (See glossary for definitions)

1. Land use
2. Master plan

BACKGROUND INFORMATION

1. Lessons No. 8, 9 and 10 are a sequence of lesson plans that conclude the fifth- grade program. The class will plan and build a city during the three final lessons. The length of the lessons may need to be adjusted by the teacher as the project progresses toward completion. These lessons will use information students learned in Lessons No. 1-7 of the fifth grade, as well as lessons of previous grades.

ACTIVITY

- A. The class will plan a city that will contain many of the land uses that have been studied in previous lessons (see Lesson No. 3 for reference). On a large sheet of paper or on an overhead projector, show the class the "Undeveloped Land Use Map." The teacher should lead the class in discussing a simple master plan for their new city. Decide what the city will look like. Should they add a railroad line or large freeway? List the land uses that will be included in the city on the chalkboard. This list may include:

- | | |
|------------------------|------------------------------|
| 1. Individual homes | 7. Libraries |
| 2. Apartment buildings | 8. Factories |
| 3. Shopping areas | 9. City Hall |
| 4. Parks | 10. Police and fire stations |
| 5. Schools | 11. Office buildings |
| 6. Religious buildings | 12. Hospitals |



Fifth Grade ♦ Lesson Eight



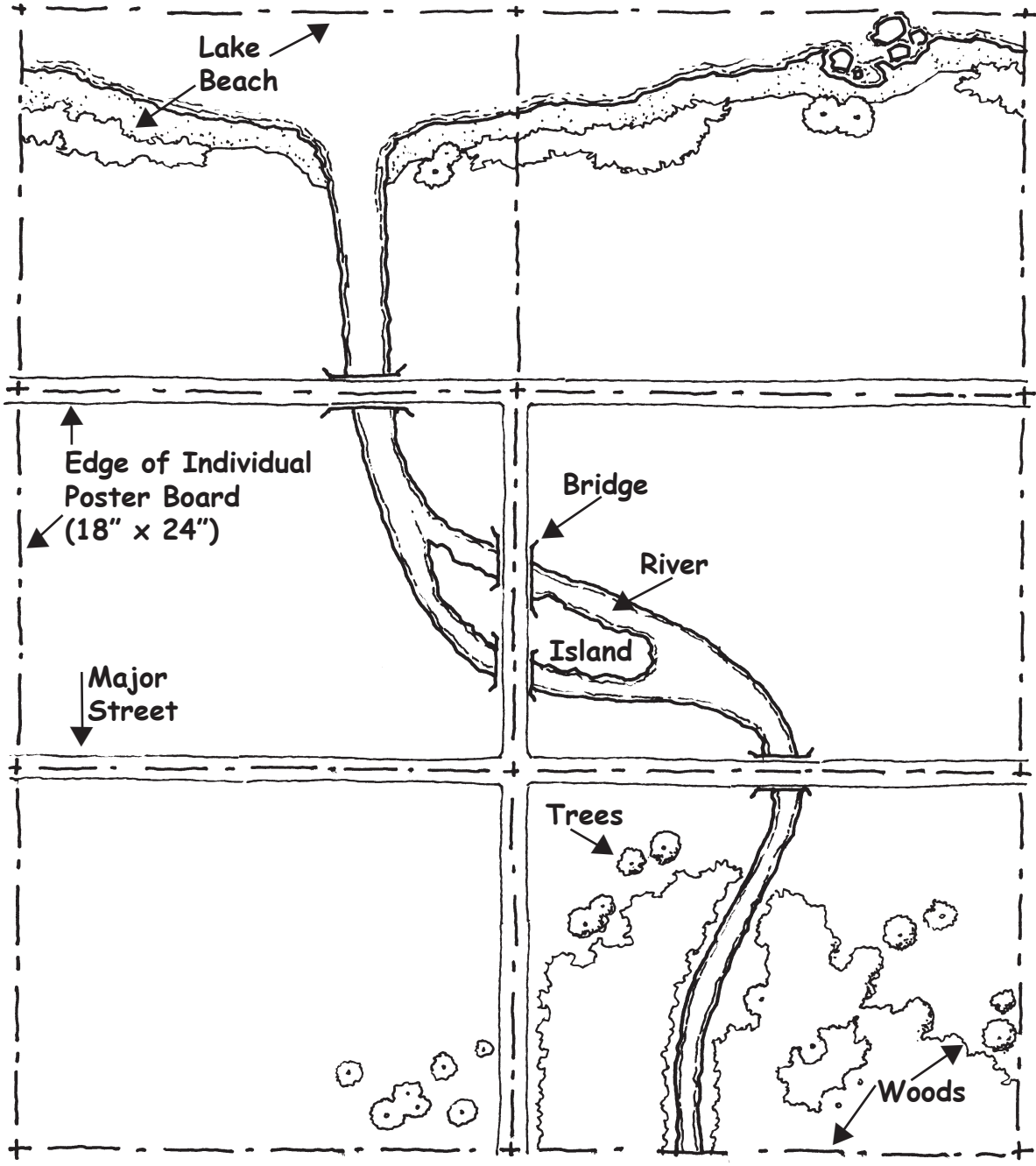
- B. As a class, discuss and locate the land uses on the master-plan drawing ("Undeveloped Land Use Map") of the city. The class should decide where all land uses should be located based on how they relate to one another, and explain their reasons why. For example, neighborhood schools should be located in the residential area. Also locate the major roads, railways, etc.
- C. Divide the class into groups, assign each group related land uses, and hand out poster board(s). Near the edge of each poster board, the students should draw a line around the entire perimeter. The inside rectangle represents the four sides of a city block. The outside rectangle represents one-half of the surrounding streets. The students should draw other elements, such as railroads, large freeways, lakes, etc., on their poster boards.
- D. Decide the location of each land-use (poster board) in the master plan. Place the poster boards together. This will form the total city plan. In order to reassemble the city map for future lessons, make sure to keep a record of how the master plan boards are assembled.
- E. The development of the city master plan will continue in Lesson No. 9.

TEACHER'S EVALUATION

- A. Evaluate the development and progress of the students' planning and construction of the city master plan, as well as their understanding of the concepts.

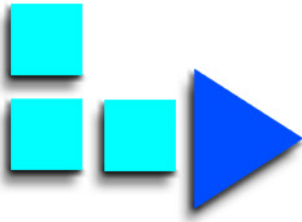


Fifth Grade ♦ Lesson Eight



Undeveloped Land Use Map for City Model

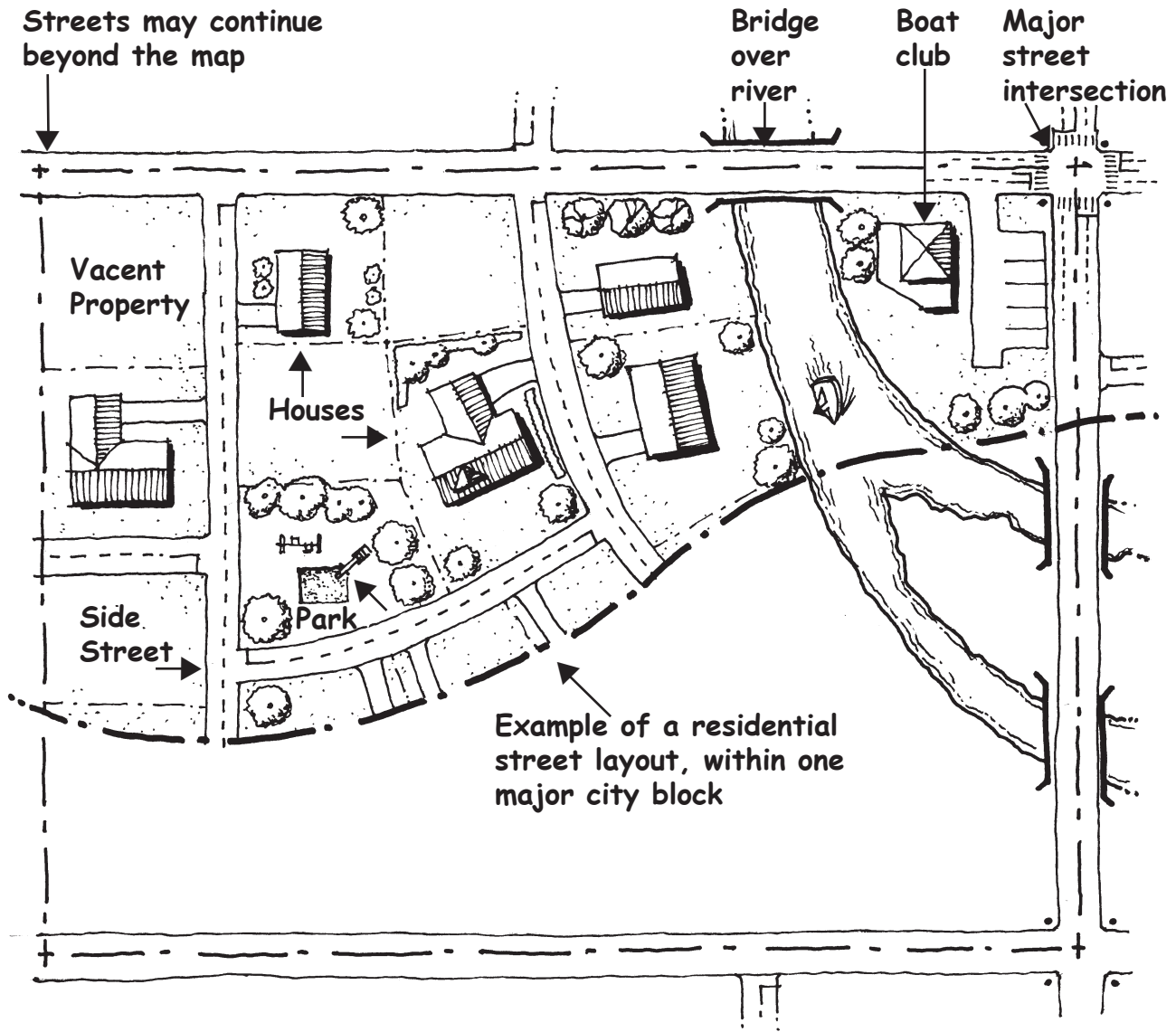
Note Scale: 1/8" on the map = 1" on poster board
(1" on poster board = 20 feet in real life)



Fifth Grade ♦ Lesson Eight



Note: The cut out building patterns provided are sized (scaled) to relate to the actual poster board size



Sample Poster Board of One Major City Block

Note Scale: 1/4" on the map = 1" on poster board
(1" on poster board = 20 feet in real life)



Fifth Grade ♦ Lesson Nine



FIFTH GRADE
LESSON NO. 9

DESIGN A CITY - PART 2

LENGTH OF LESSON

60 Minutes

ARCHITECTURAL PRINCIPLES:

Design is accomplished by composing the physical characteristics of size, shape, texture, proportion, scale, mass and color.

