Teeth & Anatomy Developpement

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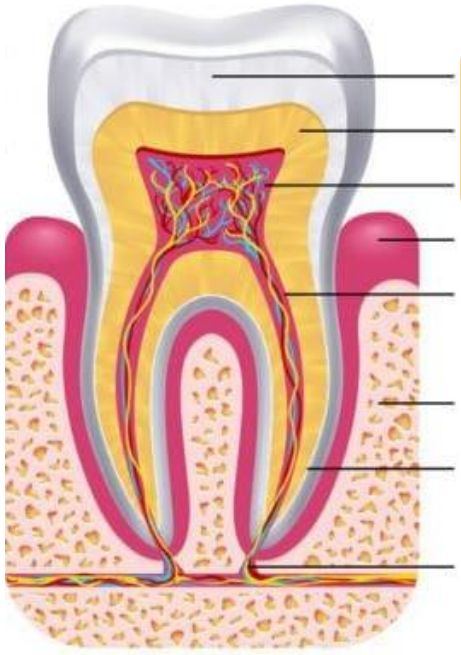
MUNI SCI

HR EXCELLENCE IN RESEARCH

ANATOMY OF TOOTH

1. Enamel
2. Dentin
3. Cementum
4. Pulp cavity

Each tooth consists of:



Enamel

White, compact & very hard substance
Covers & protects the dentin of the crown

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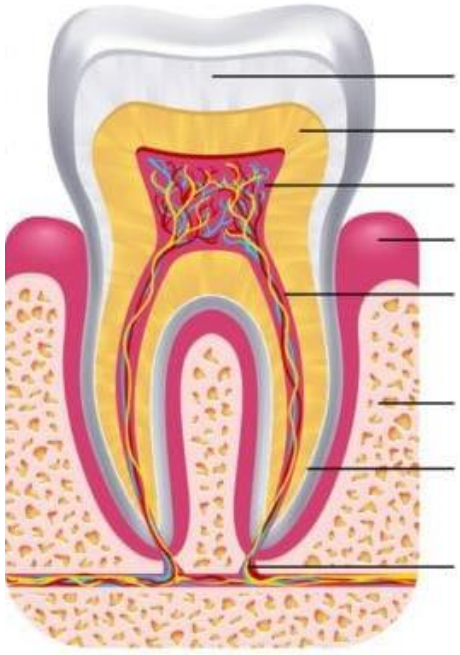

Dentin

The chief tissue of the tooth that surrounds the pulp cavity
Forms the main bulk of the tooth

Covered by
- enamel on most of the exposed parts of the tooth
- cementum on the part implanted in the jaw

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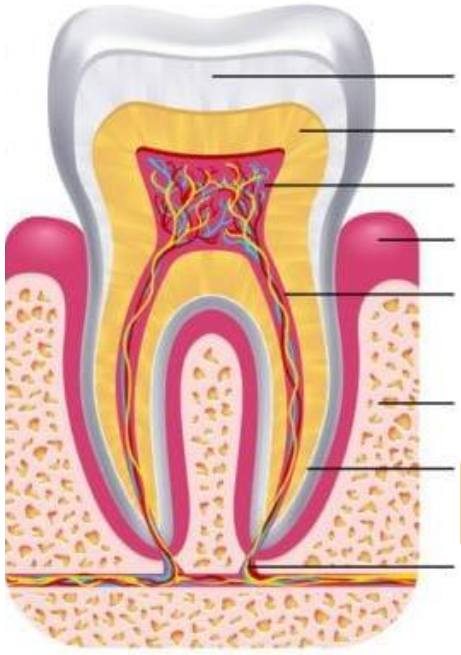

Cement

Layer of bony tissue covering the root of the tooth

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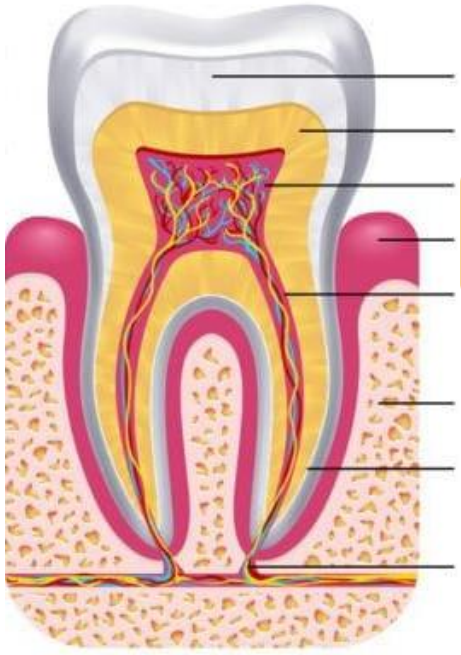


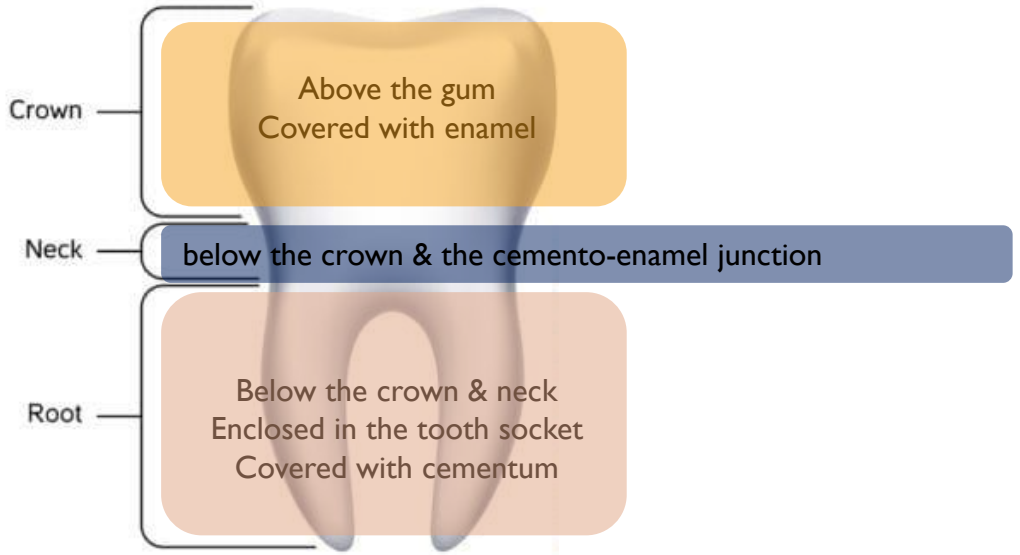
Pulp Cavity

Pulp chamber & canal within the tooth
Contains a soft tissue called pulp

ANATOMY OF TOOTH

1. Crown
2. Neck
3. Root

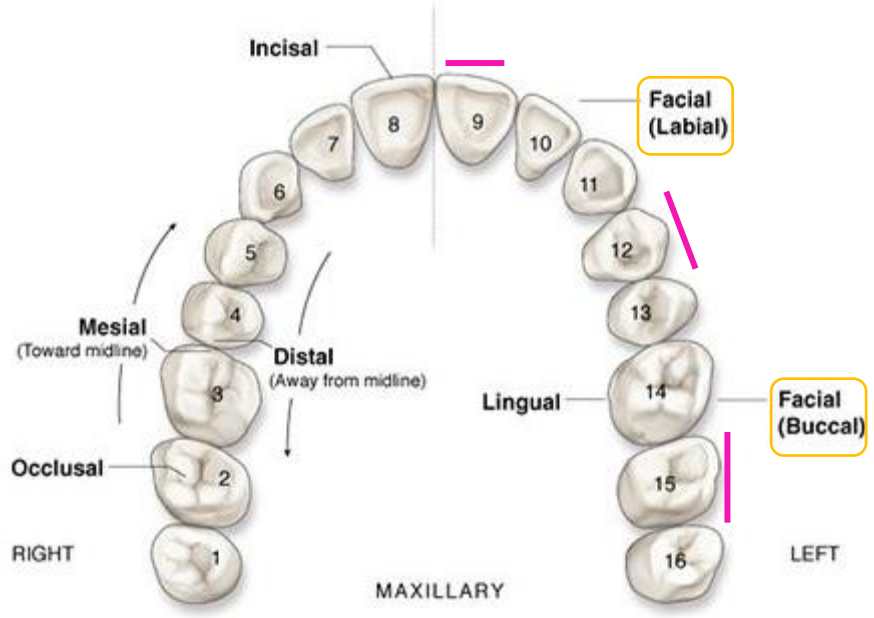
Each tooth has three areas:



