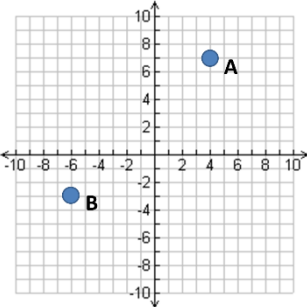
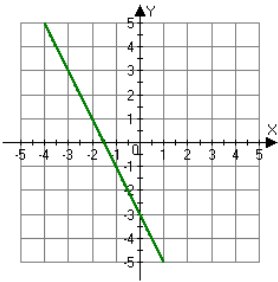
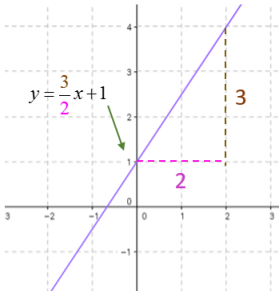
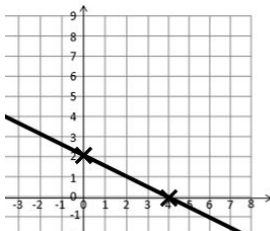
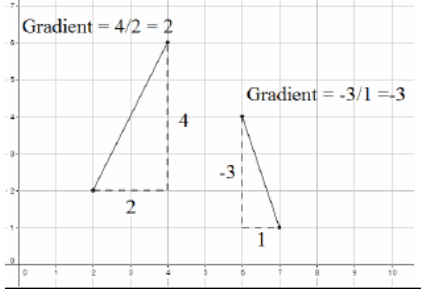
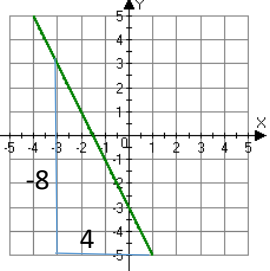


Topic: Coordinates and Linear Graphs

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)	 <p style="text-align: right;">A: (4,7) B: (-6,-3)</p>																
2. Midpoint of a Line	<p>Method 1: add the x coordinates and divide by 2, add the y coordinates and divide by 2</p> <p>Method 2: Sketch the line and find the values half way between the two x and two y values.</p>	<p>Find the midpoint between (2,1) and (6,9)</p> $\frac{2+6}{2} = 4 \text{ and } \frac{1+9}{2} = 5$ <p>So, the midpoint is (4,5)</p>																
3. Linear Graph	<p>Straight line graph.</p> <p>The general equation of a linear graph is</p> $y = mx + c$ <p>where m is the gradient and c is the y-intercept.</p> <p>The equation of a linear graph can contain an x-term, a y-term and a number.</p>	<p>Example:</p>  <p style="text-align: right;">Other examples: $x = y$ $y = 4$ $x = -2$ $y = 2x - 7$ $y + x = 10$ $2y - 4x = 12$</p>																
4. Plotting Linear Graphs	<p>Method 1: Table of Values Construct a table of values to calculate coordinates.</p> <p>Method 2: Gradient-Intercept Method (use when the equation is in the form $y = mx + c$)</p> <ol style="list-style-type: none"> 1. Plots the y-intercept 2. Using the gradient, plot a second point. 3. Draw a line through the two points plotted. 	<table border="1" style="margin-bottom: 10px;"> <tr> <td style="background-color: #FFD700;">x</td> <td>-3</td> <td>-2</td> <td>-1</td> <td>0</td> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td style="background-color: #FFD700;">y = x + 3</td> <td>0</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>6</td> </tr> </table>   <p style="text-align: right;">$2x + 4y = 8$</p>	x	-3	-2	-1	0	1	2	3	y = x + 3	0	1	2	3	4	5	6
x	-3	-2	-1	0	1	2	3											
y = x + 3	0	1	2	3	4	5	6											

<p>5. Gradient</p>	<p>The gradient of a line is how steep it is.</p> <p>Gradient = $\frac{\text{Change in } y}{\text{Change in } x} = \frac{\text{height of the triangle}}{\text{Width of the triangle}}$</p> <p>The gradient can be positive (sloping upwards) or negative (sloping downwards)</p>	
<p>6. Finding the Equation of a Line <u>from a graph</u></p>	<p>Find the gradient by drawing in your right angled triangles, this is your value for m.</p> <p>Find the y-intercept by looking at where the graph crosses the y-axis. This is your c.</p> <p>Substitute this into $y = mx + c$</p>	 <p>$m = \frac{-8}{4} = -2$</p> <p>$c = -3$</p> <p>$y = -2x - 3$</p>
<p>8. Parallel Lines</p>	<p>If two lines are parallel, they will have the same gradient. The value of m will be the same for both lines.</p>	<p>Are the lines $y = 3x - 1$ and $2y - 6x + 10 = 0$ parallel?</p> <p>Answer: Rearrange the second equation in to the form $y = mx + c$</p> $2y - 6x + 10 = 0 \rightarrow y = 3x - 5$ <p>Since the two gradients are equal (3), the lines are parallel.</p>