Order is the arrangement and organization of elements to help solve visual and functional problems.

Visual relationships are determined by light, shadow, edges and contrast.

Balance is the creation of visual harmony through the use of color and the manipulation of form.

Form follows function is a design approach where the form of the building is determined by the function of its spaces and its parts.

Nature is a model for architectural forms and shapes.

Mass creates form, which occupies space and brings into being a spatial articulation.

Symbolism is an important means of visual communication for architecture.

Visual thinking is a key to awareness of the built environment.

Sustainable design of the built environment protects the natural environment.

Social structure, culture and the built environment have a direct influence on one another.

Design is experienced through human sensory perception.

The creative process is basic to design.



Fifth Grade ♦ Lesson Nine



Aesthetics is the artistic component of architecture.

Climate and the natural environment influence design decisions.

Architecture satisfies emotional and spiritual needs in addition to physical needs.

Past, current and future technologies influence design decisions.

MATERIALS

1. Paint and brushes to create roads, lakes, etc.
2. Colored pencils
3. Building cutout sheets with tabs for gluing or taping (included); photocopy for student use
4. Tape and glue
5. Scissors

VOCABULARY (See glossary for definitions)

1. Land use planning
2. Master plan

BACKGROUND INFORMATION

1. Lessons No. 8, 9 and 10 are a sequence of lesson plans that conclude the fifth-grade program. The class will plan and build a city during the three final lesson plans. The time allotted for the lesson plans may need to be adjusted by the teacher as the project progresses toward completion.



Fifth Grade ♦ Lesson Nine



ACTIVITY

- A. In the previous lesson, each group was assigned a separate land use(s) as part of the city master plan. In this lesson, each group will design the location of and construct buildings, all reflecting their assigned land use(s), which will then be placed on their city block(s) (poster board(s)).
- B. Have the groups from Lesson No. 8 plan their individual city block(s). The students will need to incorporate side streets and locations of different land uses, which may cross over from one poster board to another. Various groups should work together where necessary.

NOTE:

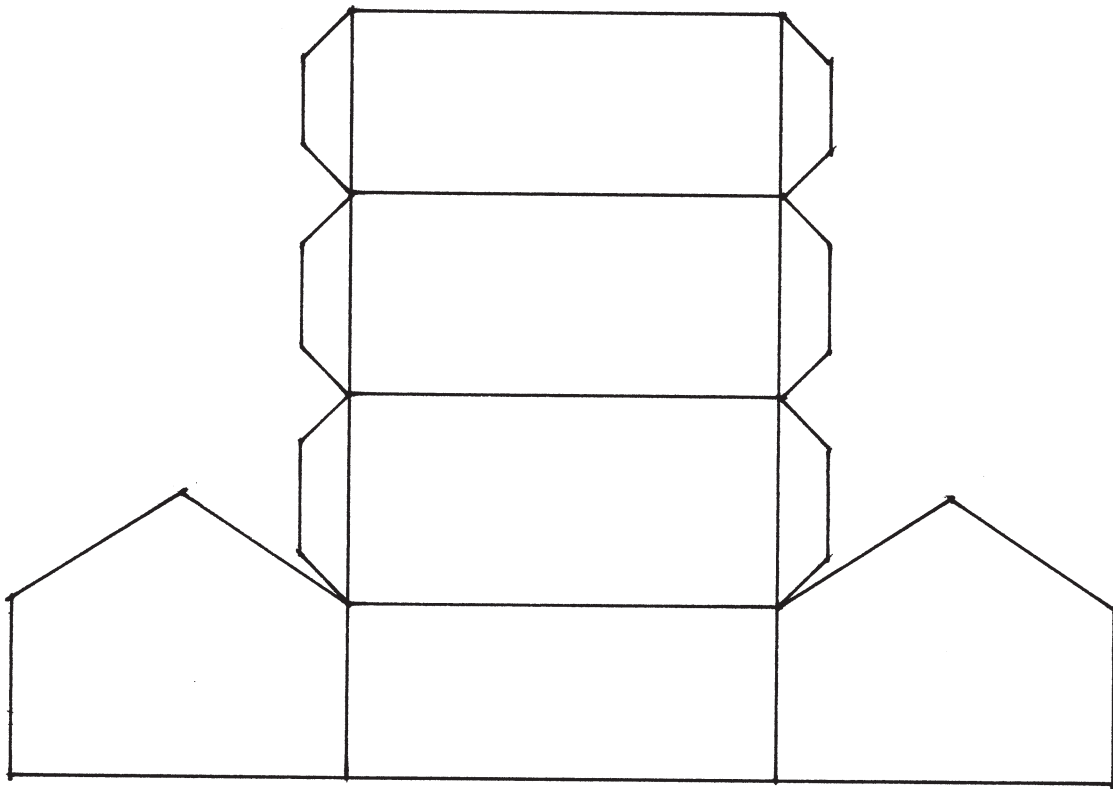
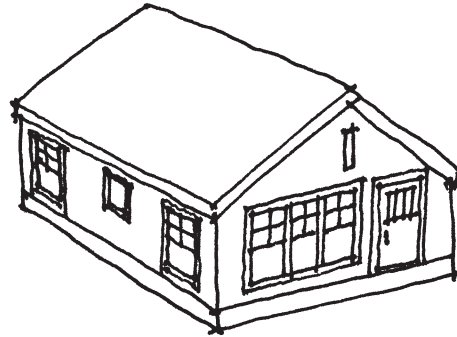
1. The students may start with the poster boards laid on the floor and spaced apart so that each group can plan their boards in the same relationship to one another as in the final assembly.
 2. The teacher may offer guidance in the spacing of side streets within each block, based on the size of the cutout buildings.
- C. The students in each group should determine how many buildings are necessary for their master plan.
 - D. Using the building cutout sheets, the students should color the building shapes before they cut them out; then cut out the building shapes.
 - E. Have the students assemble their buildings and other constructions (trees, cars, telephone poles, etc.).
 - F. Have the students place their buildings on their city block(s), but do not attach them to the poster boards.
 - G. The city master plan will continue in Lesson No. 10.

TEACHER'S EVALUATION

- A. Monitor the development and progress of the student planning and construction of the city master plan.



