

**Mathematical Knowledge for the curriculum in Year 5**

Dear parents,

The following are the mathematical facts your child will need to complete the year 5 curriculum. In order that they can learn how to use numbers, algebra, geometry and statistics they will need to have a basic recall of facts that can then be applied. The UK curriculum in mathematics is now focussed on Mastery approaches to ensure that the best students genuinely are so, and that more students get the best grades. With this in mind the first step to mastery comes from knowing the basic facts so that in school they can apply these facts.

**The decimal number system**

Millions	Thousands			Ones			Fractions		
Millions	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones	Tenths	Hundredths	Thousandths

3 245 769 is three million, two hundred and forty five thousand, seven hundred and sixty nine.

In the number 3 245 769 the 5 stands for five thousand and the 2 stands for two hundred thousand.

27.398 is twenty seven point three nine eight; you will note that fractions are read as single numbers.

In the number 27.398 the 3 stands for three tenths, the 9 stands for nine hundredths and the 8 for eight thousandths.

**Counting in multiples of 10 for any given number up to 1 000 000**

count forward or backwards in 10's

e.g. 2 347, 2 357, 2 367,                      e.g. 98 346, 98 336, 98 326

count forward or backwards in 100's

e.g. 52 397, 52 497, 52 597,                      e.g. 7 926, 7 826, 7 726

Count forwards or backwards in 1 000's

e.g. 6 139, 7 139, 8 139                      e.g. 375 228, 374 228, 373 228

**Counting forwards and backwards with positive and negative whole numbers, including across zero**

Counting up in 1's from -3

-3, -2, -1, 0, 1, 2, 3, 4, ...



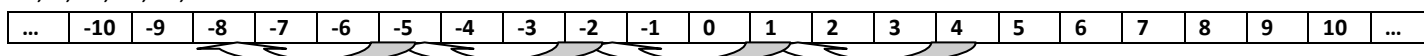
Counting up in 2's from -6

-6, -4, -2, 0, 2, 4, 6, 8, ...



Counting down in 3's from 4

4, 1, -2, -5, -8, ...



**Read and recognise Roman numerals and years written in Roman numerals**

Number	1	5	10	50	100	500	1000
Roman numeral	I	V	X	L	C	D	M

1987	2004	2015
MCMLXXXVII	MMIV	MMXV

**Prime numbers**

Numbers that only have a single pair of factors:

2, 3, 5, 7, 11, 13, 17, 19, ...

**Square numbers and cube numbers**

Square numbers are numbers that can be made by multiplying the same two whole numbers together e.g. 9 is square because it can be thought of as 3 x 3. The square numbers are:

1, 4, 9, 16, 25, 36, 49, 64, 81, 100, 121, 144, 169, 196, 225, ....

The notation for square is a small raised 2, like this <sup>2</sup>

Cube numbers are numbers that can be made by multiplying the same three whole numbers together e.g. 27 is cube because it can be thought of as 3 x 3 x 3. The cube numbers are:

1, 8, 27, 64, 125, 216, 343, 512, 729, 1000, ...

The notation for cube is a small raised 3, like this <sup>3</sup>

**Fractions**

Fractions are numbers that include part of a whole number, they are written as  $\frac{\text{numerator}}{\text{denominator}}$