ANATOMY OF TOOTH

1. Facial: a. Labial/b. Buccal
2. Lingual
3. Occlusal
4. Mesial
5. Distal

Each tooth has five surface:



a. Labial: side toward the lips (incisors & canines)
b. Buccal: side toward the cheek (premolars & molars)

ANATOMY OF TOOTH

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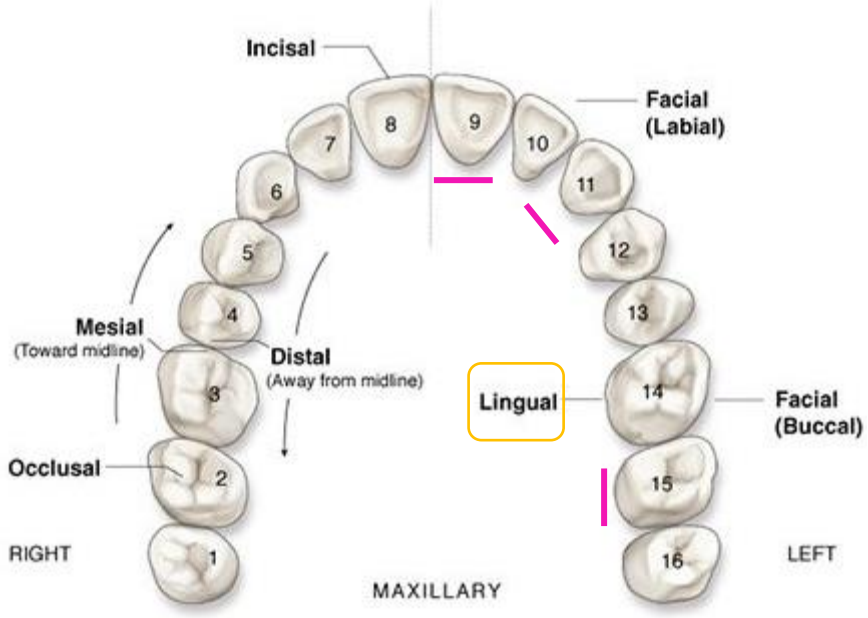
Each tooth has five surface:



Lingual: side toward the tongue (all teeth)

ANATOMY OF TOOTH

1. Facial
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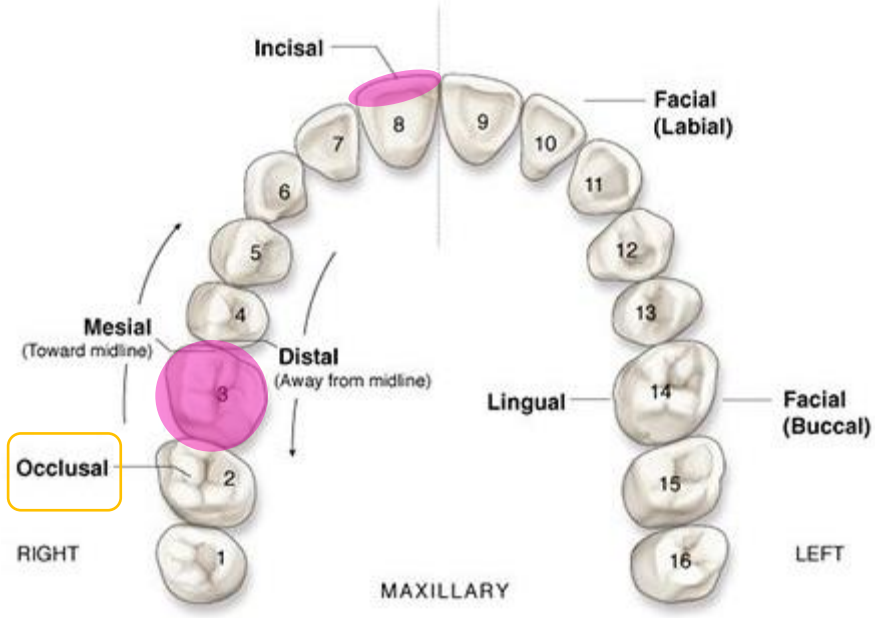
3. Occlusal
4. Mesial
5. Distal

Each tooth has five surface:



Occlusal: surface of the tooth that comes into contact with the teeth of the opposite jaw
* biting surface* (all teeth)

ANATOMY OF TOOTH

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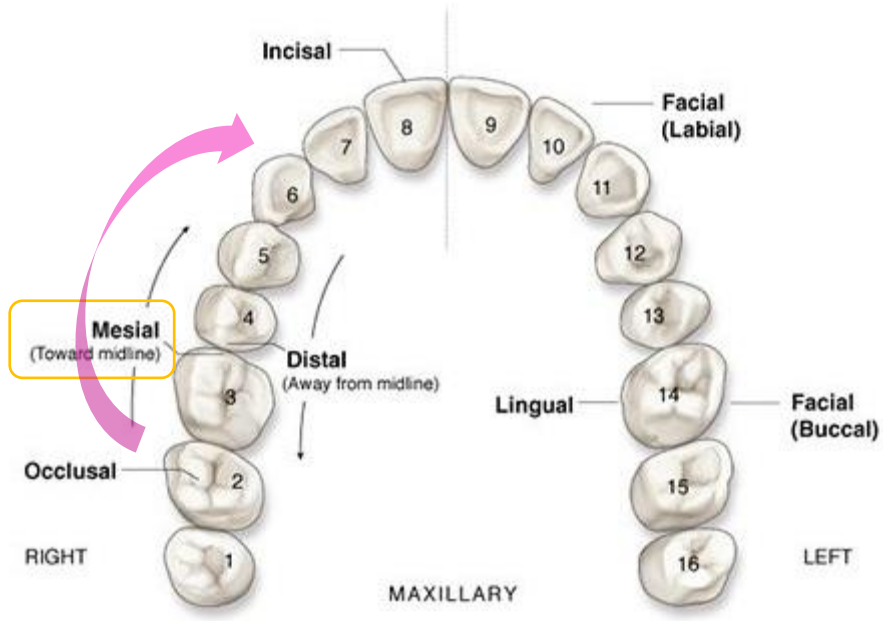
4. Mesial
5. Distal

Each tooth has five surface:



Mesial: surface of the tooth that lies against an adjoining tooth faces toward the median line (all teeth)

ANATOMY OF TOOTH

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3. Occlusal
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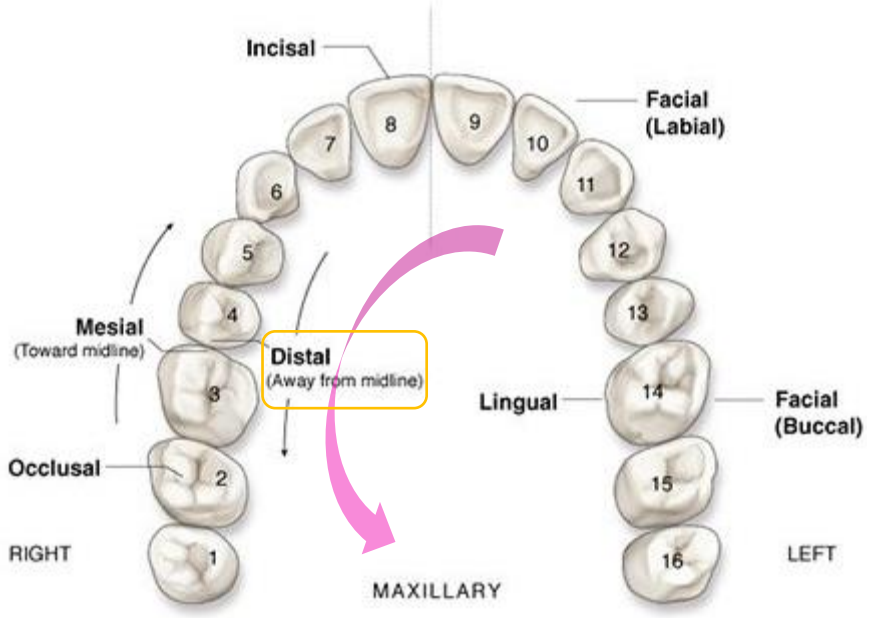
5. Distal

Each tooth has five surface:



Distal: surface of the tooth that lies against an adjoining tooth faces away from the median line (all teeth)

How many sets of dentition are you developing in your life?