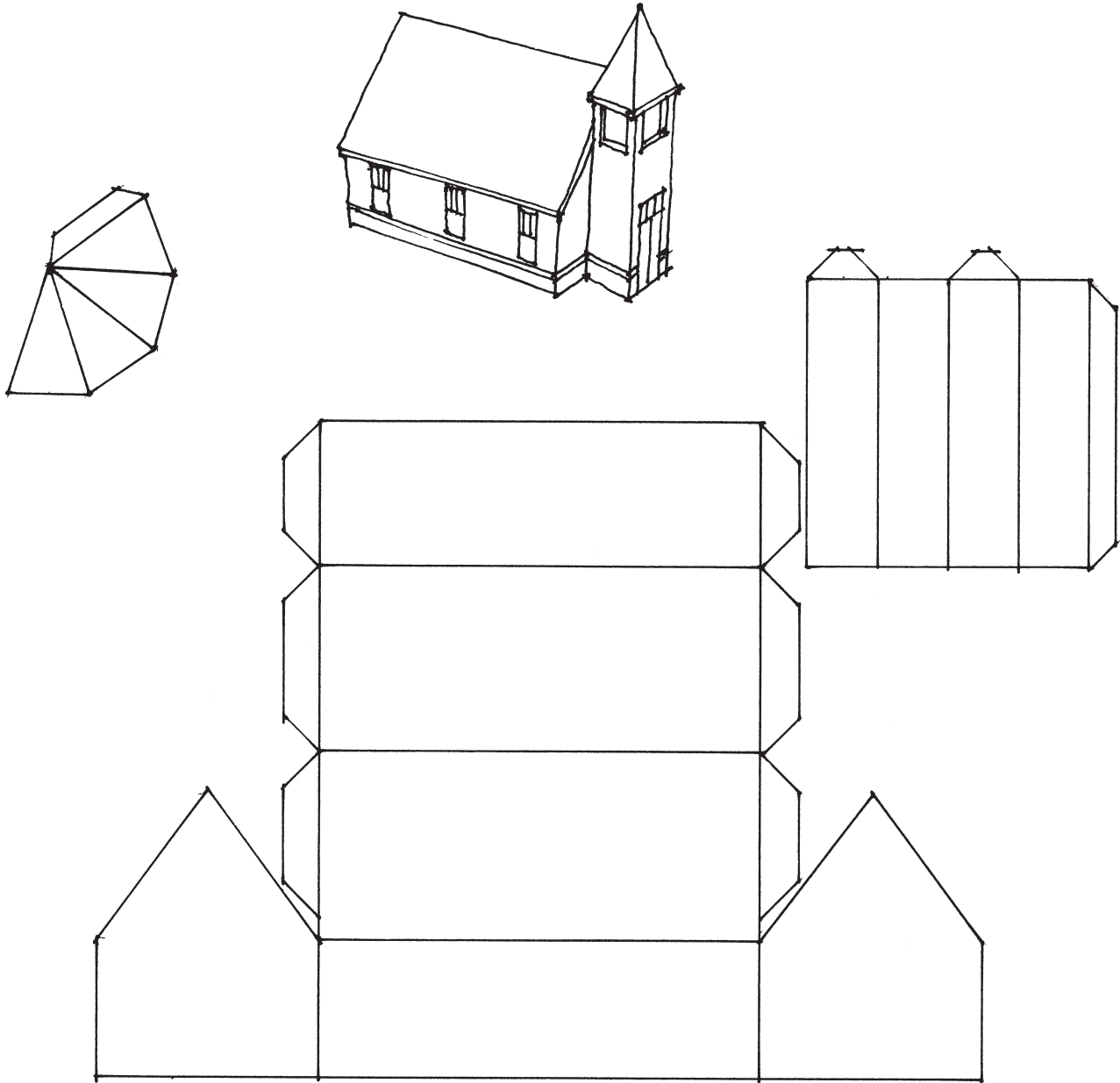
Fifth Grade ♦ Lesson Nine



Building Cutout Pattern #1 - A House



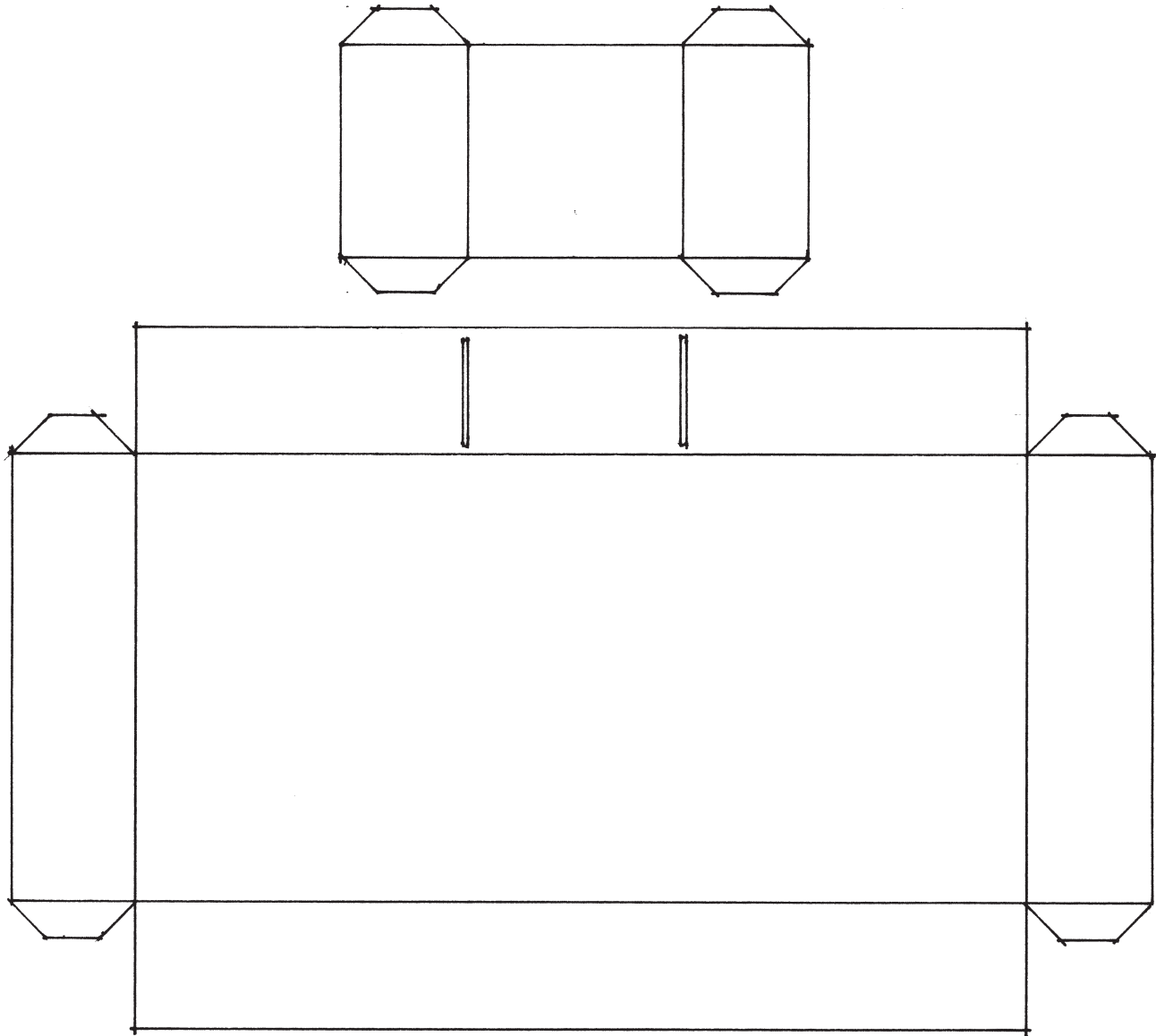
Fifth Grade ♦ Lesson Nine



Building Cutout Pattern #2 - A Church



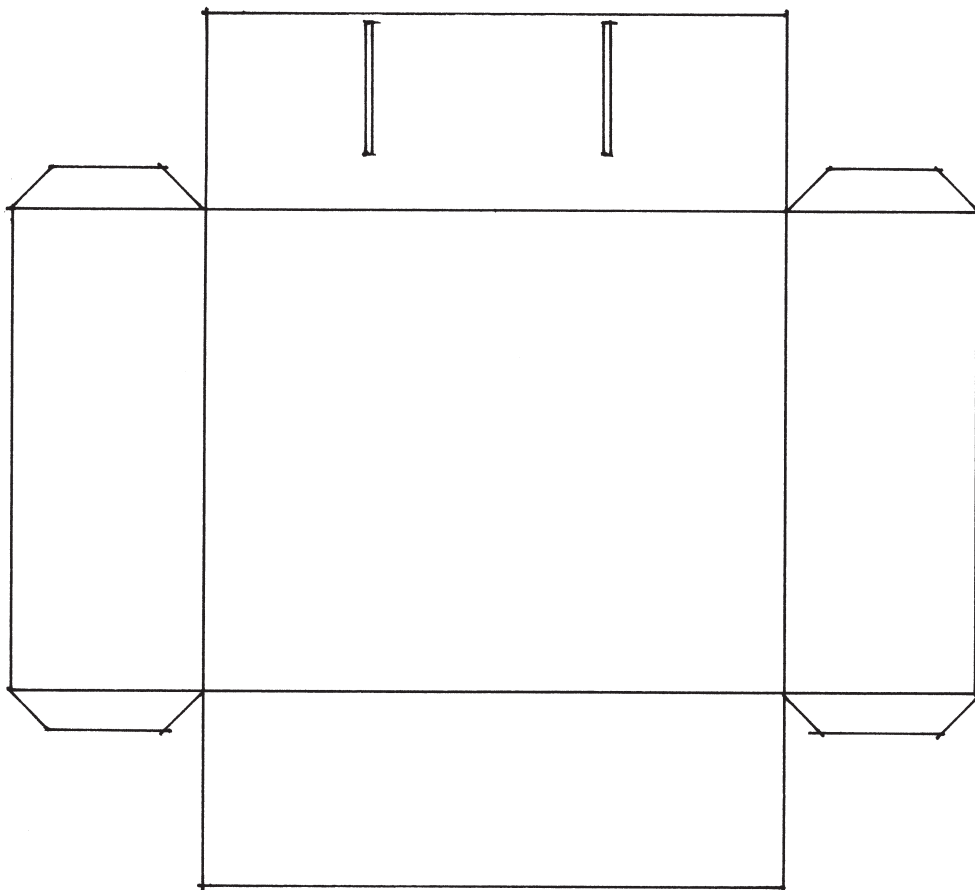
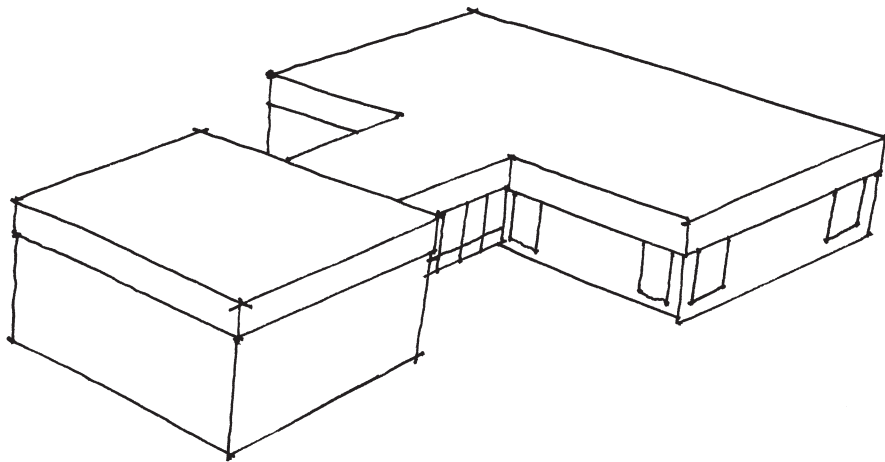
Fifth Grade ♦ Lesson Nine



