

The History of Mathematics - BBC doc (part1)

<http://www.youtube.com/watch?v=WD1CXzTbUtA>

Listen to and watch the video, then fill in the missing expressions in the statements.

- 1) In his studies of maths, the speaker is especially interested in
- 2) Give examples of patterns and sequences which occur in the world.
.....
- 3) The most basic concepts of maths are
- 4) Also animals understand
- 5) People around the Nile river started to settle around
- 6) The most important event in Egypt was
- 7) People used this event for
- 8) People of Egypt needed to calculate or measure.....
- 9) Egyptians used their for measurements.
- 10) It was important to know the area of farmer' s land so that it could be
- 11) The first numbers in history were
- 12) They used a number system because they used their 10 fingers.
- 13) There was, however, no concept of a
- 14) Million minus 1 has characters in total.
- 15) The is the most important mathematical document
form ancient Egypt.
- 16) The speaker demonstrates how to calculate
- 17) The interesting thing is that the second number is described in

NUMBERS AND MEASUREMENTS

SIMPLE ARITHMETIC

Look at the way we say these examples

- | | |
|-------------------|---|
| $4+4 = 8$ | four and four is eight |
| $9-2 = 7$ | nine minus two is seven |
| $5 \times 5 = 25$ | five times five is twenty-five |
| $8 \div 4 = 2$ | or five multiplied by five is twenty-five
eight divided by four is two |

1. Now read these aloud

- a) $12+7 = 19$ b) $15 \div 3 = 5$ c) $6 \times 2 = 12$ d) $23-6 = 17$
 e) $9-3 = 6$ f) $6+3 = 9$ g) $28 \div 4 = 7$ h) $8 \times 9 = 72$
 i) $3 \times 8 = 24$ j) $12-4 = 8$

ARITHMETIC

Here are some more arithmetical symbols. Notice how to say them.

- | | |
|--------------------------------|-----------------------------|
| 2^2 two squared | $\sqrt{\quad}$ square root |
| 2^3 two cubed | $\sqrt[3]{\quad}$ cube root |
| 2^4 two to the power of four | π pi |

This is how we say fractions

- | | |
|------------------------------|-------------------------------|
| $\frac{1}{2}$ a half | $\frac{1}{3}$ a third |
| $\frac{1}{4}$ a quarter | $\frac{3}{5}$ three fifths |
| $\frac{3}{4}$ three quarters | $2\frac{1}{2}$ two and a half |

1. Now read these aloud

- $5\frac{1}{2}$, $2\frac{3}{4}$, $10\frac{1}{4}$, $\frac{2}{3}$, $1\frac{2}{3}$, $4\frac{1}{4}$

Look at this example

- $5+4 = \dots$ How much is five and four?
 Five and four is nine.

2. Ask and answer questions about these in the same way:

Work with a friend.

- | | | |
|--|--|----------------------------------|
| a) $12-6 = \dots$ | c) $\sqrt{16} = \dots$ | i) $\sqrt[3]{27} = \dots$ |
| b) $9 \times 5 = \dots$ | f) $4+7\frac{1}{2} = \dots$ | j) $2^4 = \dots$ |
| c) $30 \div 6 = \dots$ | g) $3\frac{2}{3} + 6\frac{1}{3} = \dots$ | k) $\pi = \dots$ |
| d) $4\frac{1}{2} + 6\frac{1}{3} = \dots$ | h) $9^2 = \dots$ | l) $2\frac{1}{2} \div 2 = \dots$ |

FRACTIONS AND DECIMALS

Parts of a whole number can be expressed as fractions or as decimals. Here are some fractions with decimal equivalents. Notice how we say the decimals:

- $\frac{1}{2} = 0.5$ (nought point five)
 $1\frac{1}{2} = 1.75$ (one point seven five)
 $3\frac{1}{10} = 3.8$ (three point eight)
 $\frac{874}{1000} = 0.874$ (nought point eight seven four)

and the measurements:

- 0.643 g = point six four three of a gramme
 1.385 cm = one point three eight five centimetres.

1. Change these fractions into decimals

- a) $\frac{1}{2}$ b) $4\frac{1}{2}$ c) $6\frac{1}{4}$ d) $7\frac{1}{2}$ e) $\frac{1}{10}$

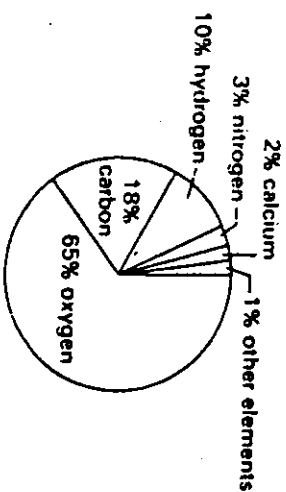
Look at the way we say this example 1 km = 0.621 miles one kilometre equals nought point six two one miles

PERCENTAGES

We can express parts of a full quantity as percentages (%).