PRIMARY TEETH

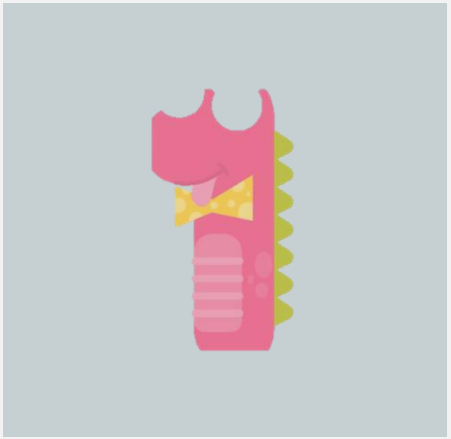
- Known as : baby teeth, milk teeth, deciduous teeth
- **How many are they?**
- Eruption 6-33 months old

SECONDARY TEETH

- Known as permanent teeth
- Replace the baby teeth
- **How many are they?**
- Eruption 6-20 yrs old

You are developing two sets of dentition during your life

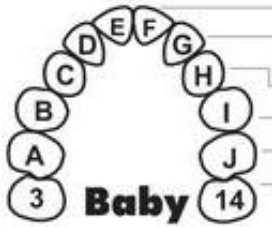
a third set of teeth? Dentures?



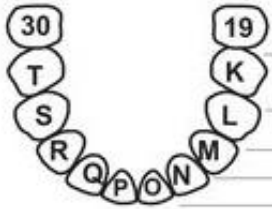
TOOTH CHART

Tooth Eruption Chart

Primary Teeth

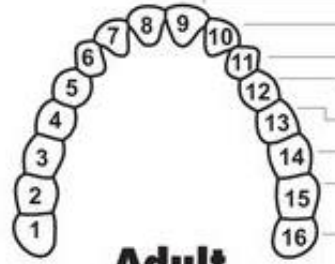


Erupt	Shed	Upper Teeth
8-12 mos	6-7 yrs	Central Incisor
9-13 mos	7-8 yrs	Lateral Incisor
16-22 mos	10-12 yrs	Canine (Cuspid)
13-19 mos	9-12 yrs	First Molar
25-33 mos	10-12 yrs	Second Molar
6-7 yrs	Permanent	First (6-yr) Molar

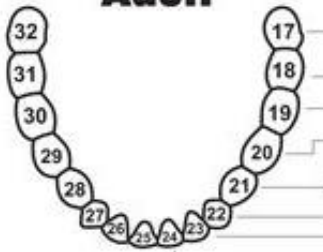


Erupt	Shed	Lower Teeth
6-7 yrs	Permanent	First (6-yr) Molar
23-31 mos	10-12 yrs	Second Molar
14-18 mos	9-11 yrs	First Molar
17-23 mos	9-12 yrs	Canine (Cuspid)
10-16 mos	7-8 yrs	Lateral Incisor
6-10 mos	6-7 yrs	Central Incisor

Permanent Teeth



Erupt	Upper Teeth
7-8 yrs	Central Incisor
8-9 yrs	Lateral Incisor
11-12 yrs	Canine (Cuspid, Eye Tooth)
10-11 yrs	First Premolar (First Bicuspid)
10-12 yrs	Second Premolar (Second Bicuspid)
6-7 yrs	First Molar (6-yr molar)
12-13 yrs	Second Molar (12-yr Molar)
17-21 yrs	Third Molar (Wisdom Tooth)



Erupt	Lower Teeth
17-21 yrs	Third Molar (Wisdom Tooth)
12-13 yrs	Second Molar (12-yr Molar)
6-7 yrs	First Molar (6-yr molar)
10-12 yrs	Second Premolar (Second Bicuspid)
10-11 yrs	First Premolar (First Bicuspid)
11-12 yrs	Canine (Cuspid, Eye Tooth)
8-9 yrs	Lateral Incisor
7-8 yrs	Central Incisor

www.ToothSpeak.com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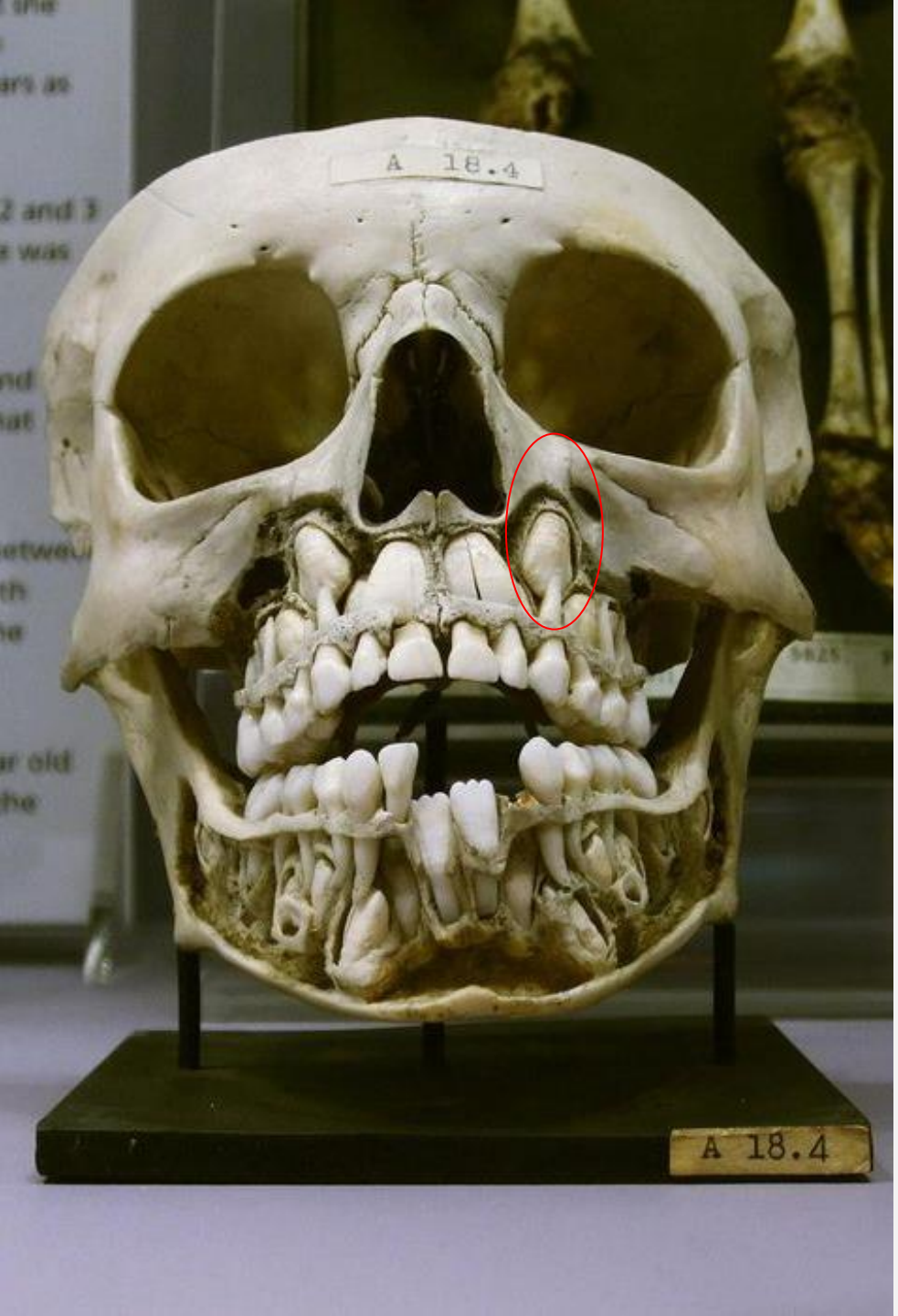
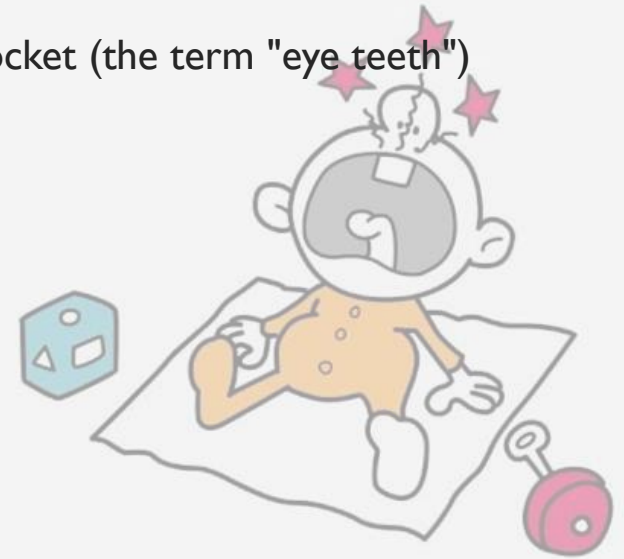


