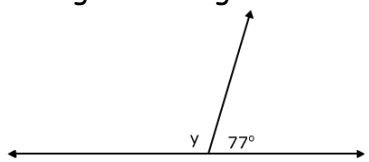
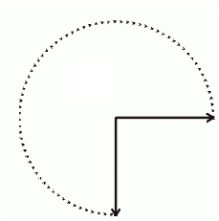
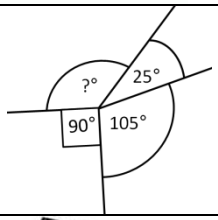
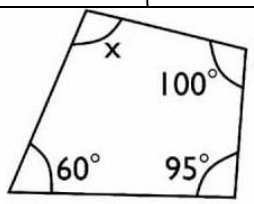
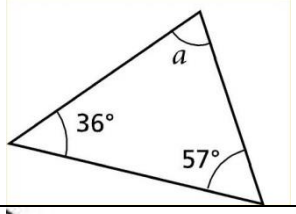
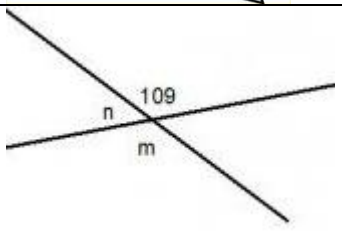
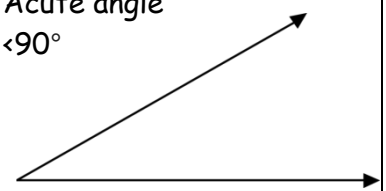
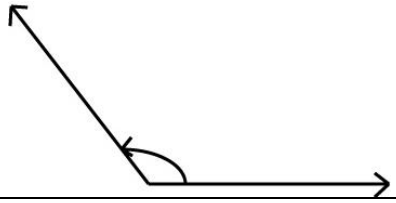
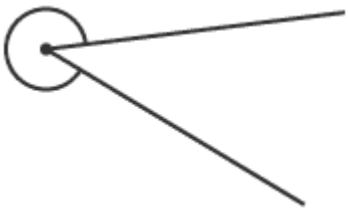
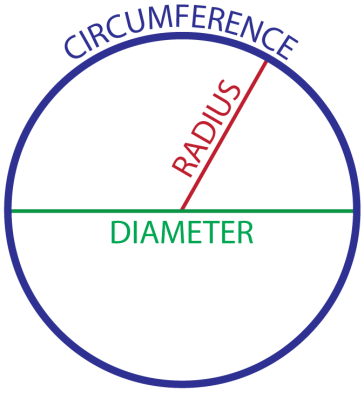
Angle	Rule
Right Angle 	Always 90°
Straight line angle 	Adds up to 180°
$\frac{3}{4}$ of a circle 	Always 270°
Around a point 	Adds up to 360°
Quadrilateral 	Internal angles add up to 360°
Triangle 	Internal angles add up to 180°
Opposite angles 	Opposite angles are the same, if the lines that cross are straight and continuous.

Acute angle <90°	Obtuse angle >90° - <180°	Reflex angle >180° - <360°
		

Fraction, decimal and percentage equivalents

Fraction	Decimal	Percentage
$^1/_2$	0.5	50%
$^1/_4$	0.25	25%
$^3/_4$	0.75	75%
$^1/_5$	0.2	20%
$^2/_5$	0.4	40%
$^3/_5$	0.6	60%
$^4/_5$	0.8	80%
$^1/_3$	0.33	33%
$^2/_3$	0.66	66%
$^1/_{10}$	0.1	10%
$^2/_{10}$	0.2	20%
$^3/_{10}$	0.3	30%
$^4/_{10}$	0.4	40%
$^5/_{10}$	0.5	50%

Parts of a circle



Circumference = the perimeter of the circle.

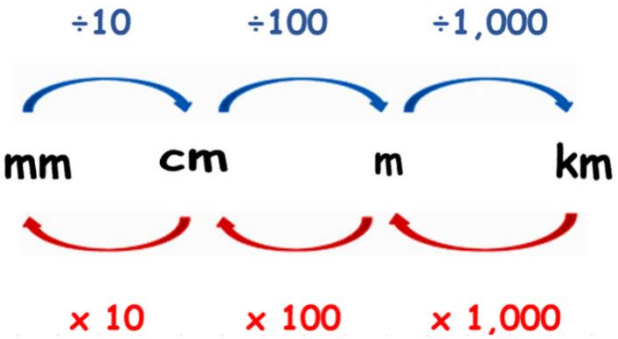
Radius = the distance from the centre of the circle to the circumference. It is half the diameter.