Building Cutout Pattern #3 - An Elementary School
or Portion of a High School



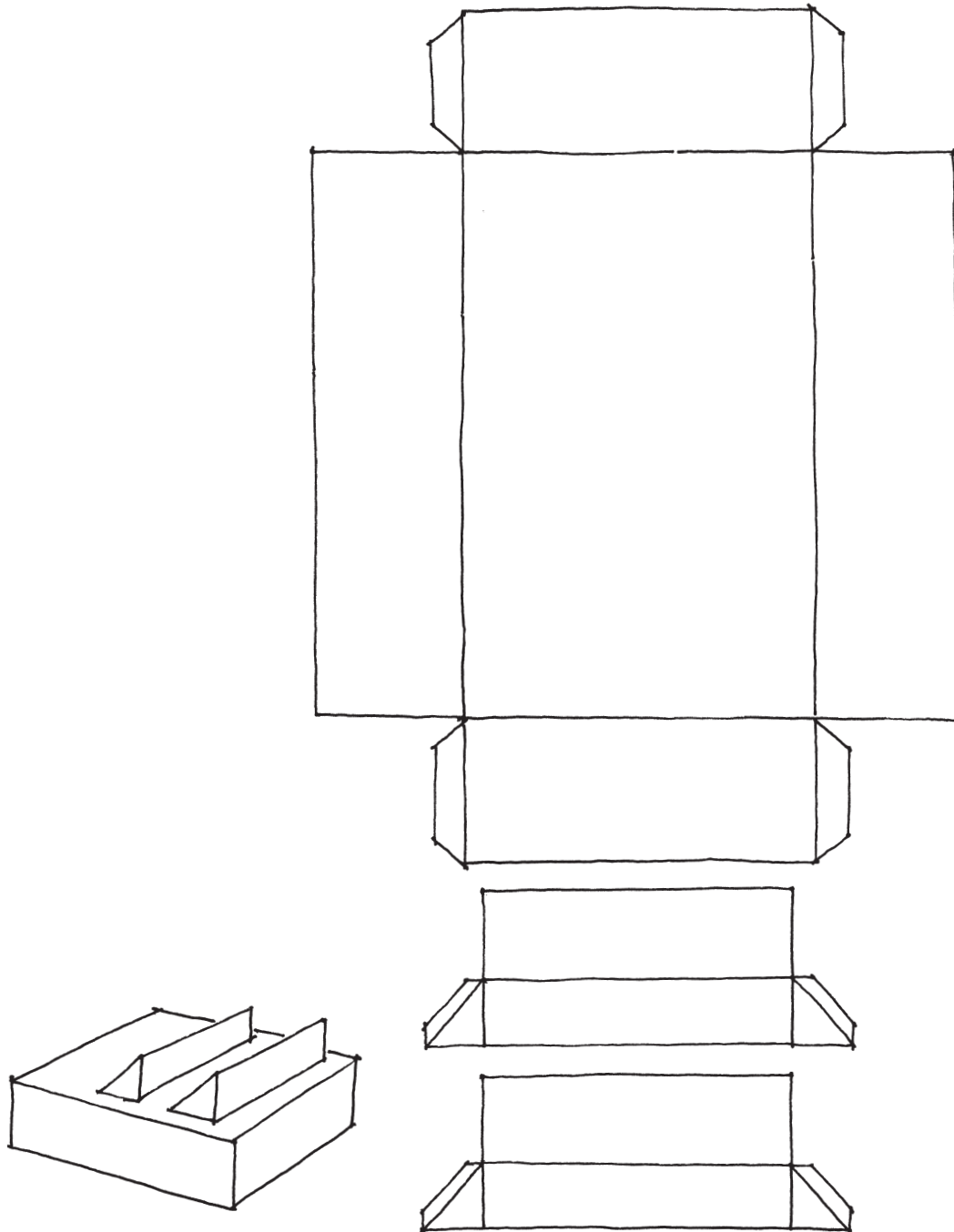
Fifth Grade ♦ Lesson Nine



Building Cutout Pattern #4 - A Gym, to be Added to an Elementary School to Make a High School



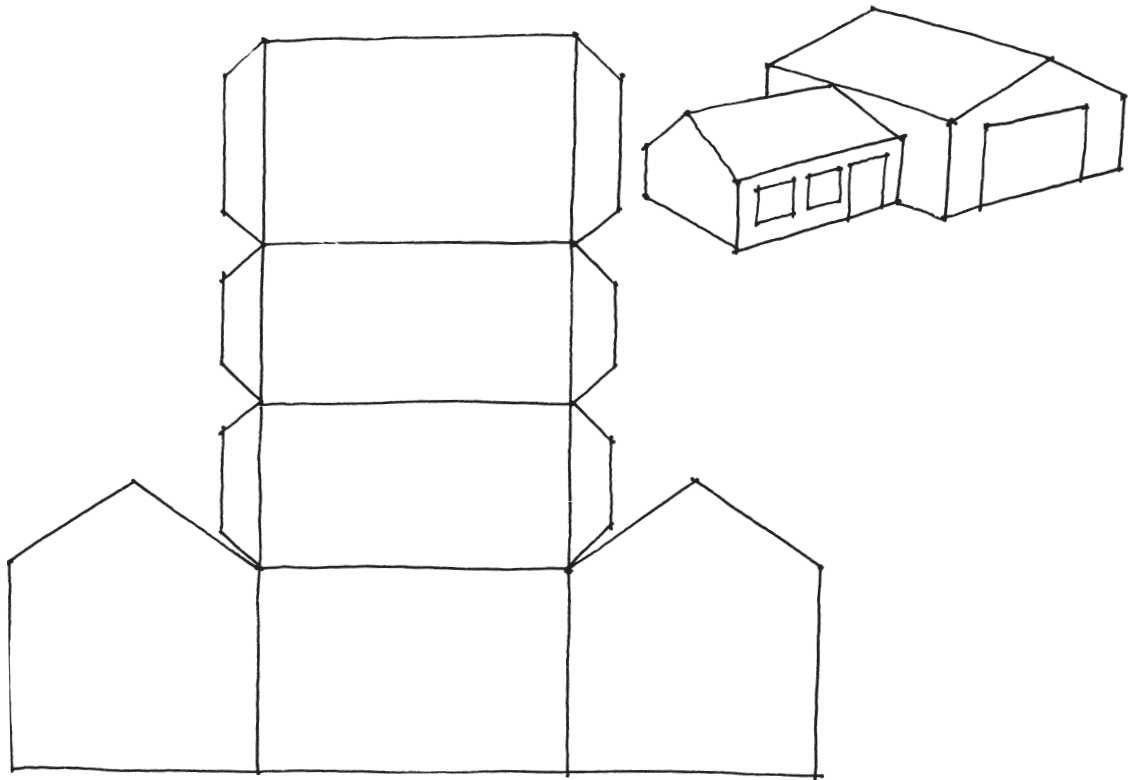
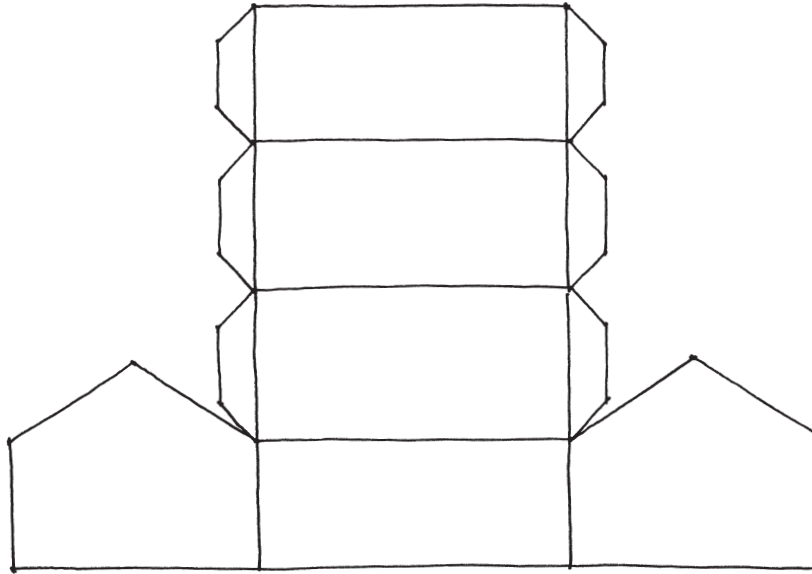
Fifth Grade ♦ Lesson Nine



Building Cutout Pattern #5 -
Commercial Buildings/Shops



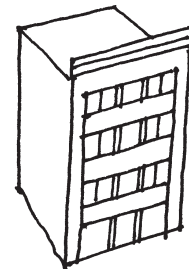
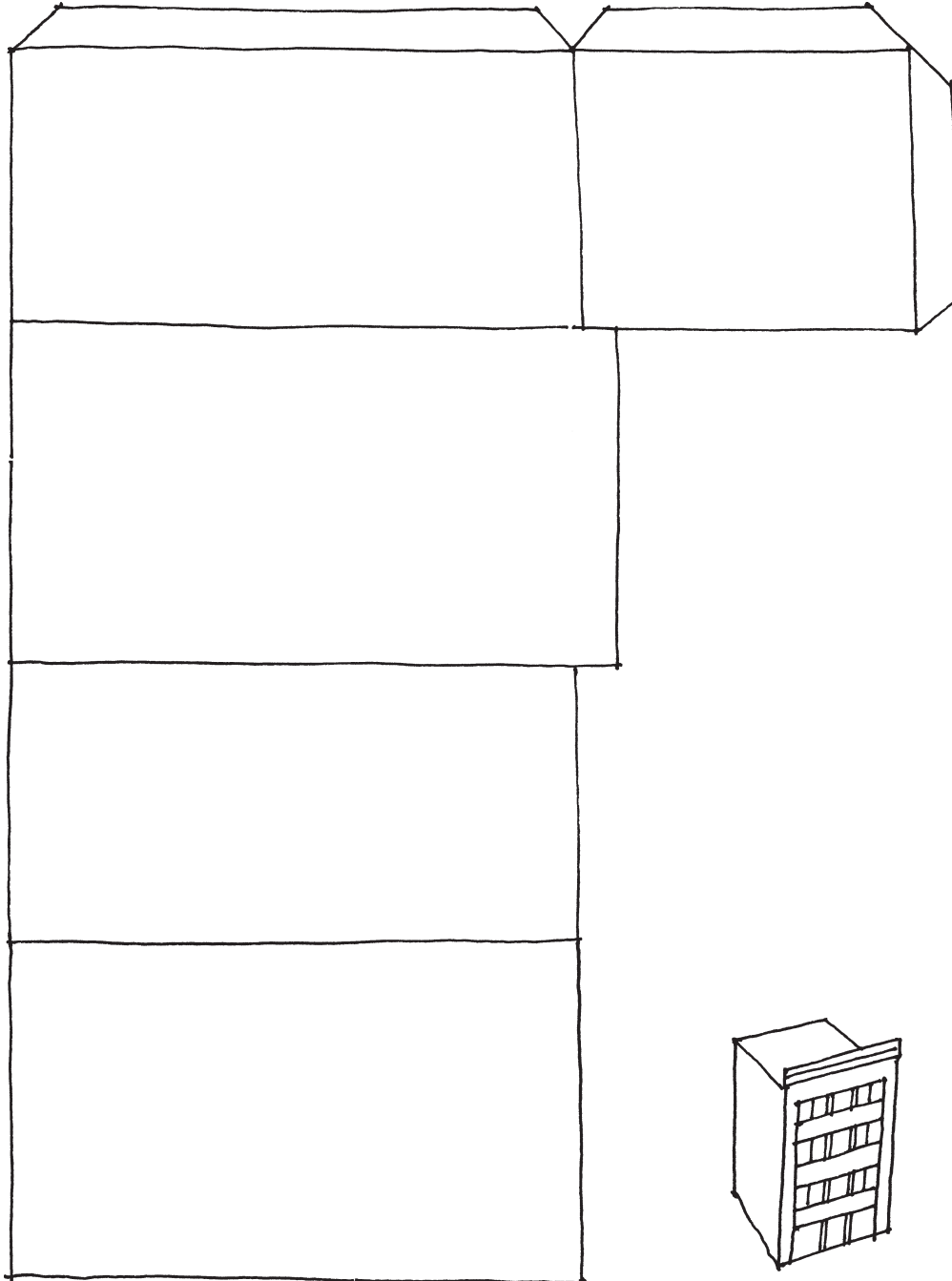
Fifth Grade ♦ Lesson Nine