"EYE TEETH"

- child's skull
- dates to the 19th cent
- in the Hunterian Collection, Royal College of Surgeons (London)
- shows deciduous & permanent teeth
- Canine socket directly under the eye socket (the term "eye teeth")

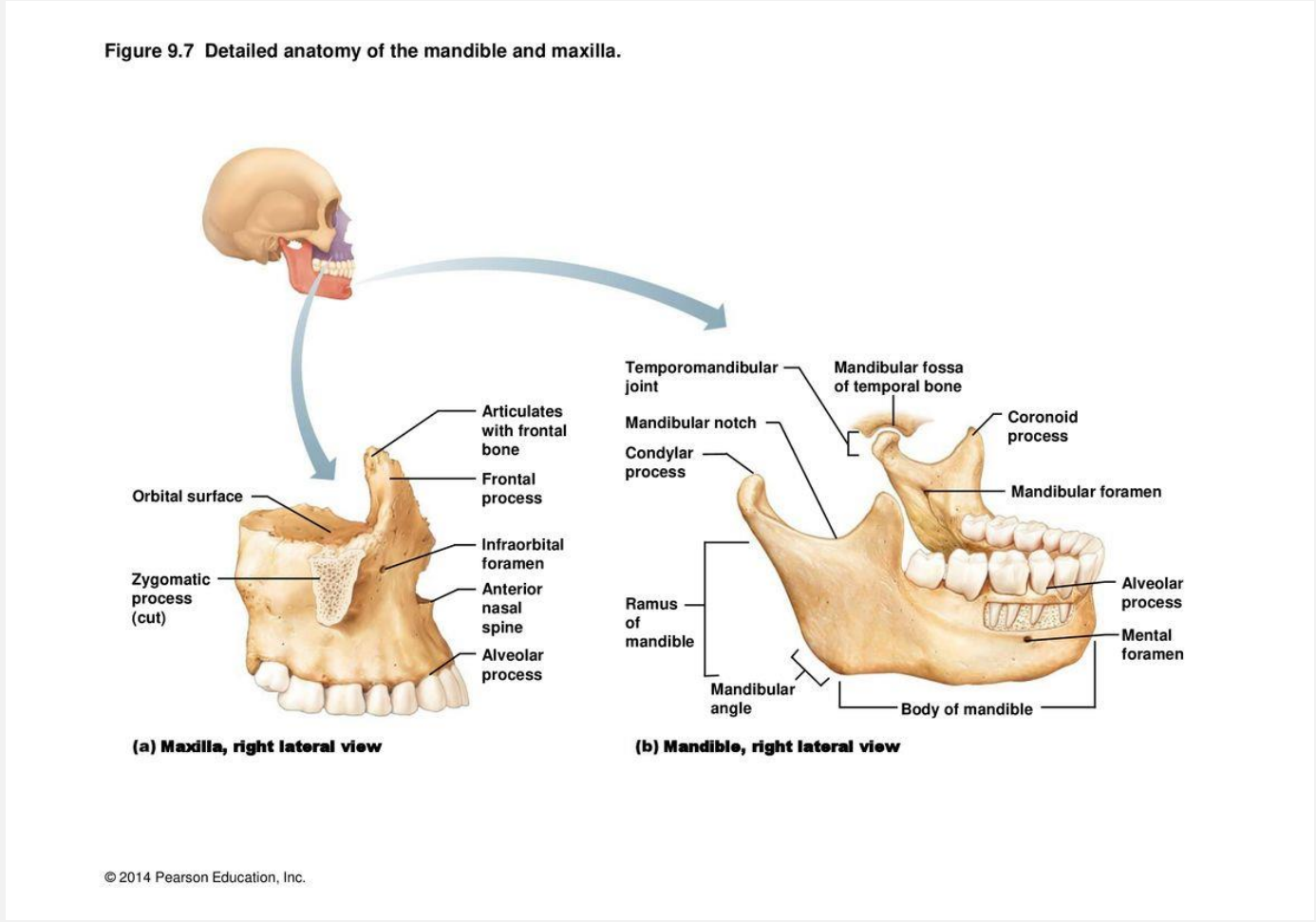


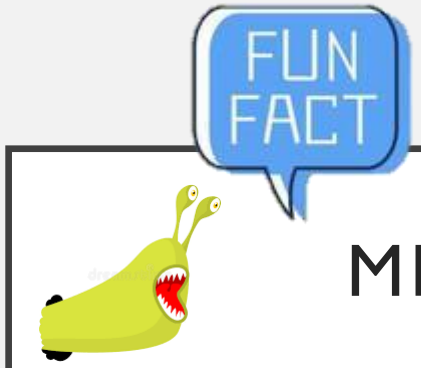
THE DENTAL ARCHES

Teeth form the upper & lower jawbones in the shape of an arch

referred to as dental arches

Maxilla & Mandible



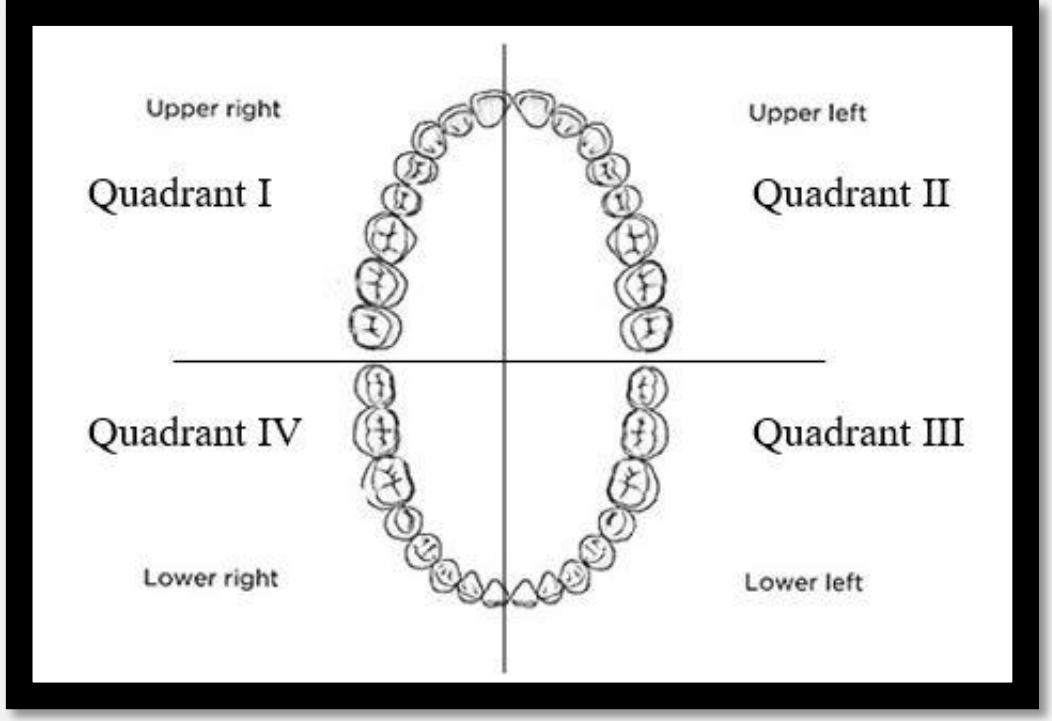


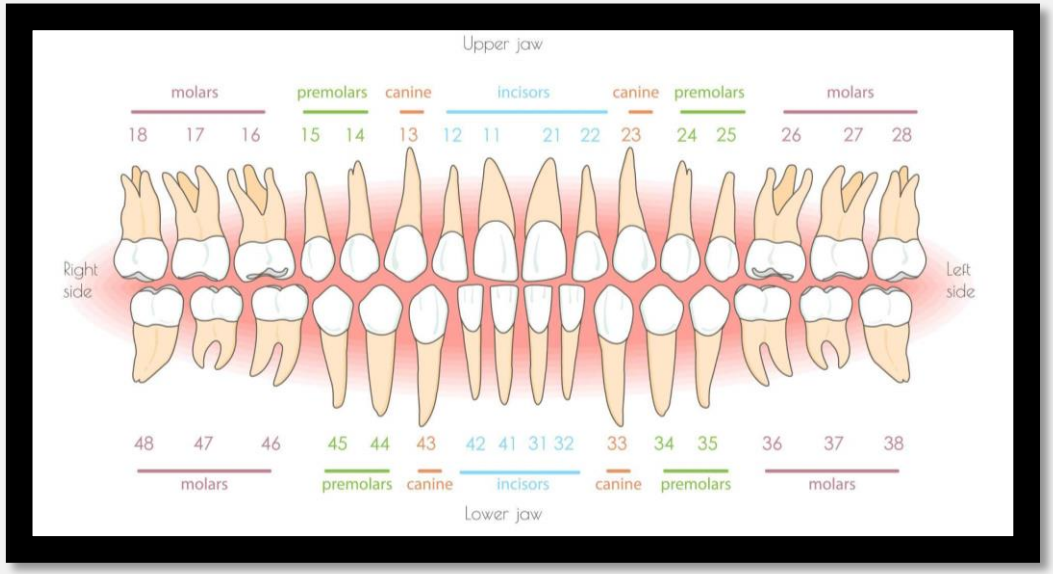
MEET THE TOOTH WORM

- the belief that cavities were the result of a worm boring into & throughout the tooth
- an ancient myth common across many regions and cultures (Greece, Egypt, Japan, China & India)

ALVEOLUS (TOOTH SOCKET)

- Each tooth is contained within a bony socket (alveolus)
- function: support & maintain teeth in functional position
- Highly adaptable to forces of asymmetrical stress
- Narrows toward bottom – allows tooth a large pressure surface
- Gradually resorbs with lack of principle function





QUADRANTS AND TOOTH TYPES

4 quadrants

Each has the same number & types of teeth:

- 2 incisors
- 1 canine
- 2 premolars
- 3 molars

TOOTH NOTATION

U L R V

Common

Used in most publications

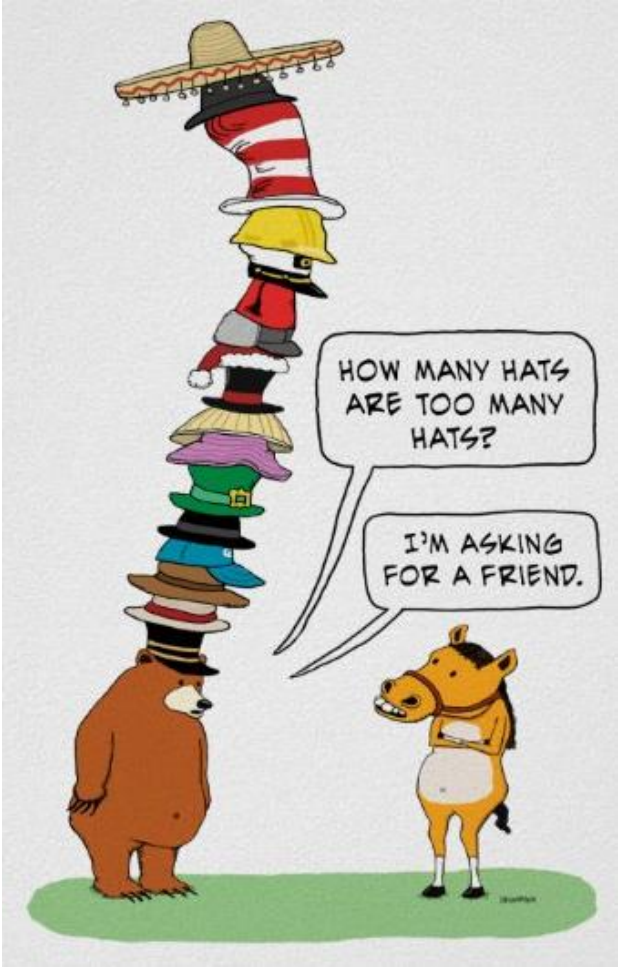
Permanent Maxillary= I^1 ,I^2 ,C' ,P^1 ,P^2 ,M^1 ,M^2 ,M^3

Permanent Mandibular= I_1 , I_2 ,C, ,P_1 ,P_2 , M_1 , M_2 , M_3

Deciduous Maxillary= i^1 , i^2 , c' , m^1 , m^2

