

**Coordinates**

Coordinates	Written in <b>pairs</b> . The <b>first</b> term is the <b>x-coordinate</b> (movement <b>across</b> ). The <b>second</b> term is the <b>y-coordinate</b> (movement <b>up or down</b> )	<p>A: (4,7) B: (-6,-3)</p>
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**Linear Graphs**

Linear Graph	<b>Straight line graph.</b> The <b>equation</b> of a linear graph can contain an <b>x-term</b> , a <b>y-term</b> and a <b>number</b> .	<p>Example:</p> <p>Other examples:  <math>x = y</math>  <math>y = 4</math>  <math>x = -2</math>  <math>y = 2x - 7</math>  <math>y + x = 10</math>  <math>2y - 4x = 12</math></p>
Gradient and Intercept	<b><math>y = mx + c</math></b>  <b>Gradient (m)</b> is the steepness of the line. From a graph, find how many squares up/down the graph moves for every one square right.  <b>Intercept (c)</b> = Where the line crosses the y-axis. Also called the <b>y-intercept</b>	<p>Gradient = 3 Intercept = -1 Equation: <math>y = 3x - 1</math></p>
Horizontal and Vertical lines	Line $x = ?$ is a <b>vertical line</b> . Line $y = ?$ is a <b>horizontal line</b> .	<p><math>x = 2</math></p> <p><math>y = -2</math></p>

**Real Life Graphs**

Real Life Graphs	Graphs that are supposed to model some real-life situation.  The actual meaning of the values depends on the labels and units on each axis.  The <b>gradient</b> might have a contextual meaning. The <b>y-intercept</b> might have a contextual meaning. The <b>area</b> under the graph might have a contextual meaning.	<p>A graph showing the cost of hiring a ladder for various numbers of days. The gradient shows the cost per day. It costs £3/day to hire the ladder. The y-intercept shows the additional cost/deposit/fixed charge (something not linked to how long the ladder is hired for). The additional cost is £7.</p>
Conversion Graph	A line graph to <b>convert one unit to another</b> .  Can be used to convert units (eg. miles and kilometres) or currencies (£ and \$)  Find the value you know on one axis, read up/across to the conversion line and read the equivalent value from the other axis.	<p>Conversion graph miles ↔ kilometres</p> <p>8 km = 5 miles</p>
Depth of Water in Containers	Graphs can be used to show how the depth of water changes as different shaped containers are filled with water at a constant rate.	

**Non-Linear Graphs**

Quadratic Graph	A ' <b>U-shaped</b> ' curve called a <b>parabola</b> . The equation is of the form $y = ax^2 + bx + c$ , where $a, b$ and $c$ are numbers, $a \neq 0$ . If $a < 0$ , the parabola is <b>upside down</b> .	
Cubic Graph	The equation is of the form $y = ax^3 + k$ , where $k$ is an <b>number</b> . If $a > 0$ , the curve is <b>increasing</b> . If $a < 0$ , the curve is <b>decreasing</b> .	<p><math>a &gt; 0</math></p> <p><math>a &lt; 0</math></p>
Reciprocal Graph	The equation is of the form $y = \frac{A}{x}$ , where $A$ is a <b>number</b> and $x \neq 0$ . The graph has <b>asymptotes</b> on the <b>x-axis</b> and <b>y-axis</b> .	
Asymptote	A <b>straight line</b> that a graph <b>approaches</b> but <b>never touches</b> .	