Building Cutout Pattern #6 - A Library, Police Station or Community Building



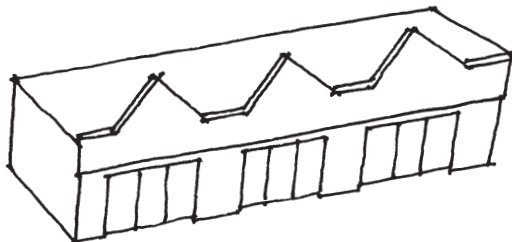
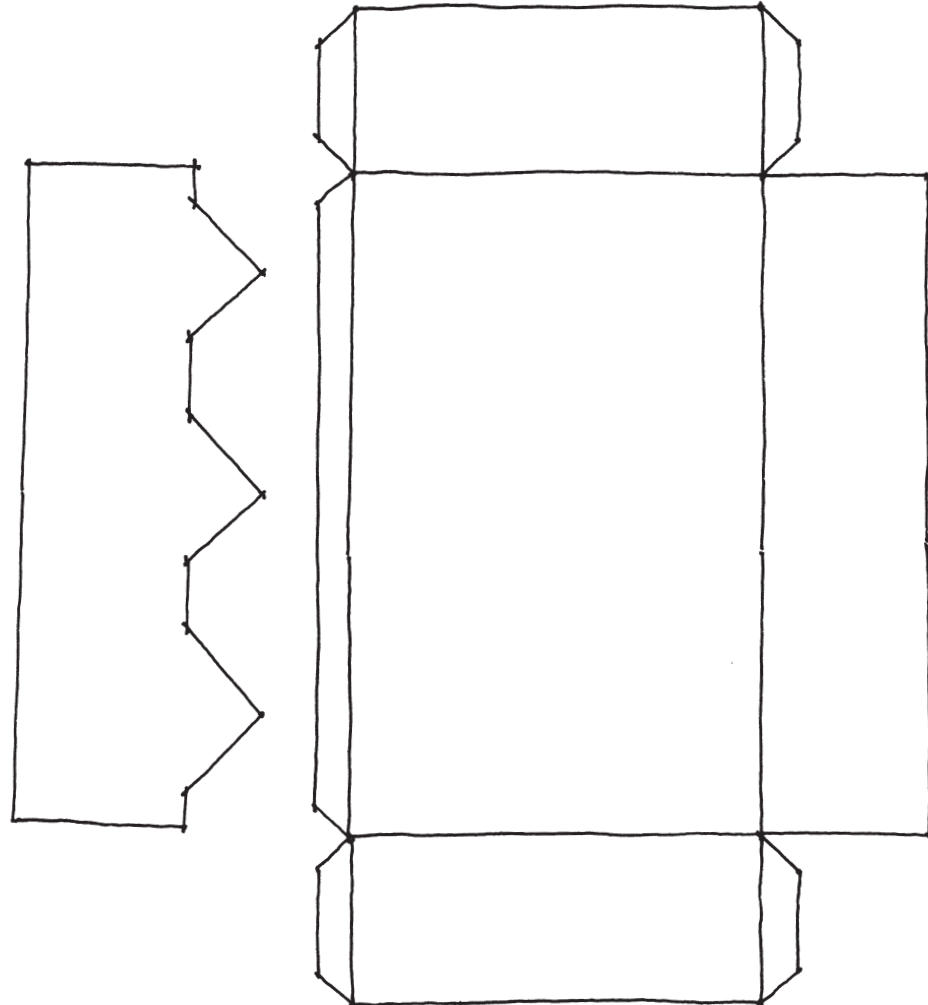
Fifth Grade ♦ Lesson Nine



Building Cutout Pattern #7 - Office Building



Fifth Grade ♦ Lesson Nine



Building Cutout Pattern #8 - Shopping Center



Fifth Grade ♦ Lesson Ten



FIFTH GRADE
LESSON NO. 10

DESIGN A CITY - PART 3

LENGTH OF LESSON

60 Minutes

ARCHITECTURAL PRINCIPLES:

Design is accomplished by composing the physical characteristics of size, shape, texture, proportion, scale, mass and color.

Order is the arrangement and organization of elements to help solve visual and functional problems.

Visual relationships are determined by light, shadow, edges and contrast.

Balance is the creation of visual harmony through the use of color and the manipulation of form.

Form follows function is a design approach where the form of the building is determined by the function of its spaces and its parts.

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Mass creates form, which occupies space and brings into being a spatial articulation.

Symbolism is an important means of visual communication for architecture.

Visual thinking is a key to awareness of the built environment.

Sustainable design of the built environment protects the natural environment.

Social structure, culture and the built environment have a direct influence on one another.

Design is experienced through human sensory perception.



Fifth Grade ♦ Lesson Ten



The creative process is basic to design.

Aesthetics is the artistic component of architecture.

Climate and the natural environment influence design decisions.

Architecture satisfies emotional and spiritual needs in addition to physical needs.

Past, current and future technologies influence design decisions.

MATERIALS

1. Assembled buildings
2. Any accessory construction (i.e. street lamps, telephone poles, cars, trees, etc.)
3. Tape, glue

VOCABULARY (See glossary for definitions)

1. Land-use planning
2. Master plan
3. Sustainability

BACKGROUND INFORMATION

Lessons No. 8, 9 and 10 are a sequence of lesson plans that conclude the fifth-grade program. The class will plan and build a city during the three final lesson plans. The time of the lesson plans may be adjusted by the teacher as the project progresses toward completion.

This lesson plan allows students to finish and assemble all the structures for their model city block(s) and to prepare for a final presentation.



Fifth Grade ♦ Lesson Ten



ACTIVITY

- A. Allow the students to view their "master planned" city before attaching buildings and other constructions.
- B. The teacher and the students should discuss the relationship of the buildings to one another. Tell the students to look at their finished city and see if they are satisfied with the locations and sustainability of their buildings, amenities, parks, etc. They should make any necessary changes. Students should also discuss how well they addressed issues of sustainable design.
- C. When decisions are final, attach buildings.
- D. The students may add trees, cars, street lamps, telephone poles, etc. at this time.
- E. A final presentation of the project can be held for the school's entire student body and/or for the parents of the fifth-grade students, possibly at a Family Night.

TEACHER'S EVALUATION

- A. Does the construction and development of the city master plan show an understanding of the architecture and sustainability concepts? Depending upon the complexity of the project, the teacher may determine whether local city planners should be invited for an informal presentation.



Curriculum Guide



Appendix

Glossary



A:

Acoustical ceiling tile (noun)

- Ceiling material used to control the sound characteristics of a room

Activity (noun)

- Being in a state of action; a sphere of action

Adaptive reuse (noun)

- To take an existing building that had one purpose and renovate it to be used for a different purpose

Adobe (adj.) (noun)

- A type of brick used in building houses that comes from washed away rock sediment, soil or sand (alluvial)
- Sediment sun-dried in lieu of fired or burnt brick

Adobe house (noun)

- A house made of the sun-dried brick usually found in more arid climates

Aerial photograph (noun)

- A photograph taken from the air

Aesthetics (noun)

- The artistic component of architecture
- A sense of appreciation for beauty in nature and art

Air conditioning (noun)

- The process of cooling down the outside air to make it more comfortable inside a building or vehicle by controlling the humidity and temperature





Aluminum (noun)

- A building material whose chemical makeup provides lightness plus strength and non-corrosive properties; often used for exterior trim, window and door frames, handrails and fences

Anatomy (noun)

- The structure of a plant or animal

Angle (noun)

- The amount of difference in direction of two intersecting lines or planes measured in degrees or radians

Anthropomorphic (adj.)

- Relating to or characterized by attributing human qualities or characteristics to non-human things

Apartment (noun)

- A room or suite of rooms to live in that one leases (pays to live in) but does not own

Aqueduct (noun)

- A conduit or manmade canal for bringing water by gravity from a distant source

Aquifer (noun)

- A wet underground layer of water-bearing permeable rock or materials such as gravel, sand or silt which transmits water to a well or a spring

Arch (noun)

- A curved structure, as of masonry, that supports the weight of material over an open space as in a bridge, doorway or gateway





Architecture (noun)

- The science, art or profession of designing and constructing buildings
- A style of construction

Archway (noun)

- A passage through or under an arch

Arctic region (noun)

- A very cold region around the North Pole

Area (noun)

- The measure of a bounded region on a plane or surface of a solid
- Defining a specific area of a house, e.g., kitchen area, dining area, etc.

Arena (noun)

- An open, central area in which games or contests are conducted

Arid (adj.)

- Dry, parched, having little rainfall

Artificial light (noun)

- Light that is created by humans instead of by natural means, such as sunlight

Artisan (noun)

- A craftsman

Asphalt (noun)

- A tar-like substance, usually black in color, that is used as a surfacing material on roads, playground areas or walkways





Attic (noun)

- The space above the living area just below the roof of a house

Axis (noun)

- A real or imaginary straight line in which the parts of the object are symmetrically or evenly arranged on both sides of the line

B:

Balcony (noun)

- A platform projecting from the wall of a building, usually enclosed by a railing

Barter (verb)

- The act of trading by exchanging one commodity for another

Baseball field (noun)

- A diamond-shaped field on which the game of baseball is played, consisting of three bases, an infield and an outfield

Basement (noun)

- The lowest floor of a building, which is partially or completely underground

Basketball court (noun)

- The court where the game of basketball is played, with a netted hoop at each end of the court

Bathroom (noun)

- A private room designed for the caring of one's personal hygiene, such as bathing, washing, shaving, brushing of hair and teeth, and elimination of bodily waste; equipped with water, toilet, basin and sometimes bathtub and/or shower stall





Beam (noun)

- A piece of wood, metal or stone that spans from support to support and holds the weight of the floor, roof or material above it

Bedroom (noun)

- A private room that contains a bed for sleeping, an area for dressing and undressing, and storage for clothing

Bench (noun)

- A platform or horizontal structure that provides a place for sitting and lying; can be found in parks, back yards or inside homes

Bird's-eye view (noun)

- The view of an object from overhead

Block (noun)

- A three-dimensional object with straight sides and right angles, usually solid, e.g., a building block
- A small area of a city or town that is part of a neighborhood and is usually bounded by streets

Brace (noun)

- A structural member that is used to stiffen or support a structure; a strut that supports or fixes another member in position

Bracket (noun)

- A support projecting from a wall or column
- Any angle shaped support, especially one in the form of a right triangle (e.g., a shelf bracket)

Brick (noun)

- A building material made with a clay base and fired in a kiln; used as a building material for walls and pavement





Bridge (noun)

- A structure that spans a depression and provides a passage between two points for pedestrians or vehicles to cross

Bubble diagram (noun)

- A visual aid on a drawing using circles or “bubbles” connected by lines labeled with specific spatial use/ functions to aid in organizing areas relative to one another

Building (noun) (verb)

- Any permanent structure or enclosure built with walls and a roof
- The act of constructing a permanent structure

Building program (noun)

- A checklist to determine the requirements of a particular building in the early stages of planning to ensure that all the necessary elements are included in the final plan

Built environment (noun)

- The environment that has been altered from its natural state by man to meet the requirements of the people utilizing an area

C:

Cabin (noun)

- A small, one-story structure, usually crudely built from logs
- Any small, simple structure designed for a brief stay

Cantilever (noun)

- A large bracket or block projecting from a wall and supported on one end only; often supports a balcony or extended part of a building





Carbon Footprint (noun)

- The measure of an entity's impact on the environment based on the release of the carbon dioxide that entity creates.