Deciduous Mandibular= i_1 , i_2 , c, m_1 , m_2

Ex. URM^1= Upper Right Molar First



TOOTH NOTATION

2. World Dental Federation (FDI)

International System

most suitable computer-friendly labelling method

FDI two-digit notation

Permanent teeth

			upper right								upper left				
18	17	16	15	14	13	12	11	21	22	23	24	25	26	27	28
48	47	46	45	44	43	42	41	31	32	33	34	35	36	37	38
			lower right								lower left				

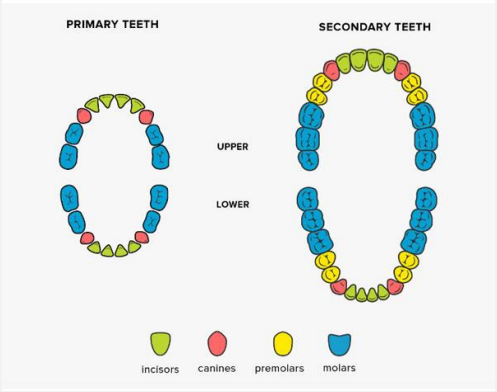
Deciduous teeth

			upper right								upper left				
			55	54	53	52	51	61	62	63	64	65			
			85	84	83	82	81	71	72	73	74	75			
			lower right								lower left				

61= upper left central deciduous incisor
46= lower right first permanent molar

HOW TEETH ARE USED

Human dentition is heterodont: multiple forms for multiple functions



Tooth	Fonction
Incisors	Cut
Canines	Tear, Pierce, Hold
Premolars	Grasp, Hold, Reduce size
Molars	Crush, Mill and Grin

HOW TEETH ARE USED

Using your teeth as tools may be human nature, but that doesn't mean it's good for your teeth.

AS A THIRD HAND

Evidences of Neanderthals use of teeth as a third hand

Why?

a consequence of a less specialized capacity of integration between eye and hand, and between brain and object

"It is one of the few cases in the study of the human evolution with several possibilities about the same hypothesis: spatial archaeology, cerebral anatomy, dental wear, anatomy of the hand, etc.",

Marina Lozano.

