Mathematics Enhancement Programme

TEACHING SUPPORT: Year 4

FACTS TO KNOW AND REMEMBER

Multiplication tables Up to 10×10

Units

10 mm = 1 cm
1000 mm = 1 m
100 cm = 1 m
1000 m = 1 km

- - - - - - - - - - - - - - - - - - -

10 ml = 1 cl
1000 ml = 1 litre
100 cl = 1 litre

- - - - - - - - - - - - - - - - - - -

1000 g = 1 kg
1000 kg = 1 tonne

- - - - - - - - - - - - - - - - - - -

60 seconds = 1 minute
60 minutes = 1 hour
24 hours = 1 day
7 days = 1 week
52 weeks = 1 year
12 months = 1 year

- - - - - - - - - - - - - - - - - - -

Numbers

$$1\text{ h} = \frac{1}{100}$$

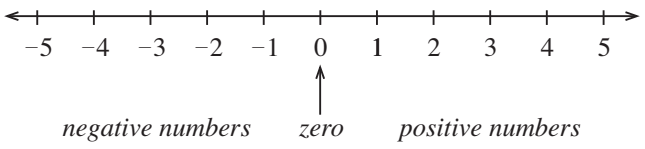
$$1\text{ t} = \frac{1}{10}$$

$$1\text{ T} = 10$$

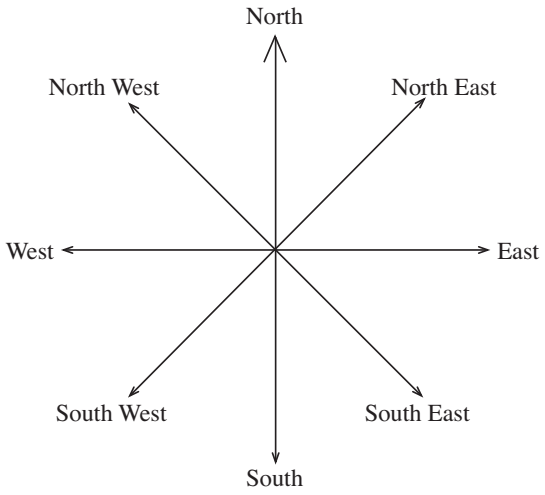
$$1\text{ H} = 10\text{ T} = 100$$

$$1\text{ Th} = 10\text{ H} = 100\text{ T} = 1000$$

Negative Numbers



Compass Points



Roman Numerals

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

Even / Odd

Whole numbers ending in 0, 2, 4, 6, 8 are EVEN (and divisible by 2 with no remainder).

Whole numbers ending in 1, 3, 5, 7, 9 are ODD (and have remainder 1 when divided by 2).

Equivalent Fractions

$$\frac{1}{2} = \frac{2}{4} = \frac{4}{8} = \ldots$$

$$\frac{1}{10} = \frac{5}{50} = \frac{10}{100} = \ldots$$

Adding/Subtracting Fractions

$$\frac{a}{b} + \frac{c}{b} = \frac{a+c}{b}$$

(a, b and c are natural numbers, that is, numbers used for counting)

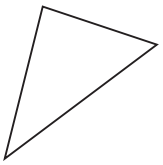
$$\frac{a}{b} - \frac{c}{b} = \frac{a-c}{b}$$

Decimals

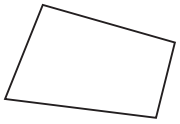
$$0.a = \frac{a}{10} \qquad (a = 0, 1, \ldots, 9)$$

$$0.ab = \frac{a}{10} + \frac{b}{100} \qquad (a, b = 0, 1, 2, \ldots, 9)$$

Shapes : 2D

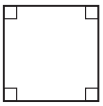


Triangle (3 straight sides)

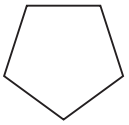


Quadrilateral (4 straight sides)

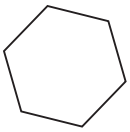
Rectangle (opposite sides equal and parallel ,and four right angles)



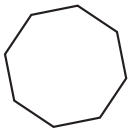
Square (all sides equal and four right angles)



Pentagon (five straight sides)



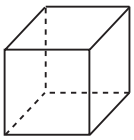
Hexagon (six straight sides)



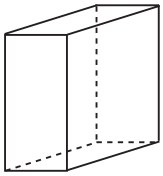
Octagon (eight straight sides)

(Note that all squares are rectangles and all rectangles are quadrilaterals.)

