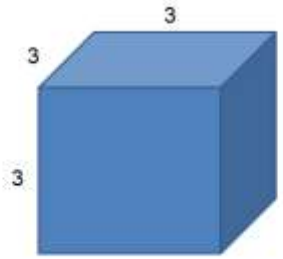
Patterns and relationships

erms	Illustrations	Definitions
Cubed	Cubed  3 cubed or 3^3 = 3 x 3 x 3 = 27	Multiplying a number 3 times e.g. 4 cubed is 4 x 4 x 4 = 64. The cubed sign is ^{3} For example, 5^3 = 5 x 5 x 5 = 125
Cube root	This is the symbol that means "cube root". $\sqrt[3]{27} = 3$	Finding the cube root is the inverse process of cubing a number *e.g. 3 cubed is 3 x 3 x 3 = 27 so the cube root of 27 is 3.*

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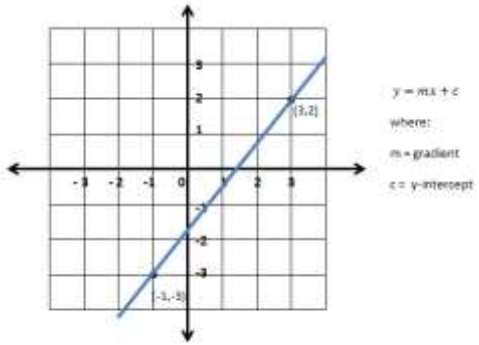
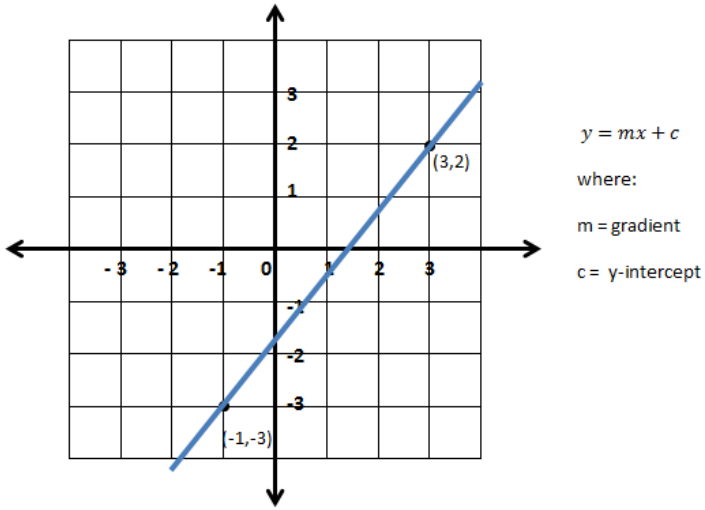
Equations of straight lines		A form of the **equation** of the straight line is y = mx + c. In a graph, 'm' represents the gradient and 'c' represents the point where the line intercepts the y-axis' (y-intercept). Horizontal and vertical lines are special cases of y = mx +c.
Fibonacci Sequence		Found by adding the two numbers before it together. e.g. 0, 1, 1, 2, 3, 5, 8, 13, 21, 34… The 2 is found by adding the two numbers before it (1+1) The 5 is found by adding the two numbers before it (2+3) The 8 is found by adding the two numbers before it ((3+5) The 13 is found by adding the two numbers before it (8+5) The 21 is found by adding the two numbers before it (8+13) The next number in the sequence above would be 55 (21+34)

		There are many areas of nature where the Fibonacci sequence can be found and some of these areas include, flower petals, plants, fruit, the human face, the human hand and animals (i.e. rabbits) Leonardo Bonacci, known as Fibonacci, founded the sequence so it was named after him.
Formula		A mathematical relationship or rule expressed in symbols *e.g. the formula for volume of a box is V = l x b x h*
Gradient	 $y = mx + c$ where: m = gradient c = y-intercept	The rate at which vertical height changes with respect to horizontal distance covered. A straight line that rises from left to right has a positive gradient and a straight line that falls from left to right has a negative gradient. To find the gradient of a straight line: • choose any two points on the line • draw a right-angled triangle with the line as **hypotenuse** • use the scale on each axis to find the triangle's: vertical length horizontal length • work out the vertical length ÷ horizontal length The result is the gradient of the line. Gradients can be recorded numerically as a fraction, decimal fraction or percentage. *E.g. in a distance-speed graph, the gradient represents the speed of an object over a distance.*

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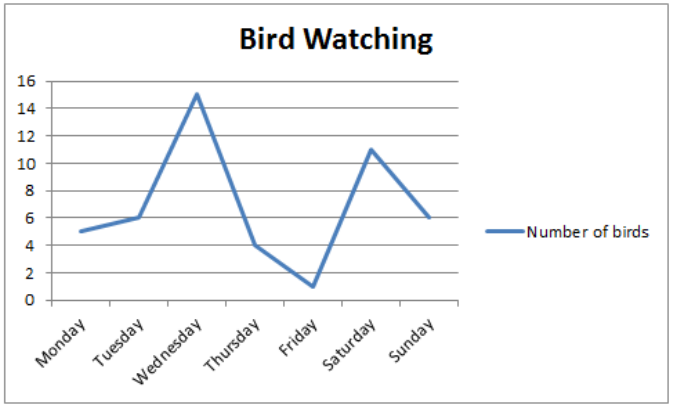
Graphical representations		It is the most efficient method of comparing two related variables, in a visual way.
Number pattern		A set of numbers that has a specific rule which makes the pattern predictable; - odds and evens, times tables etc. - **square numbers** and **triangular numbers.** - **Fibonacci sequence**
Pattern		A repetitive sequence of events, shapes or numbers which can be continued.
Sequence		A set of numbers written in order according to a mathematical rule. For example: • 4, 6, 8, 10, 12… (increasing in equal multiples of 2) • 25, 23, 20, 18, 15, 13… (subtracting 2 then subtracting 3…) • 1, 2, 4, 8, 16, 32… (increasing by doubling) • 109, 129, 124, 144, 139, 159… (adding 20, subtracting 5)

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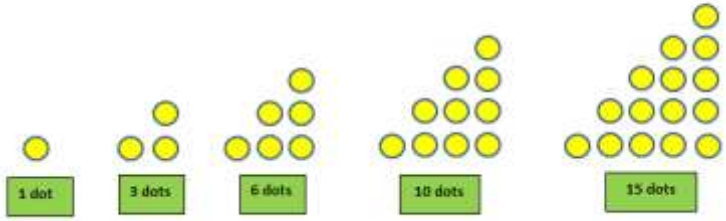
Square Root / Square numbers	This is the symbol that means "square root". $\sqrt{64} = 8$	The square root of a number is a value that, when multiplied by itself, gives the number e.g. 4 × 4 = 16, so the square root of 16 is 4. The symbol is √ which always means the positive square root e.g. √36 = 6 (because 6 x 6 = 36)
Triangular numbers		Generated from a pattern of dots which form a triangle. By adding another row of dots and counting all the dots we can find the next number of the sequence.