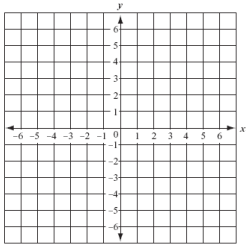
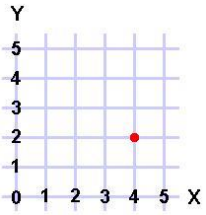
Some Key points to learn

1. Coordinate grid	4 quadrant coordinate grid X axis across horizontally Y axis down vertically Remember along the corridor and up the stairs. Numbers go on the lines not in the gaps
	
2. Coordinates	A coordinate is a point on the grid marked with a dot or cross. It is written in brackets with the x value first then the y value separated by a comma.
	The dot has the coordinate (4,2) 
3. Mid points	A mid point is the centre of a line segment.
	To calculate the mid point of (1,3) and (5,9), take the two x values add them together and divide by 2 1+5=6 6/2=3 Repeat for y values 3+9=12 12/2=6 Midpoint coordinate is (3,6)

Some Key points to learn

4. Equations of lines	A horizontal line is y= the value on the y axis where the line crosses it. A vertical line is X = the value on the x axis where the line crosses it.
5. Plotting a line	To plot a line from an equation create a table of values using x values. Substitute the x value into the equation to calculate the y value. Plot the coordinates and join them up.
6. Equation of a straight line	General equation of a line is y=mx+c where m is the gradient and c is the y intercept.
7. Parallel lines	Parallel lines have the same steepness therefore have the same gradient meaning that the number in front of the x is the same value .
8. Perpendicular lines	Perpendicular lines form a right angle where they meet and the two gradients must equal -1 when multiplied.
9. Direct proportion	Two variables linked with a consistent ratio. The symbol for proportion is $\propto$. If y is directly proportional to x, then $y \propto x$ Example number of drinks $\propto$ cost of drink 1 drink : £1.20 3 drinks : £3.60 10 drinks : £12.00
10. Standard form	Only 1 digit before the decimal point, always x10 to a power, the power is positive for very large numbers and negative for very small numbers Example 3650000000 becomes 3.65×10^9 0.000025 becomes 2.5×10^5

Castle Manor Academy
Year 9 Maths
Autumn Term 1
Knowledge Organiser

Contents of Autumn 1

Within this unit, students will learn to:
- Plot coordinates in all four quadrants
- Apply their knowledge of 2D shapes to coordinate problems
- Find the midpoint of a line segment joining two points
- Find an endpoint of a line segment, given the midpoint and one endpoint
- Identify the equations of horizontal and vertical lines
- Plot coordinates from a rule to generate a straight line
- Identify key features of a linear graph
- Make links between the graphical and the algebraic representation
- Identify parallel lines from algebraic equations
- Interpret and analyse real-life linear graphs
- Consider the applications of linear graphs to real-life problems
- Recognise when two quantities are directly proportional to each other
- Recognise when two quantities are inversely proportional to each other
- Recognise the graphical representation of a proportional relationship
- Solve proportion problems
- Use standard form to express large and small numbers
- Convert between standard form and ordinary numbers
- Use standard form to solve simple problems
- Use scales to solve distance and area problems in context

Useful links

Hegartymaths.com lines 199-205, proportion 339-341, SF 122-124
https://corbettmaths.com/contents/