Carpet (noun)

- Floor covering made from thick synthetic or natural material usually woven with jute backing

Castle (noun)

- A large building fortified with thick walls, battlements and often a moat
- A fortress usually owned by royalty

Cave (noun)

- A hollow usually formed naturally as a void in rocks and earth

Ceiling (noun)

- The inside top part or covering of a room opposite the floor

Cell-phone tower (noun)

- Radio tower that is strategically installed and capable of receiving and transmitting radio signals (waves)

Cellar (noun)

- A room or group of rooms below the ground level and usually under a building; often used for storage

Cement (noun)

- A substance made of powdered lime and clay; when mixed with water, it forms a hard solid





Center (noun)

- A point around which everything revolves
- A point of equal distance from all points on the circumference of a circle or surface of a sphere

Centimeter (noun)

- In the metric system, a unit of measure equal to one-100th of a meter

Ceramic tile (noun)

- A clay tile with a glazed hard surface; used as a finishing material in high-water usage areas such as bathrooms and/or kitchens; provides low-maintenance finish

Chemicals (noun)

- Any substance used in or obtained by a chemical process or processes

Chimney (noun)

- A vertical structure containing an opening and extending above the roof of a building to allow smoke to escape and to allow draft for a fire; required for gas-fired equipment and fireplaces

Circle (noun)

- A plane figure bounded by a simple curved line; every point is equally distant from the point at the center of the figure

City (noun)

- In the United States, an incorporated municipality whose boundaries and powers of self-government are defined by a charter from the state in which it is located





City planner (noun)

- A person especially educated in the complexities of a city who maps out the flow of the functions of the city based on land location, major routes and natural topography; develops plans for immediate needs as well as future development

Civilization (noun)

- Advancement in social culture characterized by relative progress in the arts, sciences and statecraft

Climate (noun)

- The prevailing or average weather condition of a place as determined by meteorological and temperature changes over a period of years

Collaborate (verb)

- To collectively exchange ideas and experiences, resulting in a final conclusion or idea

Collage (noun)

- A collection of smaller irregular pieces of material, such as paper, cloth, flowers and leaves of various sizes, shapes and colors, that are assembled and glued together in a relationship that conveys the artist's expression

Colonial style (adj.)

- Works of art or architecture reflecting the appearance of the British colonies in America, typical of the 17th and 18th centuries

Color (noun)

- The sensation resulting from stimulation of the retina of the eye by light waves of certain lengths
- The property of reflecting light waves of a particular length
- The primary colors are red, yellow and blue
- All other colors can be made from the three primary colors





Column (noun)

- A vertical support for supporting horizontal structural members
- Also called a post

Column and beam construction (noun)

- A horizontal member (beam) supporting weight from above and transferring the weight to a vertical member (column), which takes it to the ground where the column is secured

Commerce (noun)

- An exchange of goods, wares and property of any kind, either by barter or through purchases between persons or nations

Communal (adj.)

- Of a community, pertaining to a community or public entity, such as public property

Communication (noun)

- The act of imparting, conferring or delivering opinions, ideas or facts by writing, talking, signing or any form of language

Community (noun)

- A body of people having common organizations or interests, living in the same place under the same laws

Component (noun)

- Serving as one of the parts of a whole

Compression (noun)

- The state of being pushed together or squeezed together, which results in a decrease in volume





Concrete (noun)

- A material made from limestone, sand, aggregate, cement and water; when hardened, it provides a strong finish material

Condominium (noun)

- A place where the persons residing there jointly own portions of the land and community property, while owning their own individual living spaces

Cone (noun)

- A solid with a circle for its base and a curved surface tapering evenly to an apex so that any point on this surface is in a straight line between the circumference of the base and the apex

Coniferous (adj.)

- Referring to any of the trees, shrubs, etc., that bear cones

Craftsman (noun)

- One who practices on art, skill, trade or manual occupation; an artisan

Crosswalk (noun)

- A designated area usually using striping or a sign that allows pedestrians to cross a road safely by lawfully making vehicular traffic yield to pedestrians

Cube (noun)

- A solid with six equal square sides

Curb (noun)

- A stone or concrete edging of sidewalk or pavement that forms a step to a raised surface





Cylinder (noun)

- A solid object described by the edge of a rectangle rotated around the opposite edge as axis; the ends of the rotated forms are parallel and equal circles

D:

Deciduous (adj.)

- Referring to leaves that fall off at maturity or by season as opposed to remaining on trees all year round

Degree (noun)

- A unit of measure in angles or arcs one-360th part of the circumference of a circle; the measure of an angle is the number of degrees between the two sides
- An increment of measurement that defines an angle, e.g., an angle of 60 degrees

Demographer (noun)

- One who gathers and processes population information

Demographics (noun)

- The characteristics of a population, especially as classified by age, sex, income, etc.

Depth (noun)

- The distance from the top downward, from the surface inward or from front to back

Desert regions (noun)

- A dry barren region usually treeless and sandy due to the lack of water to sustain plant life

Design (verb) (noun)

- To create original plans, sketches, patterns
- The arrangement of parts, details, forms and color to produce a complete and artistic unit





Diagram (noun)

- An explanatory graphic design to convey a concept or an idea

Dilapidation (noun)

- The natural deterioration of a building due to neglect

Dining room (noun)

- A room in which people eat their meals

Disposable (adj.)

- Referring to an item that can be discarded after use

District (noun)

- A geographical or political division created for a specific purpose, such as a school district

Dome (noun)

- A hemispherical roof or one formed by a series of rounded arches or vaults on a round or many-sided base

Domesticate (verb)

- To tame, as to tame a wild animal
- To accustom to home life

Dormer (noun)

- A projection in the roof to allow more space; a vertical window in the roof area

Door (noun)

- A movable structure for opening and closing an entrance into a building or giving access between two enclosed spaces, such as between a room and a closet or the outer and inner spaces of a cabinet





Driveway (noun)

- A hard surface leading from the street up to the house or garage; access into or out of an area that allows cars

Drywall (noun)

- A gypsum material that provides a hard surface for wall construction; it usually comes in large 4 x 8-foot panels

Dwelling (noun)

- A place where one resides

Duplex house (noun)

- A single building purposely designed for and divided into two separate living units, each having its own entrance and living space

E:

Earth (noun)

- The third planet from the sun in the solar system of the Milky Way

Earth friendly (adj.)

- Things that encourage or promote the natural process of the environment in lieu of destroying or inhibiting the natural progression of the environment, e.g., biodegradable boxes that eventually return to being part of nature

Echo (noun)

- The repeating of sound produced by reflection of sound waves from a surface

Ecology (noun)

- The branch of biology that deals with the relationship between living organisms and their environment





Economics (noun)

- The science that deals with the production, distribution and consumption of wealth

Edges (noun)

- Any sharp terminating point or border that defines where one area ends and another area begins

Electricity (noun)

- A form of energy generated by friction, induction, or chemical change, and having magnetic, chemical and radiant effects; it is a property of the basic particles of all matter, consisting of protons and electrons that attract each other

Electric wires (noun)

- A conduit which carries electricity from point to point

Elements (noun)

- One of the simplest parts into which something can be divided

Elevation (noun)

- A geometrical projection (often in drawing form) of a building in a vertical plane, as in a front elevation, side elevation and back elevation

Ellipse (noun)

- In geometry, the path of a point that moves so that the sum of its distances from two fixed points (called foci) within the ellipse is constant; the closed curve produced is egg shaped

Energy (noun)

- The quantified ability that a physical system has so that it can do work on other systems





Entrance (noun)

- A point of access to a building

Environment (noun)

- All the conditions, circumstances and influences surrounding and affecting the development of human habitat for both shelter and community

Environmental Stewardship (noun)

- Caring for the environment in order to preserve valuable natural resources

Erosion (noun)

- The act of a material being worn away gradually by wind or water

Estimate (noun)

- A rough calculation of size, value or cost of an item; projected cost of work to be done by the person performing a task

Ethnic (adj.)

- Relating to people who are distinguished by customs, characteristics, language, common history and/or religion

F:

Façade (noun)

- The front of a building; part of a building facing a street, courtyard, etc.