Reconstruction of the left hand of a Neanderthal – Carlos Lorenzo/IPHES

SHANIDAR I (IRAQI KURDISTAN)

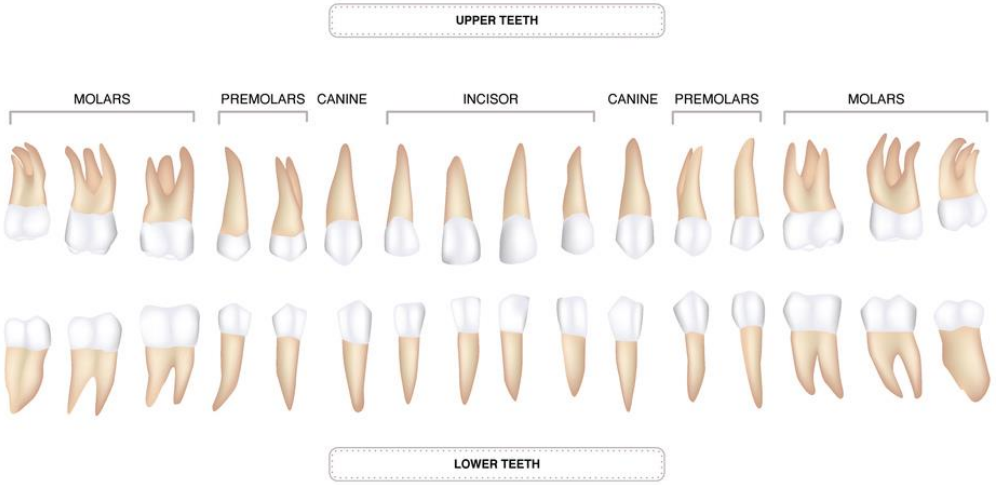
- A male Neanderthal
- Unusually worn down front teeth
- Lost his right arm at the elbow (a congenital or childhood disease or an amputation?)
- Used his teeth as a compensatory mechanism

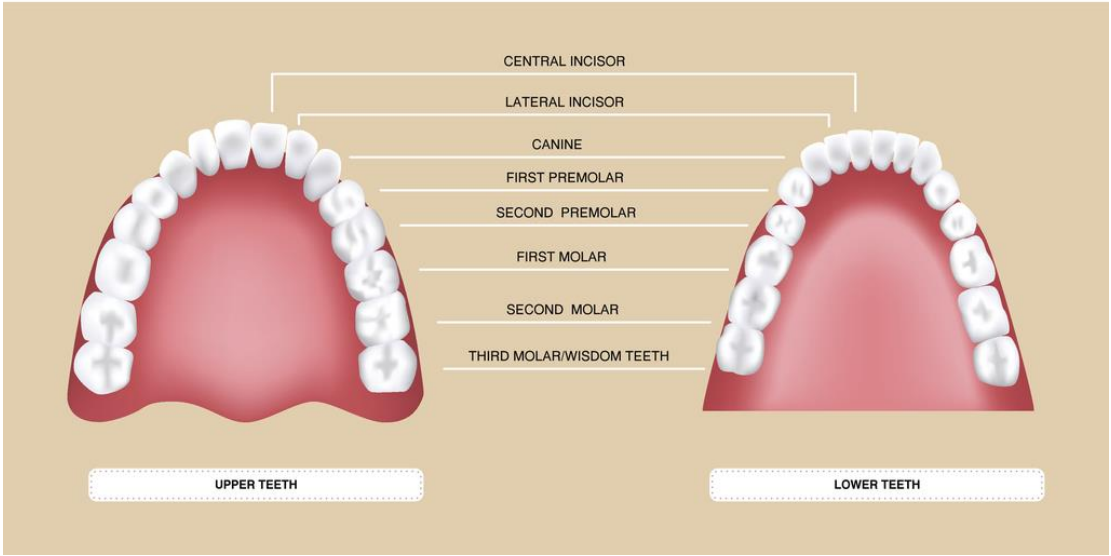
THE OLDEST TOOTHPICKS

- Hominid remains
- Dating to about 1.8 million years ago
- Dmanisi (Republic of Georgia)
- Scratch marks on the root of a tooth in one jawbone reflecting the shape of the toothpick.
- Repeated tooth-picking caused inflammation in the area

Casting of a Homo Georgicus skull, found at Dmanisi, Georgia.

TYPES OF TEETH





STEPS TO FOLLOW IN IDENTIFYING TEETH

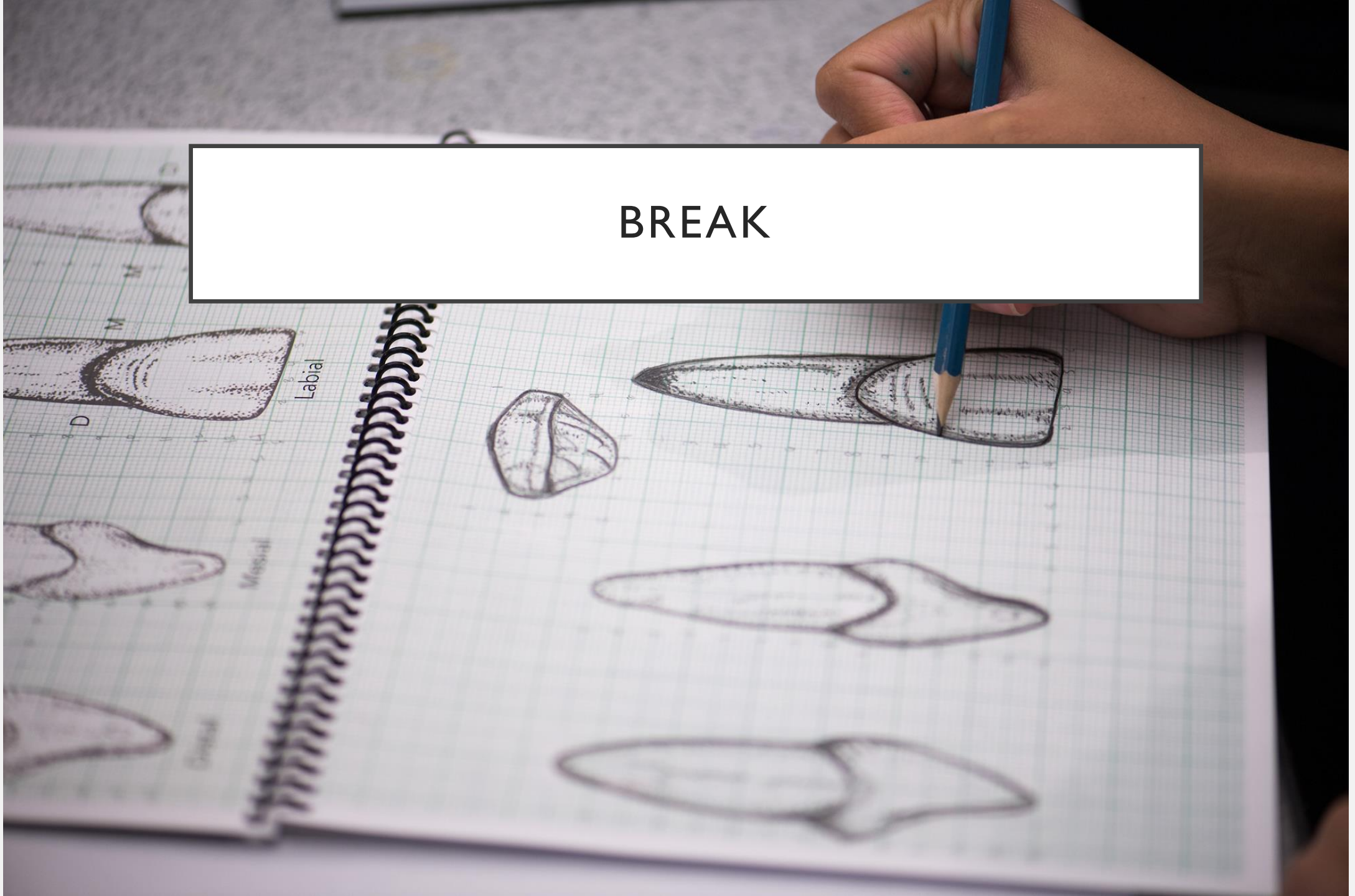
deciduous or permenant?

incisor, canine, premolar (adult) or molar?

upper (maxilla) or lower (mandible)

central, lateral? First, second or third?

right or left?