Shapes : 3D

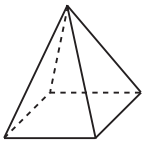


Cube (all sides equal so each face is a square)

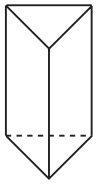


Cuboid (all opposite sides equal so each face is a rectangle)

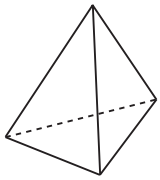
Sphere



Square-based pyramid



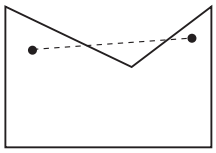
Triangle-based prism

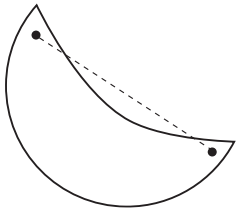


Triangle-based pyramid

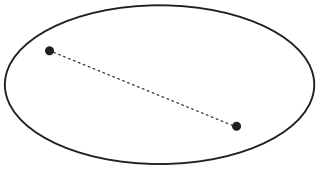
Convex and Concave Shapes

Concave: a straight line cannot always be drawn between any two points on the shape that is always inside the shape. In each of the examples below, the two points are *inside* the shape but the line drawn between them passes *outside* the shape.

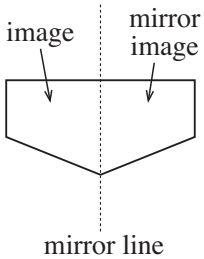




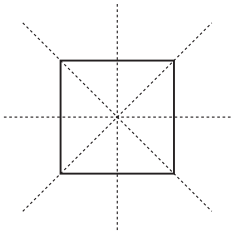
Convex: a straight line drawn between any two points on the shape will always lie *inside* the shape, as can be seen from the example below.



Symmetry



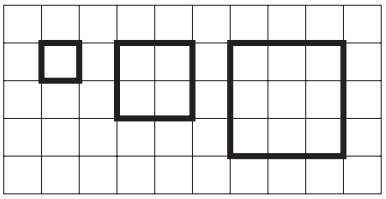
The whole shape has one line of symmetry.



Four lines of symmetry are shown here.

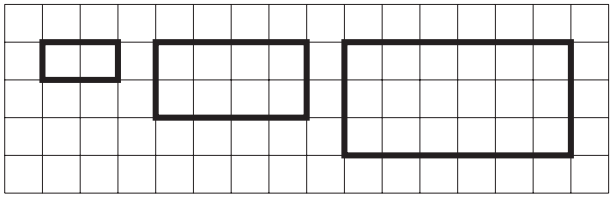
Similarity

(a)



These shapes are similar.

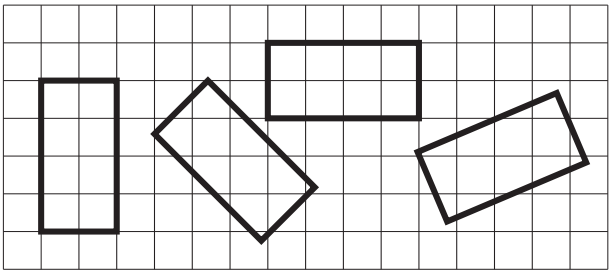
(b)



These shapes are similar.

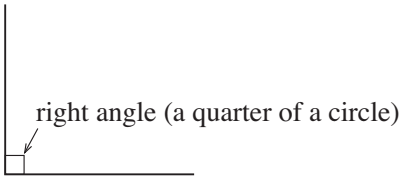
(The sides are in the same ratio, that is, 1 : 1 in (a) and 1 : 2 (i.e, 2 : 4 and 3 : 6) in (b).

Congruence

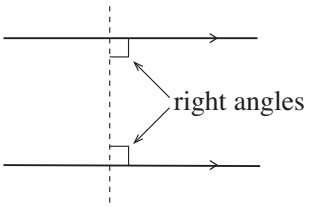


Congruent shapes are identical in shape and size but can be rotated or reflected; the 4 shapes shown are congruent.