Farmhouse (noun)

- The dwelling of a farmer
- A style of house conducive to life on a farm; usually a two-story house with a large covered porch





Federal style (noun)

- In the United States, a revival style emulating the architecture prevalent from 1790 to 1830

Fence (noun)

- An outdoor structure made of materials that define the boundaries of one's property or of an area to be utilized for a specific function

Filtration (noun)

- The process of purifying or removing foreign particles or unwanted materials from water

Fire (noun)

- A chemical change accompanied by the emission of heat and light and often flame

Fire hydrant (noun)

- An outside source of water to which firefighters attach their fire hoses to in the event of a fire; usually round and 24 inches in height; the design and placement is regulated by the city for easy identification and access

Fire station (noun)

- A building designed for the housing of trucks and people who fight fires; includes a garage area for trucks and may include living and sleeping quarters for firefighters

Floor (noun)

- The inside bottom surface of a room or building on which one walks or stands

Floor plan (noun)

- A scaled drawing showing the size and arrangement of rooms and their relationships to one another





Flower (noun)

- The bloom or blossom of a plant

Flying buttress (noun)

- An inclined masonry structure outside of the wall of a building; connected to the building by an arch designed to resist the outward pressure imposed by a vault or the building's roof; usually found in Gothic churches

Focal point (noun)

- A precisely specified position, location, place or spot

Foot (noun)

- A measurement of length derived from the approximate length of the human foot; later standardized to a uniform length of 12 inches

Force (noun)

- Strength, energy, vigor and power

Foundation (noun)

- The base upon which something rests; specifically the supporting part of a wall, house or building, usually in the ground

Fountain (noun)

- An artificial jet or flow of water usually used for aesthetics; also can be used for drinking; usually found in public places

Frame (noun)

- The structural skeleton of a building

Framework (noun)

- Skeletal structure of a building to which the final finish will be added





Freehand sketch (noun)

- A drawing done without mechanical aids or devices

Function (noun)

- The normal or characteristic action of anything

G:

Gable (adj.)

- The triangular wall formed at the end of two enclosed sloping sides of a ridged roof

Garage (noun)

- A structure with a large door for the storage of cars

Garden (noun)

- A designated area of land to grow flowers, vegetables and fruit or a combination of both

Gate (noun)

- The opening in a fence to allow entrance into a property

Geography (noun)

- The descriptive science dealing with the division of the surface of the earth into continents and countries, including the study of climate, plants, animals, natural resources, inhabitants and industries particular to those areas

Geothermal Heating (noun)

- A heating and cooling system that takes advantage of the constant temperature of the earth underground.

Geometry (noun)

- The branch of mathematics that deals with points, lines, surfaces and solids and examines their properties, measurement and relationship





Glass (noun)

- A hard, brittle substance made by fusing silicates with other materials; most often transparent or translucent and used for windows

Gothic style

- A style of architecture developed in Western Europe between the 12th and 16th centuries; characterized by the use of ribbed vaults and flying buttresses

Gravity (noun)

- The force that tends to draw all bodies in the Earth's sphere toward the center of the Earth

Greek Revival (adj.)

- Referring to a revived *Greek* style of architecture created in the 1820s and characterized by symmetry and formal geometry

Green Roof (noun)

- A living roof that is partially or completely covered with vegetation, and which provides extra insulation and provides a habitat for wildlife.

H:

Half-circle (noun)

- A circle divided into two equal parts

Hearing (noun)

- The sense that enables animals to perceive sound (sound waves) through the ear and receive impressions through its auditory nerves

Heating system (noun)

- The method used to add heat to a building interior for the comfort of its inhabitants; often a furnace or boiler





Hedge (noun)

- A thicket of shrubs

Height (noun)

- The measured distance from bottom to top of an object

Hemisphere (noun)

- Half of a sphere

Historic (adj.)

- Referring to an example from the past

Horizontal (adj.)

- Parallel to the plane of the horizon
- Lying flat (or tangent) with the ground as opposed to vertical (or perpendicular) to the ground

Hospital (noun)

- A building where the ill or injured receive medical or surgical care; a facility that has the necessary equipment needed by doctors and nurses to administer proper care

House (noun)

- A building for human beings to live in
- A structure for animals to live in, e.g., a doghouse, a bird-house, etc.

Human proportions (noun)

- A comparative relationship between the size of an object and the size of the human body

Hut (noun)

- A crude, small house; a hovel or cabin





I:

Igloo (noun)

- A house made of blocks of snow found in the Arctic Region; usually in the shape of a dome

Inch (noun)

- A measure of length equal to 1/12 of a foot

Infrastructure (noun)

- The basic installations and facilities on which the continuance and growth of a community depends, such as roads, schools, power plants, utilities, transportation and communication systems

Insulation (noun)

- Any material used to separate a warm space from a cold space and prevent the loss of heat

Interrelated (adj.)

- To be interconnected

K:

Kilometer (noun)

- 1,000 meters in the metric system; equivalent to approximately 5/8 of a mile

Kingdom (noun)

- The dwellings and land owned by a king

Kitchen (noun)

- The room in a house where food is prepared





L:

Land (noun)

- The physical solid surface of the earth

Land-use planning (noun)

- The process of determining what the land will be used for in context of an overall design

Landmark (noun)

- Any prominent object marking a locality, often one of historical interest
- Any object on land that serves as a reference point or a destination point

Landscape (noun) (verb)

- An expanse of natural scenery seen by the eye
- To create a desired effect of the natural scenery by adding trees, shrubs, greenery, plants, water, etc.

Lawn (noun)

- Land covered with grass that is kept closely mowed or manicured, especially in front of or around a house

Library (noun)

- A building or room that stores and displays books, periodicals and other audio, video and reading matter that is usually available for public use and borrowing

Linkage (noun)

- Connection of spaces or functions

Lintel (noun)

- A small structural piece of wood, steel, stone or masonry, usually over a door or window, that supports the material above; an archway is a form of lintel





Line (noun)

- The geometric shape created by connecting two points

Living room (noun)

- The room in a house where most of the public activity takes place; a meeting place for family and friends

Location (noun)

- Position in space; place where a structure is to be built

Log cabin (noun)

- A house built of logs that are laid horizontally and notched and fitted at the ends

Lumber (noun)

- Wood that has been sized and is used for building

M:

Map (noun)

- A representation of a part of Earth's surface

Mass (noun)

- A quantity of matter forming a shape often of a relatively large size

Mass Transit (noun)

- Transportation (like busses and trains) that carry more people at one time

Master plan (noun)

- A diagram or drawing showing the arrangement of the components of a city or community

Mayor (pronoun)

- The highest elected government official of a city





Measurement (noun)

- Size, capacity, extent, volume or quantity determined by comparison to some standard or unit

Meter (noun)

- A basic unit of length in the metric system; equal to 39.37 inches

Metric system (noun)

- A system of measurement using decimals; units of measurement include meters for length, grams for weight, liters for volume; established in France and widely used by most nations

Metropolitan (adjective)

- Of or constituting a large main city or center of population and commerce

Millimeter (noun)

- 1,000th of a meter

Mobile home (noun)

- A manufactured house that is set on wheels and used as a residence; built in a factory, usually in two pieces and shipped to a site where it may be placed on a permanent foundation

Monetary (money) system (noun)

- The organization of coinage or currency of a country (standard pieces of gold, silver, copper and nickel stamped by government authority and used as a medium of exchange)





Montage (noun)

- The art or process of making a composite picture by arranging into a single composition a number of different pictures or photographs; by superimposing one on another, they form a blended whole and yet express their individual character

Mortar (noun)

- A mixture of sand, lime and cement combined with water to make a mixture used between bricks, stones or block to bond them together
- The system of putting masonry together with mortar is called masonry construction

N:

Native American (adj.)

- Referring to the original inhabitants of the United States

Natural Environment (noun)

- The part of the environment that is not made by man

Natural light (noun)

- Illumination from a natural source, e.g., sunlight, moonlight, candlelight or light from a fire
- The opposite of artificial light, which is man-made using electricity

Natural material (noun)

- Matter or substance produced by nature that retains its essential character; not man-made

Natural resources (noun)

- Organic materials that are found in nature, such as water, oil, trees, etc.





Neighborhood (noun)

- A community or district composed of people living near one another

Node (noun)

- A focus of activity where people gather

Nomads (noun)

- People who travel from place, never permanently settling in one area

O:

Outlet (noun)

- The point in a wiring system at which electrical current is available for connecting equipment; usually located in a wall, floor or ceiling

Ornament (noun)

- In architecture, every detail of shape, texture and color that is deliberately added to a building to create beauty and attract an observer

Overpopulation (noun)

- A condition in which the number of people is greater than the capability of the area's resources to support them

P:

Parallel (adj.)

- Extending in the same direction and at the same distance apart at every point so as never to meet, as with parallel lines or planes

Parallelogram (noun)

- A flat plane figure with four sides, and with the opposite sides parallel and equal in length





Park (noun)

- An area of public land usually laid out with walks, drives, playgrounds, nature areas, etc., for public recreation
- An open square in a city, with benches, trees, etc.
- A large area known for its natural scenery and preserved for public recreation by a governmental authority

Path (noun)

- A walkway for the use of people on foot, as in a park or garden
- The route of travel between any two locations

Pattern (noun)

- An orderly sequence consisting of a number of repeated or complementary elements
- A repetition of a form or element to create a design

Pavement (noun)

- A surface of concrete, asphalt, brick, etc., usually used for streets and sidewalks

Plaster (noun)

- A cementitious finishing material primarily used in older buildings, mostly for walls and ceilings

Playground (noun)

- A piece of ground set apart for children to play on; often part of a school

Plaza (noun)

- An open square or marketplace in a town or city for use as a public gathering place
- A group of shops or buildings, e.g., a shopping plaza or an office plaza





Plumbing (noun)

- A building's pipes, fixtures and other apparatus for bringing in fresh water and removing liquid and waterborne wastes

Point (noun)

- An element in geometry having definite position (the center) but no shape, size or extension

Police station (noun)

- The headquarters of the local or district law enforcement officers

Politics (noun)

- The science or art of managing affairs of the government

Pollution (noun)

- The result of harmful chemicals and waste materials discharged into the water, on the land and in the air

Polygon (noun)

- A closed, two-dimensional figure with more than four sides and angles

Population (noun)

- The number of people in a building, community, city, state, country, region, etc.

Porch (noun)

- An entrance surface/platform to a building

Post (noun)

- A vertical support for supporting horizontal structural members
- Also called a column





Preservation (noun)

- Protection from harm and/or damage

Proportion (noun)

- The comparative relation between parts, things or elements with respect to size, amount, degree, etc.; ratio of various parts to one another

Proximity (noun)

- The state or quality of being near; nearness in space, time, etc.