Diameter = a straight line passing from side to side through the centre of the circle. It is double the radius.
TIP: "Run the radius" (because it is shorter)
"Drive the diameter" (because it is longer)

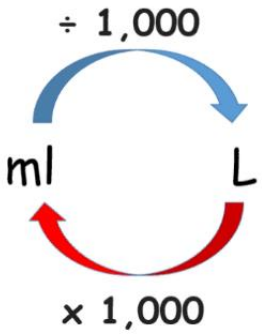
Example:
Radius = 3cm, so the diameter = 6cm
Diameter = 17cm, so the radius = 8.5cm

Converting between measures

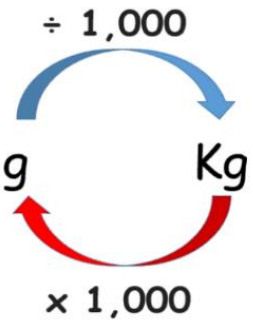
LENGTH



CAPACITY



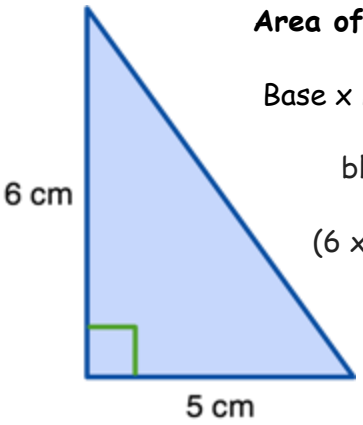
MASS



Area and Perimeter

Area = the measurement of the inside of a shape.

Perimeter = the distance around the outside of the shape.

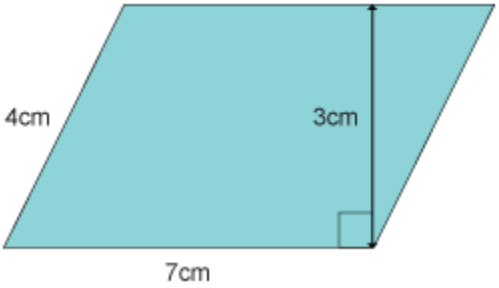


Area of a triangle

Base x Height ÷ 2

bh ÷ 2

(6 x 5) ÷ 2



Area of a parallelogram

Base x Height

bh

7 x 3

Remember: You must use the perpendicular height of a triangle of parallelogram.

Written methods

Addition and subtraction

789 + 642 becomes

$$\begin{array}{r} 7\ 8\ 9 \\ +\ 6\ 4\ 2 \\ \hline 1\ 4\ 3\ 1 \\ \hline \ \ 1\ \ 1 \end{array}$$

Answer: 1431

874 – 523 becomes

$$\begin{array}{r} 8\ 7\ 4 \\ -\ 5\ 2\ 3 \\ \hline 3\ 5\ 1 \end{array}$$

Answer: 351

932 – 457 becomes

$$\begin{array}{r} {\scriptstyle 8\ \ 12\ \ 1} \\ 9\ \not{3}\ \not{2} \\ -\ 4\ 5\ 7 \\ \hline 4\ 7\ 5 \end{array}$$

Answer: 475

Short division

98 ÷ 7 becomes

$$\begin{array}{r} 1\ 4 \\ 7\overline{)\ 9\ \ 8} \\ \ \ \ \ {\scriptstyle 2} \end{array}$$

Answer: 14

432 ÷ 5 becomes

$$\begin{array}{r} 8\ \ 6\ \ r\,2 \\ 5\overline{)\ 4\ 3\ \ 2} \\ \ \ \ \ \ {\scriptstyle 3} \end{array}$$

Answer: 86 remainder 2

496 ÷ 11 becomes

$$\begin{array}{r} 4\ \ 5\ \ r\,1 \\ 1\ 1\overline{)\ 4\ 9\ \ 6} \\ \ \ \ \ \ \ {\scriptstyle 5} \end{array}$$

