Exmouth Community College
Academy Trust

Co-ordinates

These are given in the form (X,Y). We go along the x axis and up or down the y axis.

Y intercept

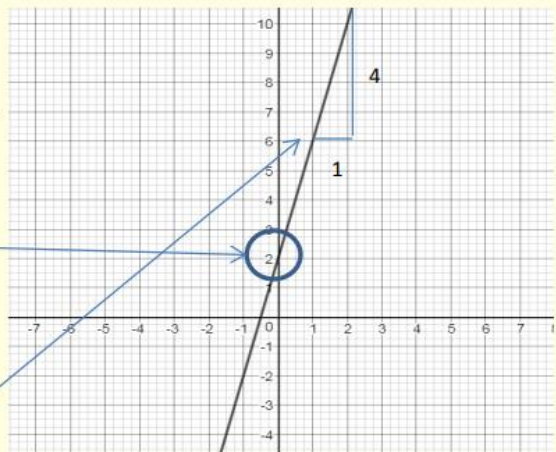This is the point where the line crosses the y axis. On the example the y intercept = +2

Gradient

The steepness of a graph is called the **GRADIENT.** You can find the gradient by :

$$\frac{\text{Squares up or down}}{\text{Squares across}}$$

$\frac{4}{1}$

Gradient + 4

Gradient can be positive (/) or negative (\)

Parallel Lines have the same gradient but a different y intercept. For example a parallel line for the above graph would be y = 4x – 3

Mid points is the point exactly in the middle. To find the coordinates add the x coordinates together and divide by 2 and do the same for the y coordinates.

Table of Values/ Plotting graphs

To find the coordinates of a straight line you can use a table of values.
Firstly create a function machine

X → X4 → +2 → Y

Then input numbers from the x axis to find the y axis.
These create coordinates which you can then plot onto the graph and join up with a ruler.

X	0	1	2	3
Y	2	6	10	14

Distance time graphs

Represents a journey. The vertical axis represents the distance from starting point. The horizontal line represents time taken.
A horizontal line on a distance time graph represents an object at rest.
The gradient of the line represents the speed of the journey
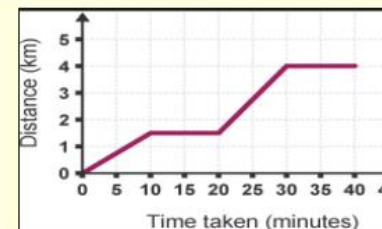
$$Y = mx + c$$

Gradient   Y intercept

You can use the gradient and y intercept to write an equation for a line.
Equation for above line is y = 4x+ 2

Reflection

Every point in the image is the same distance from the mirror line as the original shape.

The line joining a point on the original shape to the same point on the image is perpendicular to the mirror line.

A reflection creates a congruent image
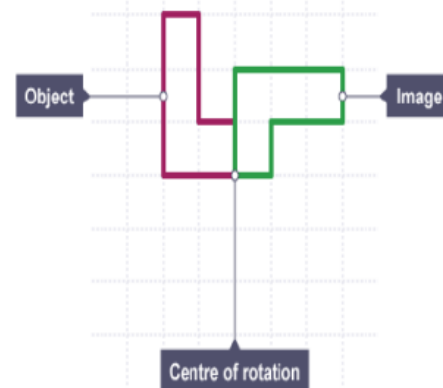

Mirror line

Mirror image
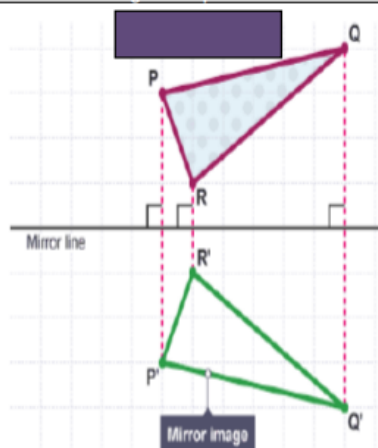
Rotation

Rotation turns a shape around a fixed point called the **centre of rotation**.

3 parts of a rotation
- the centre of rotation
- the angle of rotation
- the direction of rotation

A Rotation creates a congruent image

Object   Image

Centre of rotation

Translation

A **translation** moves a shape up, down or from side to side and creates a congruent image.

Column vectors are used to describe translations

$\begin{pmatrix} 4 \\ -3 \end{pmatrix}$ means translate the shape 4 squares to the right and 3 squares down.

$\begin{pmatrix} -2 \\ 1 \end{pmatrix}$ means translate the shape 2 squares to the left and 1 square up.
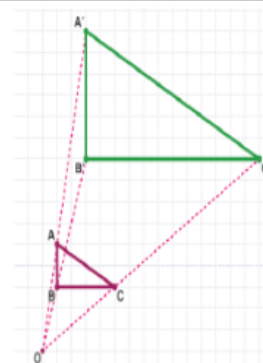

$\begin{pmatrix} -3 \\ -6 \end{pmatrix}$
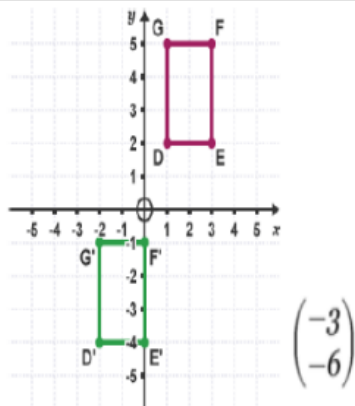
Enlargement

Enlarging a shape changes its size

2 parts of an enlargement
- the scale factor
- the centre of enlargement

Fractional SF reduces the shape
Negative SF inverts the shape

An enlargement creates a similar shape

ABC has been enlarged by sf 3 about O.

Linked Prior Topics

Shapes
Scales
Angles
Straight line graphs

Vocabulary

Object – Starting shape
Image – Created by a transformation
Congruent – 2 shapes are exactly the same
Similar – 2 shapes with the same angles but different length sides
Perpendicular – Forms a 90° angle

Linked Future Topics

Transformation of functions
Similar shapes