Pyramid (noun)

- A solid figure having a triangular, square or rectangular base, of which each side of the base forms the bases of triangular surfaces sloping inward and meeting at a common point
- A large structure from ancient times used as a symbol of power and as a burial tomb for the wealthy

Q:

Quarry (verb) (noun)

- To excavate or take from an area the stone, marble or granite which is naturally found there
- The area where these materials are mined is called a quarry (noun) and is usually found above ground

R:

Rainforest (noun)

- A forest characterized by high rainfall and millions of species of plants, insects and microorganisms and high oxygen production

Rectangle (noun)

- A four-sided plane figure with four right (90-degree) angles; the opposite sides are parallel and equal





Recycle (verb)

- To collect, reprocess and use over again instead of discarding

Relationship (noun)

- The quality or state of being connected to another person or group

Renewable Materials (noun)

- Materials that can be regrown or replenished. These materials are usually plant-based products, earth (soil) based products, or animal products that are humanly extracted

Restoration (noun)

- The act of returning a building to its original condition

Reusable (noun)

- Something that can be used over again instead of being discarded

Right angle (noun)

- Angle made by the meeting of two straight lines perpendicular to each other (90-degree angle)

Road (noun)

- A path designed for vehicular traffic

Romanesque (adj.)

- Referring to a style of European architecture from the 11th and 12th centuries based on ancient Roman architecture and characterized by the use of rounded arches and vaults supported by thick walls

Roof (noun)

- The outside top covering of a building, which provides weather protection





Room (noun)

- An interior space enclosed by walls and separated from other similar spaces by partitions; accessed through an opening

Rubbing (noun)

- In art, the result of placing paper over an item with texture and lightly moving a pencil or chalk over the paper to re-create a texture on the face of the paper

Rules (noun)

- A prescribed guide for conduct or action, usually to ensure adherence to safety, morals and ethics

S:

Safety (noun)

- The quality or condition of being free from danger, injury or damage; security

Sanitary Sewer (noun)

- A system of pipes designed to transfer polluted water to a waste disposal source

Scale (noun)

- The proportion or ratio that a map, model, drawing, etc., bears to the real thing it represents

School (noun)

- A building or institution that provides an environment for learning

See (verb)

- To perceive by light passing through the eyes and projecting an image that is picked up by the brain; the ability to see, or sight, is one of the five senses





Semi-circle (noun)

- A circle cut in half

Senses (noun)

- The five faculties of transporting impressions to a person's brain through specific body organs and the nerves associated with them: sight, touch, taste, smell and hearing

Sensory perception (noun)

- The awareness of objects or other data through the senses (see "senses")

Sewers (noun)

- A system of pipes designed to transfer storm water and polluted water to a waste disposal source

Shape (noun)

- That quality of an object which depends on the relative position of all points composing its outline or external surface; physical or spatial form

Shelter (noun)

- Something that covers or protects living creatures or their goods from the elements

Shopping center (noun)

- A concentration of stores in one location with a variety of vendors to allow a person to conveniently make multiple purchases with a minimum of travel

Sidewalk (noun)

- A path or area for pedestrian use

Single-family house (noun)

- A building where one family resides





Size (noun)

- The length, area, volume or dimensions of something compared to a standard of measurement

Slide (noun)

- A piece of recreational equipment consisting of an inclined slippery surface and a ladder

Smell (noun)

- One of the five senses of the body by which a substance is perceived by the brain through the chemical stimulation of olfactory nerves in the nasal cavity by particles given off by the substance

Social (adj.)

- Of or having to do with human beings interacting together as a group in a situation in which their dealings with one another affect their common welfare

Soccer field (noun)

- A designated area where the game of soccer is played by kicking and maneuvering a regulation ball with one's feet or body (no hands) down the regulation field

Space (noun)

- A distance extending in all directions; the continuous expanse extending in all directions or in three dimensions within which all things exist, variously thought of as boundless or indeterminate
- Area sufficient for a specific use, e.g., a parking space, a space to store one's bicycle

Spatial (adj.)

- Of or relating to space and the perception of space; the form/shape taken on by a design occupies space and brings into being a "spatial" articulation





Spatial relationship (noun)

- The relationship of how two or more defined areas affect each other, e.g., in a home, a bedroom needing quiet would not function well if placed in close proximity to the noisier family room

Sphere (noun)

- A three-dimensional, round figure having all its surface equally distant from the center at all points, e.g., globe or ball

Square (noun)

- A two-dimensional figure having four equal sides and four right angles

Steel (noun)

- A metal made from natural ores; used for support framing for buildings and other purposes

Steps (noun)

- A series of horizontal surfaces for the foot for use when ascending or descending

Stone (noun)

- Natural rock that is cut into pieces for use as a building material

Stop sign (noun)

- Octagonal red traffic sign giving instruction to halt, usually at a street corner or pedestrian crossing

Street (noun)

- A road for vehicular traffic

Street light (noun)

- A light positioned high above the street to illuminate it for visibility and safety





Streetscape (noun)

- The buildings along the street viewed from the street

Structure (noun)

- The arrangement and interrelationship of parts in building construction

Suburb (noun)

- A district, especially a residential district, on or near the outskirts of a city and often separately incorporated as a city or town

**Sustainable/
Sustainability** (noun)

- Meeting present needs without preventing future generations from being able to meet theirs; includes respect for the environment and for people

Symmetry (noun)

- Similarity of form or arrangement on both sides of a dividing line or plane

T:

Taste (noun)

- The perception of salt, bitter, sour and sweet substances through the stimulation of taste buds on the tongue; one of the five senses

Taxes (noun)

- A percentage of the dollar value of an item or a percentage of income that is paid to the government to help pay for government expenses and programs

Technology (noun)

- The science or study of the practical or industrial arts; applied sciences, etc.





Teepee (noun)

- A cone-shaped structure of animal skins on a framework used by the Plains Indians

Telecommunications (noun)

- The transmission of information over significant distances in order to communicate. Includes early smoke signals, telegraphs, telephones, radio, fiber optics, cables, satellites and the Internet

Temperature (noun)

- The measurement of heat flow using an established scale, such as the movement of mercury in a thermometer

Tension (noun)

- The state or condition of being pulled or stretched

Texture (noun)

- The arrangement of the particles or constituent parts of any material (wood, metal, fabric, etc.) as it affects the appearance or feel of the surface, structure, composition or grain; the more texture a material has, the deeper the shadows cast by the light and the rougher it feels to the touch

Three-dimensional (adj.)

- Appearing to have depth or thickness in addition to height and width

Touch (noun)

- The perception of the nature of something by placing a part of the human body against it and letting the nerve endings of the skin register its presence and nature to the brain; one of the five senses

Townhouse (noun)

- A single-family house attached to another house on at least one side





Trace (verb)

- To overlay a transparent piece of paper and follow the contour lines of the image below; the transparent paper is called "tracing paper"

Traffic lights (noun)

- A set of signals, usually changing from red to yellow to green and back, placed at intersections of streets to regulate traffic

Traffic sign (noun)

- A mark or symbol that designates how automobiles and pedestrians maneuver on streets and sidewalks; stop signs, yield signs, speed-limit signs, etc.

Trees (noun)

- A woody perennial plant with one main stem or trunk that develops many branches, usually at some height above the ground; most trees are over 10 feet tall with trunks more than six inches in diameter

Triangle (noun)

- A geometric figure having three angles and three sides

Two-dimensional (adj.)

- Having height and width but no depth

U:

Utilities (noun)

- The service of electrical power, gas, water, sanitary waste collection, storm-water collection, telephone, etc.

V:

Vault (noun)

- A masonry covering over an area which uses the principle of the arch





Ventilation (noun)

- A system to provide fresh air to and remove stale air from a building

Vertical (adj.)

- Perpendicular or at a right angle to the plane of the horizon: upright, straight up and down

Victorian style (noun)

- Referring to a type of architecture or design derived from 19th-century Great Britain and named after the reign of Queen Victoria (1837-1901); popular for home construction in America in the late 1800s and early 1900s

Village (noun)

- A group of houses in a community that is usually smaller than a city or town

Vinyl composition tile (noun)

- A non-asbestos-based resinous compound formed into flooring material and often used in today's buildings

W:

Waterproofing (noun)

- A sheet or brushed-on material applied to a building surface to prevent water penetration

Width (noun)

- The distance from side to side of an object

Wilderness (noun)

- Land untouched by civilization; inhabited by animals indigenous to the area





Wildlife (noun)

- Animals that live in wilderness areas and survive by instinct

Windows (noun)

- An opening in a building for letting in light and air and for looking through

Wood (noun)

- A material that is derived from trees and processed as lumber for use in building

Y:

Yard (noun)

- The part of a building plot not occupied by the building and open to the sky
- A measure of length, equal to 3 feet, or 36 inches; one yard is equivalent to 0.9144 meters

Z:

Zoning ordinance (noun)

- A body of regulations that divides the land uses of a city into separate areas and describes their required purpose and physical characteristics for the protection of health, safety and welfare of the inhabitants





The Architect's Perspective

The built environment is the backdrop to most of human occupation, activity and creativity. It is the arena in which we perform and the stage set on which our lives are played out. However, it is not merely the passive foil to all that goes on in the world. Due to its scale and the intricate ways lives are threaded through it, the built environment has an active role in shaping those lives, in molding those minds and sensibilities that develop in and around it.

So much of the built environment just happens - over time and by accretion with no single author or concept to order it and conduct its proper course. Historically, most outcomes were favorable and not simply serendipitous, occurring in ancient times when nature and context played a much stronger role in influencing the output of human endeavor. Materials were limited by availability within a specific area or region - leading to appropriateness and harmony in texture, color and scale.

But since the Industrial Revolution, man has grown more independent of natural materials, shaping and transforming them in many ways, and manufacturing new ones. Advancement in transportation modes and new technologies has freed him in his selection of materials and methods, leading to substantial diversification and a clash of elements within the built environment. The shrinking of the world and globalization of its varied populations has propelled a cosmopolitan potpourri of influences and cultures into juxtaposition. The built environment can be wildly diverse in scale, concept, aesthetic, color, texture and materials. Human sensibility has been relegated to a lower priority.

Since architecture is so important in affecting our lives and because almost limitless possibilities and choices exist, there has never been a greater need to slow the assault. We must consciously direct the course and the progress of our surroundings to attain a more nurturing and aesthetic built environment that is at the same time conservation conscious in its use and exploitation of natural resources.

In a world where expediency and economy are watchwords, the positive injection of energy and effort to achieve a change in the current course of the built environment is necessary. It requires knowledge and understanding of the principles of architecture and an appreciation of their benefits, together with a committed belief in the outcomes. There is no better place to initiate the endeavor of building a core of understanding and innate sensitivity than in primary education. Through a process of layered learning encounters, awareness of the built environment will become an integral part of the educated soul.

Let us empower our children with the belief that with understanding and awareness, they can make the difference.





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