Look at this example

65% (per cent) of our body weight is oxygen.



1. Now use the diagram to make more sentences about the composition of the body. Make a similar diagram and sentences about the composition of the atmosphere.

MENTAL ARITHMETIC

Mental arithmetic is done in your head, not on paper. Practise in mental arithmetic will help you to think quickly in English.

Look at this example

Add six to seven. Now multiply by four. Subtract four. Divide by twelve. What is the answer? *Four.*

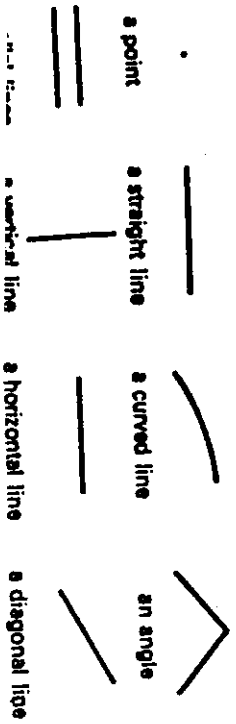
Here is the process in numbers and symbols: $6 + 7 = 13$, $13 \times 4 = 52$, $52 - 4 = 48$, $48 \div 12 = 4$.

1. Now work with a friend to do these exercises. One of you should have his book open and ask the questions. The other should have his book closed and give the answers. See how quickly you can do it.

- a) Multiply 7 by 9. Add 9. Divide by 6. Subtract 3. What is the answer?
- b) Subtract 8 from 24. Divide by 2. Add 2. Multiply by 10. What is the answer?
- c) Take the average of 20, 24, 26 and 30. Multiply by 10. What is the answer?
- d) Take 50% of the pupils in your class. Multiply by 2. Divide by 4. What is the answer?
- e) Divide 20 by 5. Multiply by 9. Add 32. What is the answer?
- f) Multiply 7 by 4. Add 20. Subtract 6. Divide by 6. What is the answer?
- g) Take the square root of 36. Add 14. Multiply by 5. Subtract 1. What is the answer?
- h) Take the square root of 81. Add the square root of 16. Multiply by 12. Divide by 4. What is the answer?
- i) Calculate the volume of a rectangular solid with a length of 10 cm, a height of 8 cm and a width of 5 cm.
- j) What is the length of a box which has a volume of 144 cc, a height of 4 cm and a width of 3 cm?

Section 1 One-dimensional and two-dimensional shapes

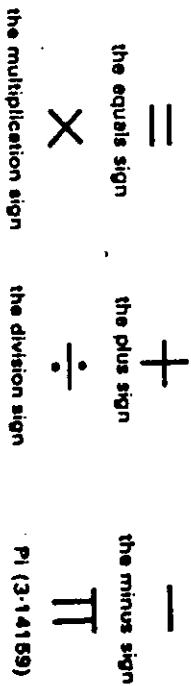
1. Look at these:



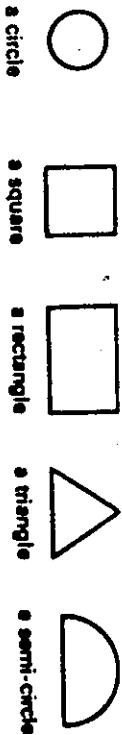
The letter 'E' has one vertical line and three horizontal lines. It also has four angles. Which of these letters are described below? D, M, C, H, F, L, Z, B.

- a) A letter with 2 horizontal lines and 1 vertical line.
- b) A letter with 1 curved line and no straight lines.
- c) A letter with 2 curved lines and 1 vertical line.
- d) A letter with 2 parallel vertical lines, 1 horizontal line and 4 angles.
- e) A letter with 2 vertical lines and 2 diagonal lines.

Now write sentences describing these signs:







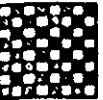
2. Look at these figures and answer the questions:



- a) Which figure is curved?
- b) Which figures have parallel sides?
- c) Which figure always has equal sides?
- d) Which figure may have equal sides?
- e) Which figure has 3 angles?
- f) Which figure has a curved side and a straight side?

Now make sentences from the table:

Example: A coin is shaped like a circle. It is circular in shape.

	A coin	is	shaped like a	circle.	It is	square	in	shape.
	A ruler	is	shaped like a	rectangle.	It is	square	in	shape.
	A set square	is	shaped like a	semi-circle.	It is	square	in	shape.
	A protractor	is	shaped like a	triangle.	It is	square	in	shape.
	A chess-board	is	shaped like a	circle.	It is	square	in	shape.