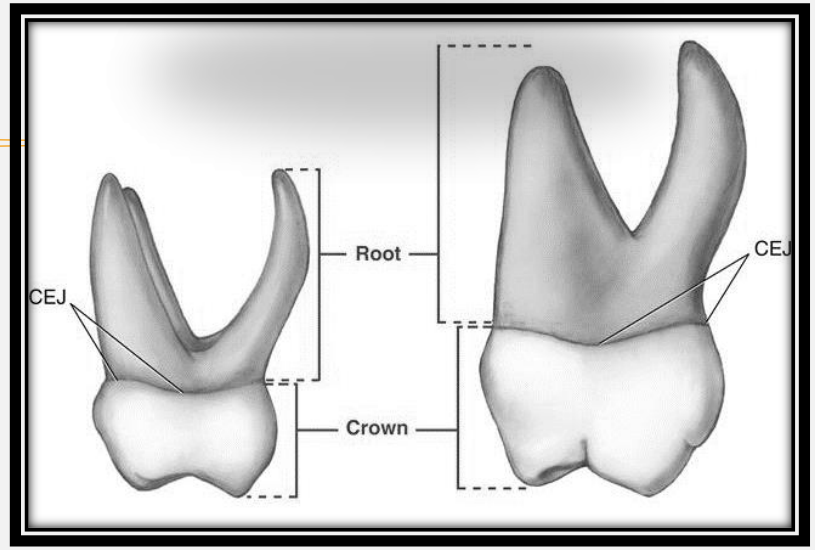


BREAK

DECIDUOUS OR PERMENANT?

Deciduous incisors are

1. considerably smaller than permanent ones
2. more yellow in colors
3. Have much thinner roots
4. Have roots that are much wider apart

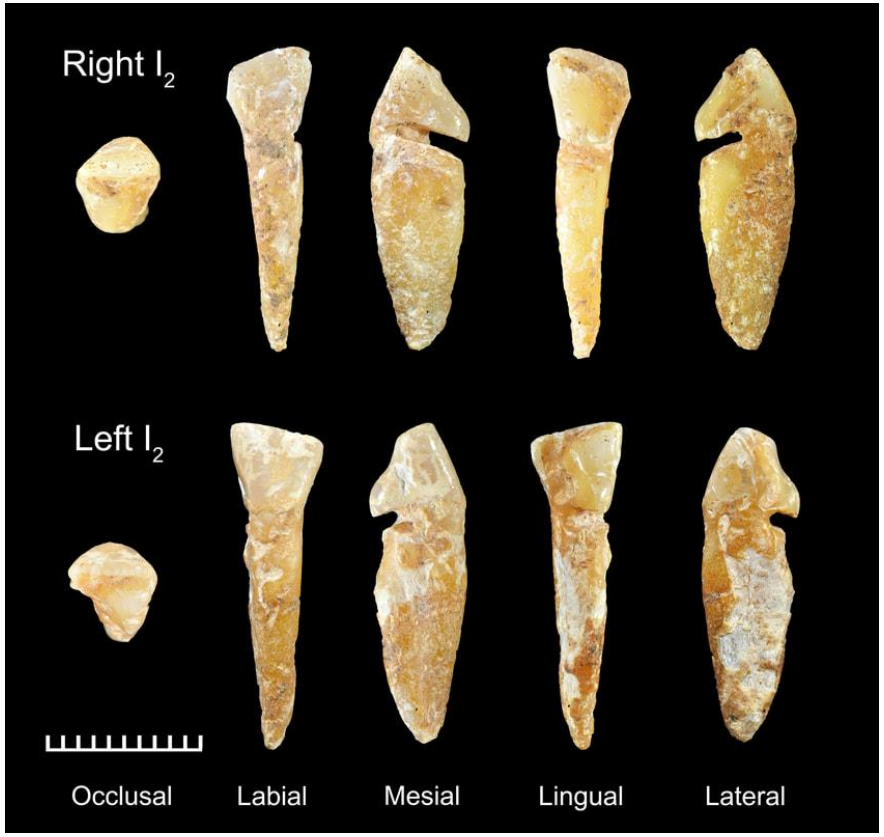


INCISORS

The two teeth on either side of the midline in both jaw

Characterized by:

- Single flat crowns
- Blade-like (shaped like a flattened shovels)
- Sharp occlusal edge (mesiodistal)
- Shovel-shaped lingual surface
- Single roots



INCISORS

The most frequently lost teeth in archaeological contexts (short single root)

CENTRAL, LATERAL, UPPER, LOWER?

Upper central incisor

Is the largest
Has a square mesial angle of crown
Has a rounded distal angle o crown
Is most likely to have a shovel shape

Upper lateral incisor

Is smaller than an upper central incisor
Usually has a pit at the base of cingulum
May have a shovel shape

Lower central incisor

Is the smallest of the incisor

Lower lateral incisor

Is larger than a lower central incisor but smaller than an upper
Has a wider crown (spreaded out into a fan shape) at the occlusal surface