Parallel and Perpendicular Lines



Lines are perpendicular



Lines are parallel

Divisor or Factor and Multiple

Any whole number that divides exactly into a whole number with no remainder is called a *divisor* or *factor* of the number.

For example, 1, 2, 3, 4, 6 and 12 are all divisors (or factors) of 12.

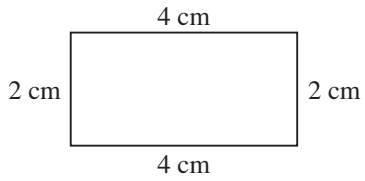
Any whole number that can be divided by a whole number with no remainder is called a *multiple* of the number.

For example, 5, 10, 15, 20, . . . are all multiples of 5.

Perimeter, Area and Volume

The *perimeter* is the total distance around the outside of a 2D shape.

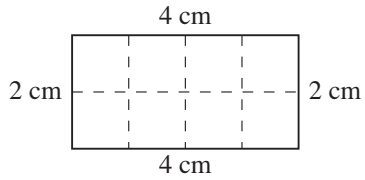
For example,



perimeter = 4 + 2 + 4 + 2 = 12 cm

The *area* is the quantity inside a 2D shape.

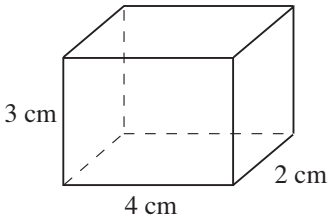
For example,



area = 8 square cm

The *volume* is the number of cubic units that will exactly fill a 3D shape.

For example,

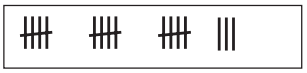


volume = 3 × 2 × 4 = 24 cubic cm

Illustrating Data

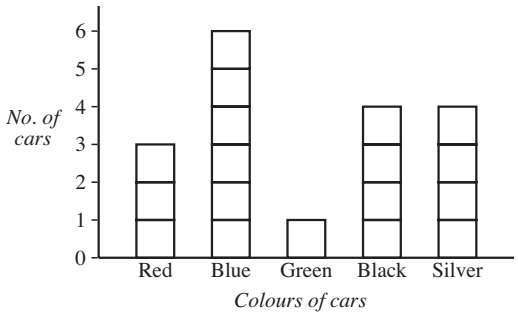
You can illustrate data with a:

Tally Chart



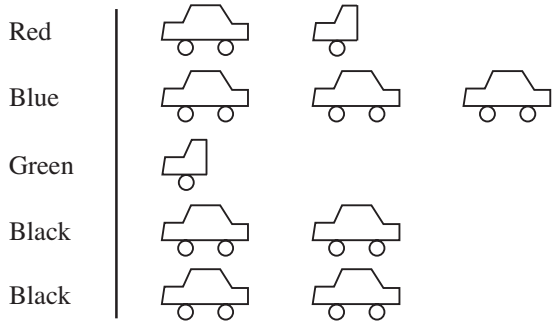
This tally chart represents 18 items of data

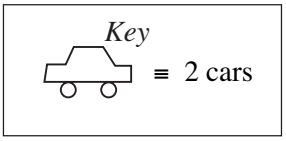
Bar Chart



This bar chart represents 18 items of data (3 Red, 6 Blue, 1 Green, 4 Black and 4 Silver cars)

Pictogram

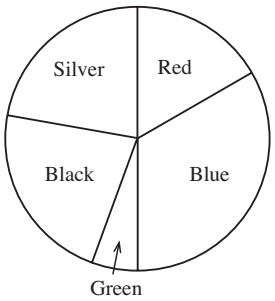




This pictogram represents the 18 cars above.

A pictogram must always have a key.

Pie Chart



This pie chart represents the 18 cars.

Each car is represented by an angle of $20°$, so the angle for Red $= 3 \times 20° = 60°$, Blue $= 120°$, etc.

Median of a set of numbers is the *middle* value when they are arranged in order.

For example,

$$2,\ 5,\ 3,\ 1,\ 4,\ 9,\ 8 \Rightarrow 1,\ 2,\ 3,\ 4,\ 5,\ 8,\ 9$$

↑

middle value

median = 4