|  |  |  |
| --- | --- | --- |
| **Topic/Skill** | **Definition/Tips** | **Example**  **Topic: Coordinates and Linear Graphs** |
| 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) |
| 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)  and  So, the midpoint is (4,5) |
| 3. Linear Graph | **Straight line** graph.  The general equation of a linear graph is  where  **is the gradient** and  **is the y-intercept**.  The **equation** of a linear graph can contain an **x-term**, a **y-term** and a **number**. | Example:  Image result for linear graphOther examples: |
| 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 )  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 )  1. Cover the term and solve the resulting equation. Plot this on the  2. Cover the term and solve the resulting equation. Plot this on the  3. Draw a line through the two points plotted. | Image result for gradient intercept method  Image result for cover up method straight line graphs |
| 5. Gradient | The gradient of a line is how **steep** it is.  **Gradient =**  The gradient can be positive (sloping upwards) or negative (sloping downwards) |  |
| 6. Finding the Equation of a Line given a point and a gradient | **Substitute** in the **gradient (m)** and **point (x,y)** in to the equation and **solve for c**. | Find the equation of the line with gradient 4 passing through (2,7) |
| 7. Finding the Equation of a Line given two points | Use the two points to **calculate the gradient**. Then **repeat the method above** using the gradient and either of the points. | Find the equation of the line passing through (6,11) and (2,3) |
| 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 and parallel?  Answer:  Rearrange the second equation in to the form  Since the two gradients are equal (3), the lines are parallel. |
| 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 | Find the equation of the line perpendicular to which passes through (6,5)  Answer:  As they are perpendicular, the gradient of the new line will be as this is the negative reciprocal of 3.  Or |

**Knowledge Organiser**