CANINES

Called eyeteeth

Dog teeth

Although greatly used in man, it still the longest tooth

Has the largest root in relation to crown

The second most frequently lost teeth in archaeology

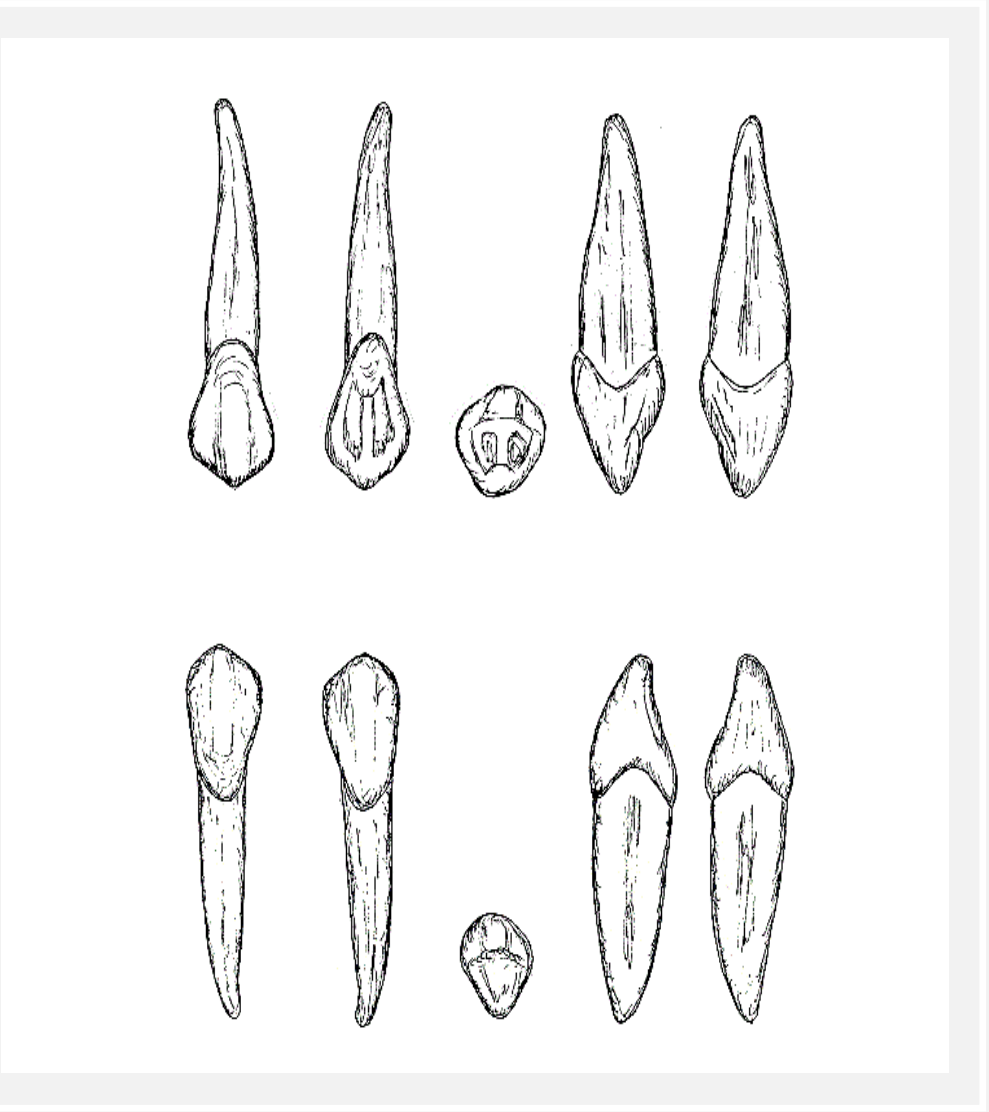
CANINES

crowns are conical

crowns are tusk-like

outline of the occlusal dentin patch is diamond shaped

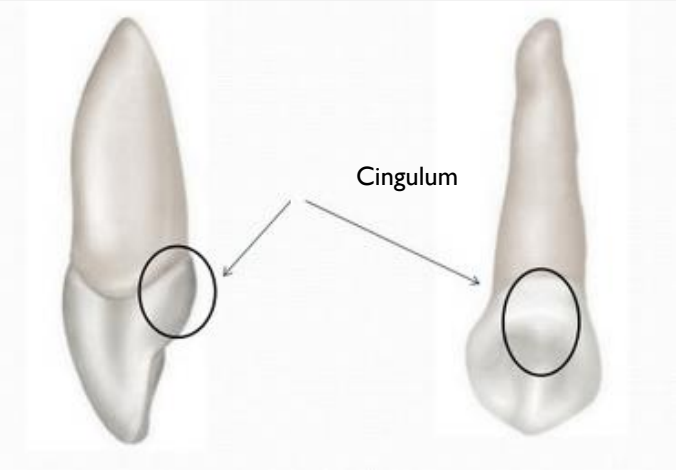
has single pointed cusp



A cingulum? What was it again?

It is a bulge or raised area on the lingual surface of the tooth near its neck or gum line.
usually

CANINES



Upper canine

A wider crown
A large size
A sharp single-point cusp
A cingulum

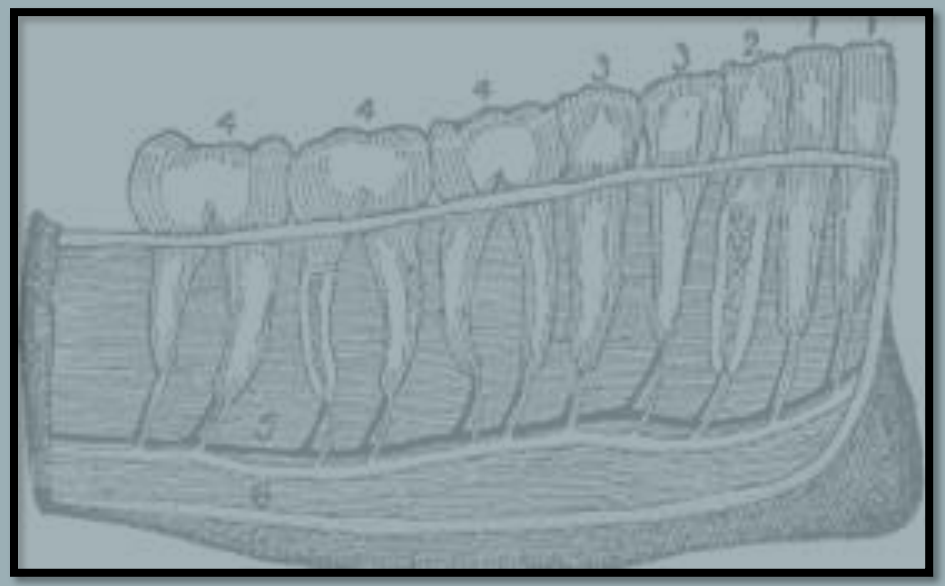
Lower canine

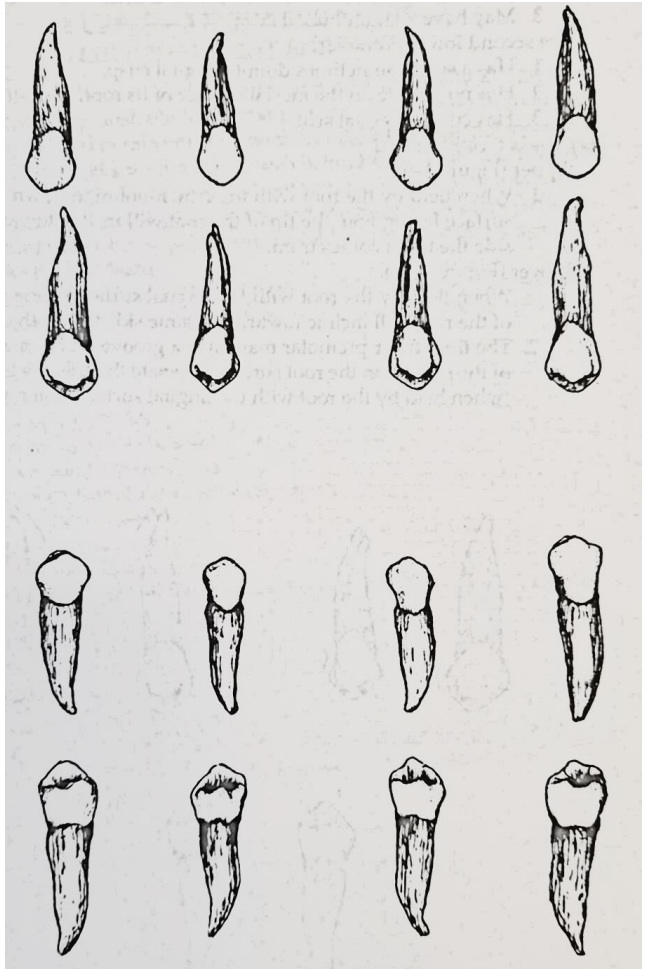
A narrower crown
A smaller size
A blunt single-point cusp
No cingulum

PREMOLARS

Known as bicuspids

Usually have 2 cusps, or points, on the crown





FIRST, SECOND, UPPER, LOWER?

First upper premolar	Second upper premolar
Usually has two roots Buccal cusps may be larger Mesial surface of the crown is concave	Usually has one root Both cusps are about equal Mesial surface of the crown is convex
First lower premolar	**Second lower premolar**
Single root Has a small, single, lingual cusp May have a groove on the mesial surface of its root May have a larger buccal cusp	Single root Has a small, sometimes double lingual cusp Has no groove on the mesial surface of its root Has cusps of equal size

MOLARS

- The least frequently lost teeth

Upper first molar 1. Lingual root is largest and often widely divergent 2. Contact facets are found mesially and distally 3. Carabelli's Cusps often present	**Upper second molar** 1. Lingual root is largest but not widely divergent 2. Contact facets are located mesially and distally. When there is no 3rd molar, a distal contact facet is not present.	**Upper third molar** 1. Roots often are fused and smaller than in the 1st and 2nd molars 2. Contact facets are on the mesial surface only
Lower first molar 1. Two separate roots, mesial surface curved backward 2. Usually has five cusps	**Lower second molar** 1. Two roots may be fused, both curved backwards 2. Usually four cusps	**Lower third molar** 1. Two fused roots that curve backward 2. Variable

THANK YOU!