Topic: Coordinates and Linear Graphs

Topic/Skill	Definition/Tips	Example
1. Coordinates	Written in pairs. The first term is the x-coordinate (movement across). The second term is the y-coordinate (movement up or down)	A: (4,7) B: (-6,-3) B: (-6,-3)
2. Midpoint of a Line	Method 1: add the x coordinates and divide by 2, add the y coordinates and divide by 2 Method 2: Sketch the line and find the values half way between the two x and two y values.	Find the midpoint between (2,1) and (6,9) $\frac{2+6}{2} = 4 \text{ and } \frac{1+9}{2} = 5$ So, the midpoint is (4,5)
3. Linear Graph	Straight line graph. The general equation of a linear graph is $y = mx + c$ where m is the gradient and c is the y-intercept. The equation of a linear graph can contain an x-term, a y-term and a	Example: Other examples: $x = y$ $y = 4$ $x = -2$ $y = 2x - 7$ $y + x = 10$ $2y - 4x = 12$
4. Plotting Linear Graphs	number. Method 1: Table of Values Construct a table of values to calculate coordinates. Method 2: Gradient-Intercept Method (use when the equation is in the form $y = mx + c$) 1. Plots the y-intercept 2. Using the gradient, plot a second point. 3. Draw a line through the two points plotted. Method 3: Cover-Up Method (use when the equation is in the form $ax + by = c$)	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$

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$ 2v - 6v + 10 - 0 \rightarrow v - 2v - 5$			$2y - 6x + 10 = 0 \rightarrow y = 3x - 5$
			$\begin{array}{cccccccccccccccccccccccccccccccccccc$
			1
Since the two gradients are equal			Character to the first
(3), the lines are parallel.			Since the two gradients are equal

9. Perpendicular Lines	If two lines are perpendicular , the product of their gradients will always equal -1 . The gradient of one line will be the negative reciprocal of the gradient of the other line. You may need to rearrange equations of lines to compare gradients (they need to be in the form $y = mx + c$)	Find the equation of the line perpendicular to $y = 3x + 2$ which passes through (6,5) Answer: As they are perpendicular, the gradient of the new line will be $-\frac{1}{3}$ as this is the negative reciprocal of 3.
		$y = mx + c$ $5 = -\frac{1}{3} \times 6 + c$ $c = 7$ $y = -\frac{1}{3}x + 7$ Or $3x + x - 7 = 0$