Answer: $45\frac{1}{11}$

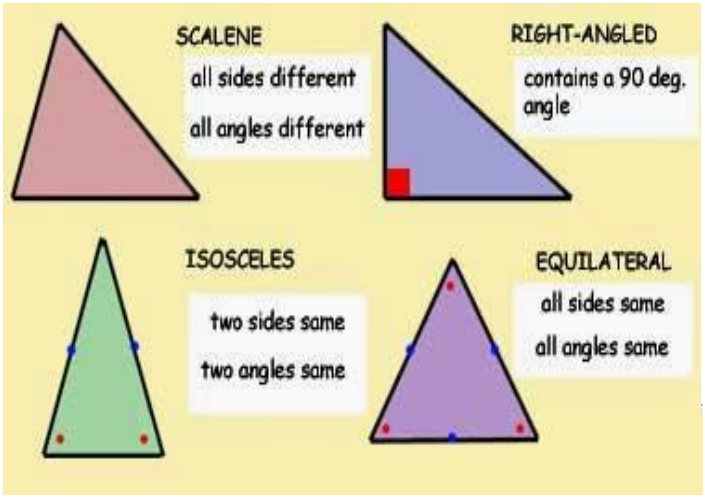
Long multiplication

124 × 26 becomes

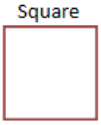
$$\begin{array}{r} {\scriptstyle 1\ \ 2} \\ 1\ 2\ 4 \\ \times\ \ \ 2\ 6 \\ \hline 7\ 4\ 4 \\ 2\ 4\ 8\ 0 \\ \hline 3\ 2\ 2\ 4 \\ {\scriptstyle 1\ \ 1} \end{array}$$

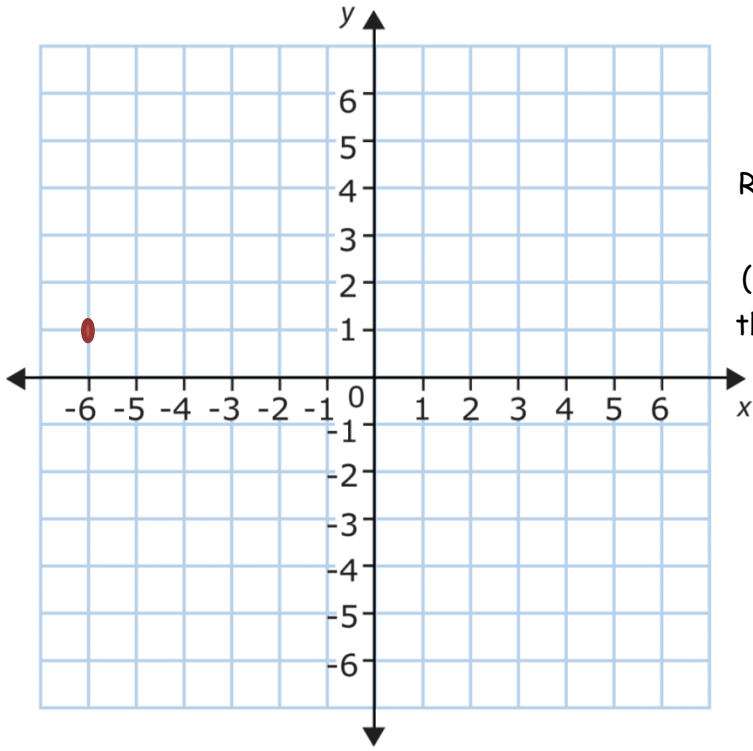
Answer: 3224

Triangles



Quadrilaterals

Type	Properties
Parallelogram 	• Opposite sides are equal and parallel • Opposite angles are equal
Rectangle 	• Opposite sides are equal and parallel • All angles are right angles (90°)
Square 	• Opposite sides are parallel • All sides are equal • All angles are right angles (90°)
Rhombus 	• Opposite sides are parallel • All sides are equal • Opposite angles are equal • Diagonals bisect each other at right angles (90°)
Trapezoid 	• One pair of opposite sides is parallel
Kite 	• Two pairs of adjacent sides are equal • One pair of opposite sides are equal • One diagonal bisects the other • Diagonals intersect at right angle (90°)



Reading coordinates:

Read along the X-axis first, then the Y-axis

(Along the corridor and up/down the stairs. X also comes before Y in the alphabet, so read the X-axis first then the Y).

(X, Y)

(↔ , ↕)

(-6, 1)

Roman Numerals

I Value Xylophones Like Cows Do Milk

Symbol	Value
I	1
V	5
X	10
L	50
C	100
D	500
M	1000

Order of Operations

B	I	D	M	A	S
()	Squared Cubed	÷	×	+	-

100 + 2 x 6 = 40 - 50 ÷ 10 = 40 + 2 x 10^2 =

Algebra

When letters and/or numbers are placed next to each other, it means you must multiply.

e.g. if b = 2 and h = 3 …

7b = 7 x 2 = 14 bh = b x h = 2 x 3 = 6

Finding the fraction of a number

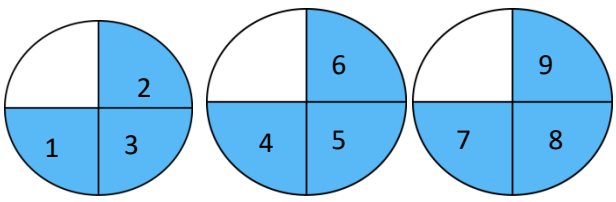
Find $^2/_3$ of 27.

