Foundation GCSE

Reading and Writing Large Numbers

Millions			Thousands										
H	T	U	H	T	U	H	T	U	•	1/10	1/100	1/1000
	4	3	0	0	5	2	0	3	•	6		

Reading in groups of 3 we have:-

43 millions, 5 thousands, 2 hundred and 3 point 6

Multiplying by 10, moves the digits **one** place to the left (430 052 036)
Dividing by 10, moves the digits **one** place to the right (4 300 520.36)

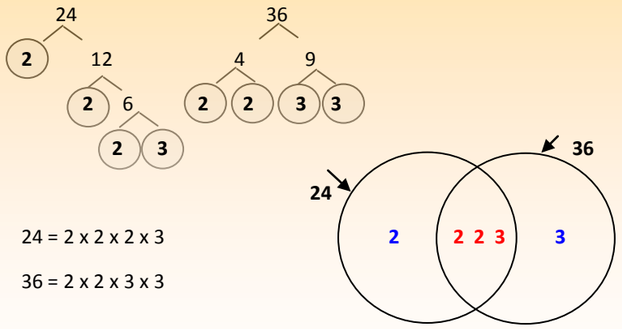
Multiplying or dividing by 100 moves the digits **two** places and

Multiplying or dividing by 1000 moves the digits **three** places

Metric Units

Length	Mass	Capacity	Common Conversions
10mm = 1cm		10mℓ = 1cℓ	1 kg = 2.2 lbs
100cm = 1m		100cℓ = 1ℓ	5 miles = 8km
1000m = 1km	1000g = 1kg	1000mℓ = 1ℓ	1ℓ = 1000 cm^3

HCF and LCM (Product of Prime Factors)



24 = 2 x 2 x 2 x 3

36 = 2 x 2 x 3 x 3

HCF = **2 x 2 x 3** = 12

LCM = HCF x **2 x 3** = **12 x 2 x 3** = 72

Vocabulary

Factor—Divides exactly into a number eg 3 is a factor of 12

Multiple—In the times tables of a number eg 24 is a multiple of 8

Square number—A number which can be written as the product of 2 equal factors eg 25 is a square number since 25 = 5 x 5

Prime number—A number which only has 2 factors, 1 and itself

Sum—Result of adding two or more numbers

Product—Result of multiplying two or more numbers

Estimate—Round the numbers first and give an approx. answer

Correlation—The relationship between 2 variables

Probability

A pack of playing cards contains:-

52 cards split into 4 suits

(**hearts, diamonds**, **spades & clubs**)

13 cards in each suit, so 26 **red** cards and 26 **black**

When flipping a fair coin

P(H) = P(T) = $^1/_2$

When rolling a fair dice

P(1)=P(2)=P(3)=

P(4)=P(5)=P(6) = $^1/_6$

Averages and Spread

Hey Diddle Diddle,

The **MEDIAN** is the middle.

You add then divide for the **MEAN**.

The **MODE** is the one that you see the most

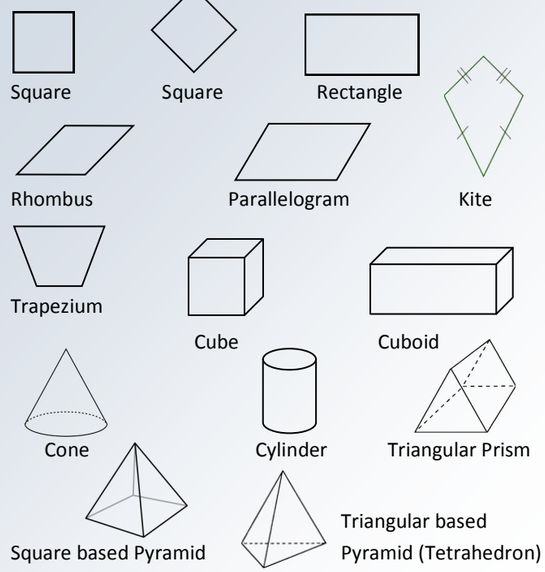
And the **RANGE** is the difference between.

