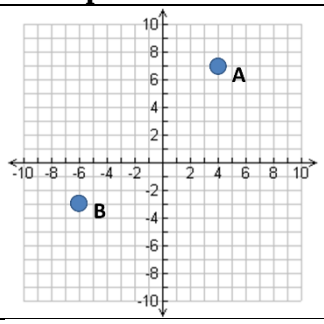
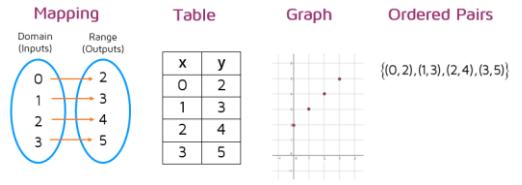
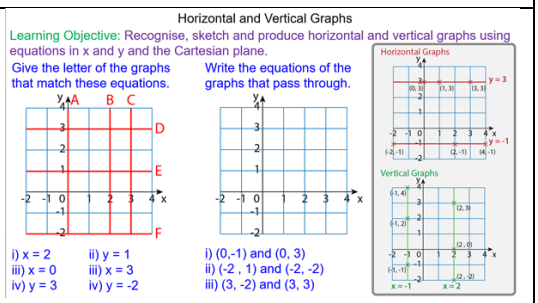
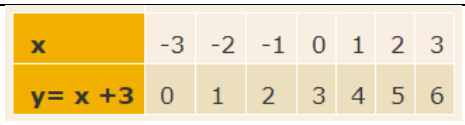
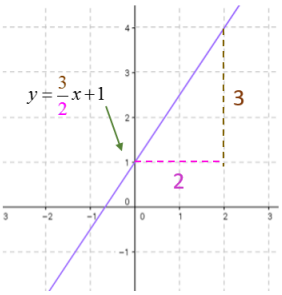
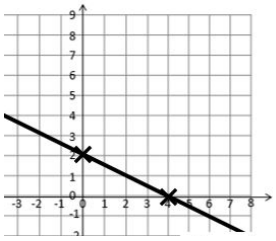
STM Knowledge Organiser Year: 7 Subject: Maths

Topic: Coordinates and Linear Graphs

Core Knowledge

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**). The **origin** is the set of coordinates (0,0)	 A: (4,7) B: (-6,-3)
2. Mapping	A function or combination of functions to change one number (input) into another (output). The input is the x coordinate The output is the y coordinate	
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 **number**.	
4. Plotting Linear Graphs	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 $ax + by = c$) 1. Cover the x term and solve the resulting equation. Plot this on the $x - axis$. 2. Cover the y term and solve the resulting equation. Plot this on the $y - axis$. 3. Draw a line through the two points plotted.	  

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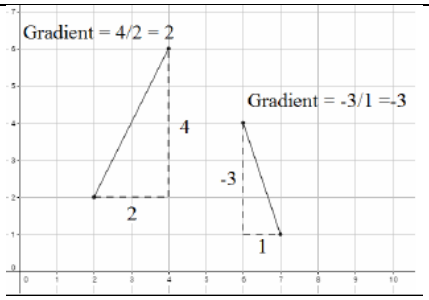
5. Gradient	The gradient of a line is how **steep** it is. **Gradient =** $\frac{\textbf{Change in } y}{\textbf{Change in } x} = \frac{\textbf{Rise}}{\textbf{Run}}$ The gradient can be positive (sloping upwards) or negative (sloping downwards)	
8. Parallel Lines	If two lines are **parallel**, they will have the **same gradient**. The value of m will be the same for both lines.	Are the lines $y = 3x - 1$ and $2y - 6x + 10 = 0$ parallel? Answer: Rearrange the second equation in to the form $y = mx + c$ $2y - 6x + 10 = 0 \rightarrow y = 3x - 5$ Since the two gradients are equal (3), the lines are parallel.

Links to function machines, sequences, proportion, substitution, rate of change,