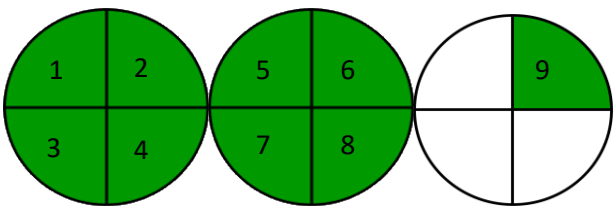
Divide by the denominator (3), and multiply by the numerator (2).

27		
9	9	9

Fraction multiplication

$\frac{3}{4}$ x 3 = $^9/_4$ = $2\,^1/_4$





Multiplication grid

This is arguably the most important revision tool, as multiplication is needed to access so many other areas of mathematics. **You must also know your related division facts!**

e.g. 5 x 6 = 30 6 x 5 = 30 30 ÷ 6 = 5 30 ÷ 5 = 6

×	1	2	3	4	5	6	7	8	9	10	11	12
1	1	2	3	4	5	6	7	8	9	10	11	12
2	2	4	6	8	10	12	14	16	18	20	22	24
3	3	6	9	12	15	18	21	24	27	30	33	36
4	4	8	12	16	20	24	28	32	36	40	44	48
5	5	10	15	20	25	30	35	40	45	50	55	60
6	6	12	18	24	30	36	42	48	54	60	66	72
7	7	14	21	28	35	42	49	56	63	70	77	84
8	8	16	24	32	40	48	56	64	72	80	88	96
9	9	18	27	36	45	54	63	72	81	90	99	108
10	10	20	30	40	50	60	70	80	90	100	110	120
11	11	22	33	44	55	66	77	88	99	110	121	132
12	12	24	36	48	60	72	84	96	108	120	132	144

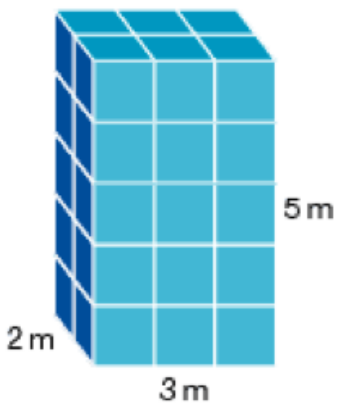
Factors, Multiples and Prime Numbers

Factor - numbers that multiply together to make another number. Factors always come in pairs e.g. the factors of 12 are: 1 and 12, 2 and 6, 3 and 4.

Multiples – in the multiplication table e.g. the multiples of 8 are: 8, 16, 24… 80, 88, 96, 104 etc.

Prime – a number that can be divided by **only** itself and 1, without any remainders. These numbers only have 2 factors (1 and itself) e.g. 2, 3, 5, 7 etc.

NOTE: 1 is not a prime number, and 2 is the only <u>even</u> prime number!



Volume

Volume consists of 3-dimensions.

$V = l \times w \times h$

$V = 3\text{ m} \times 2\text{ m} \times 5\text{ m}$

$V = 30\text{ m}^3$

Finding a percentage (%)

Finding 10%: Divide your number by 10. (200 ÷ 10)

Finding 20%: Find 10% and then double it. (200 ÷ 10) x 2

Finding 5%: Find 10% and then halve it. (200 ÷ 10) ÷ 2

Finding 1%: Find 10% and divide this by 10, or…
Divide your number by 100.

200									
20	20	20	20	20	20	20	20	20	20
10%	10%	10%	10%	10%	10%	10%	10%	10%	10%

Place value and multiplying and dividing by powers of 10.

Note: After the decimal, there is no "ones" column.
Also note the spelling of the columns after the decimal (they all end in "ths").

Ten thousands	Thousands	Hundreds	Tens	Ones	Tenths	Hundredths	Thousandths
10 000	1000	100	10	1	$\frac{1}{10}$	$\frac{1}{100}$	$\frac{1}{1000}$

Multiplying

X 10	digits move LEFT **1** space
X 100	digits move LEFT **2** spaces
X 1000	digits move LEFT **3** spaces

Dividing

÷ 10	digits move RIGHT **1** space
÷ 100	digits move RIGHT **2** spaces
÷ 1000	digits move RIGHT **3** spaces