Equivalent Percentages, Decimals and Fractions

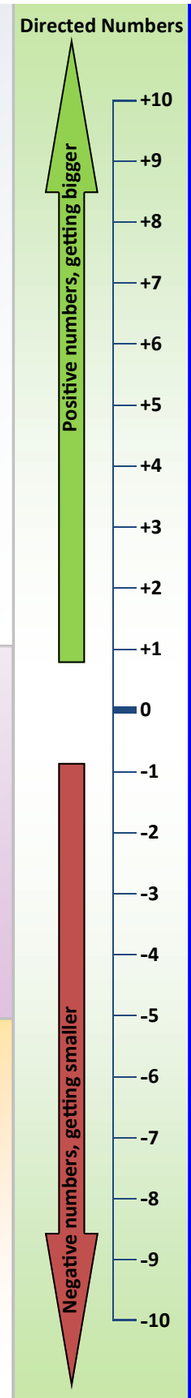
50%	= 0.5	= $^1/_2$	Divide by 2
25%	= 0.25	= $^1/_4$	Divide by 4
10%	= 0.1	= $^1/_{10}$	Divide by 10
1%	= 0.01	= $^1/_{100}$	Divide by 100

Percentage means … Parts out of 100

Shapes

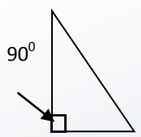


Directed Numbers



Triangles

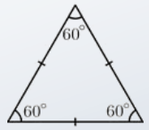
Right angled triangle



Isosceles triangle

Two sides the same
Two angles the same

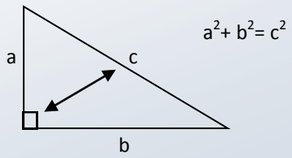
Equilateral triangle



Three equal sides
Three angles always 60^0

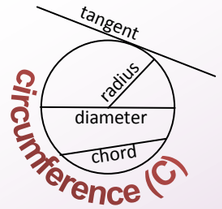
The three internal angles in a triangle **ALWAYS** add up to 180^0

Pythagoras' Theorem



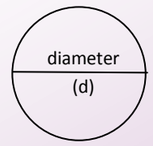
The hypotenuse (c) is always the longest side and always opposite the Right-angle

Circles

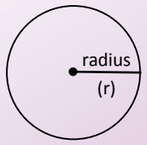


π = 3.142 (Pi)

Circumference



Area



C = π x d
"Cherry Pies Delicious"

$A = \pi \times r^2$
"Apple Pies Are Too"

Angles

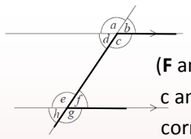
Acute angle (less than 90^0)

Right angle

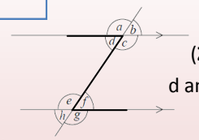
Obtuse angle (more than 90^0 but less than 180^0)

Reflex angle (more than 180^0)

Angles on a straight line add up to 180^0
Angles in a triangle add up to 180^0

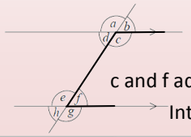


(**F** angles)
c and g are equal corresponding angles



(**Z** angles)
d and f are equal—alternate angles

Opposite angles are always equal too
(a=c, b=d, e=g and f=h)



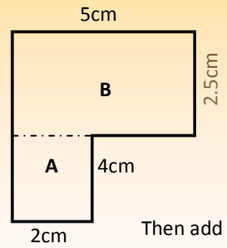
(**C** angles)
c and f add up to 180^0
Interior angles

Perimeter, Area and Volume

Perimeter is the distance around the edge
Add the measurements all around the edge
Measured in mm, cm, m or km

Area is the space inside a 2D shape
Length x Width
Measured in mm^2, cm^2, m^2 or km^2

Volume is the capacity inside a 3D shape
Length x Width x Height
Measured in mm^3, cm^3, m^3 or km^3



Composite Shapes

Perimeter—remember to calculate the unknown sides first, then add together
2 + 4 + 3 + 2.5 + 5 + 6.5 = 23cm

Area—Split into 2 rectangles
A = 2 x 4 = $8cm^2$ B = 5 x 2.5 = $12.5cm^2$
Then add your areas together 8 + 12.5 = $20.5cm^2$

Volume—Split into cuboids, find volume of each, then add together

BIDMAS

B	I	D	M	A	S
( )	x^2	÷	x	+	-

Algebra

Simplify 3a + 2a = 5a
(gather together "Like" terms)

Expand and simplify 4(3y – 2) = 12y—8
(multiply out the bracket and then gather together "Like" terms)

Factorise 30—24b = 6 (5— 4b)
(put the brackets back in)

Solve 3x + 7 = 22 so 3x = 15 and x = 5
(find the value of x)