The denominator tells you how many divisions make a whole number

Whole = 1



Three divisions =  $\frac{?}{3}$

Whole = 1



Four divisions =  $\frac{?}{4}$

Whole = 1



Six divisions =  $\frac{?}{6}$

The numerator tells you how many divisions are selected



Three divisions, two selected =  $\frac{2}{3}$



Four divisions, one selected =  $\frac{1}{4}$

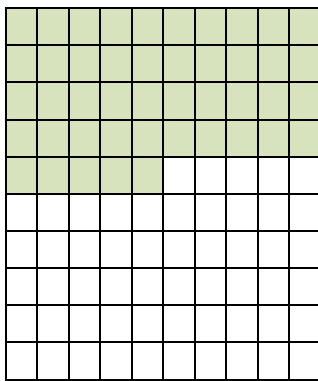


Six divisions, five selected =  $\frac{5}{6}$

Y5 Mathematical facts

**Know what a percentage is.**

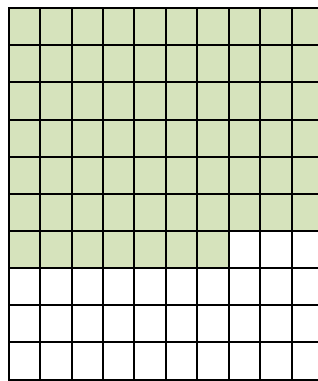
Percentage means “per 100” so 50% means 50 per 100



$$= 45\%$$

$$= \frac{45}{100}$$

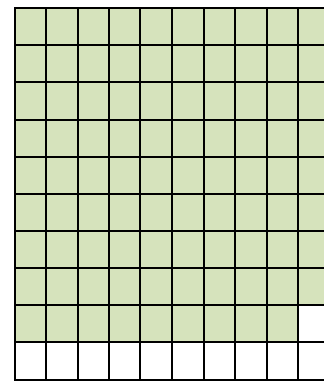
$$= 0.45$$



$$= 67\%$$

$$= \frac{67}{100}$$

$$= 0.67$$



$$= 89\%$$

**Equivalent fractions, decimals and percentages**

$$\frac{1}{2} = 0.5 = 50\%$$

$$\frac{1}{4} = 0.25 = 25\%$$

$$\frac{1}{5} = 0.2 = 20\%$$

$$\frac{1}{10} = 0.1 = 10\%$$

$$\frac{2}{4} = \frac{1}{2} = 0.5 = 50\%$$

$$\frac{2}{5} = 0.4 = 40\%$$

$$\frac{3}{10} = 0.3 = 30\%$$

$$\frac{3}{4} = 0.75 = 75\%$$

$$\frac{3}{5} = 0.6 = 60\%$$

$$\frac{7}{10} = 0.7 = 70\%$$

$$\frac{4}{5} = 0.8 = 80\%$$

$$\frac{9}{10} = 0.9 = 90\%$$

**Standard units of length, mass, volume and time**

	Length	Area	Volume	Mass
Standard units	kilometre = km metre = m centimetre = cm millimetre = mm	Square kilometres = km <sup>2</sup> Square metres = m <sup>2</sup> Square centimetres = cm <sup>2</sup> Square millimetres = mm <sup>2</sup>	litre = l millilitre = ml Cubic metre = m <sup>3</sup> Cubic centimetre = cm <sup>3</sup> Cubic millimetre = mm <sup>3</sup>	tonne = t Kilogram = kg gram = g milligram = mg
Equivalencies	1km = 1000m, 1m = 100cm = 1000mm, 1cm = 10mm,		1 l = 1000ml 1 ml = 1 cm <sup>3</sup>	1t = 1000kg, 1kg = 1000g, 1g = 1000mg

**Metric and Imperial units**

$$1 \text{ inch} = 2.54\text{cm}$$

$$1\text{cm} = 0.39 \text{ inch}$$

$$1 \text{ pound} = 454\text{g}$$

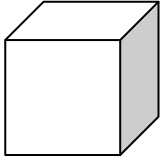
$$1\text{kg} = 2.2\text{lb}$$

$$1 \text{ pint} = 568\text{ml}$$

$$1 \text{ litre} = 1.76 \text{ pints}$$

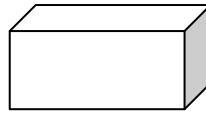
Y5 Mathematical facts  
**3-Dimensional shapes**

Cube

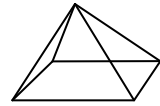


All the sides are the same length

Cuboid



Square based pyramid



**The rectangle**



Two pairs of equal and parallel sides.  
Four equal angles of  $90^\circ$   
Two lines of reflection

**Turn and degrees**

A whole turn – the angle around a point.  $360^\circ$



A half turn – the angle around a point on a straight line.  $180^\circ$



A quarter turn – the right angle.  $90^\circ$

