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**Knowledge Rich Curriculum Plan**

Year 10 Higher+ Algebra 2



| **Lesson/Learning Sequence**  | **Intended Knowledge:***Students will know that…* | **Tiered Vocabulary**  | **Prior Knowledge:***In order to know this…* | **Assessment**  |
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| **To learn how to draw straight line graphs and interpret the equation of a line** | * Students will know how to plot straight line graphs in the form y = mx + c by first constructing their own table of values.
* Students will know how to plot and draw graphs of straight lines in the form ax + by = c by first rearranging into the form y = mx + c
* Students will know how to identify the gradient and y-intercept of a straight line given the equation including where rearrangement is required
 | **Intercept** – cross **Y-intercept** – the y-intercept tells us where a graph crosses the y-axis, this where x = 0**X-intercept** – the x-intercept tells us where a graph crosses the x-axis, this where y = 0 | * Students should already know how to draw a graph of an equation given in the form y = mx + c where m is a positive integer
 | Exam Prep 3 |
| **To learn how to calculate gradient and find the equation of a straight line** | * Students will know how to calculate gradient between two pairs of coordinates (without a drawn graph).
* Students will know that $gradient=\frac{change in y}{change in x}$
* Students will know how to find the equation of a given straight line and write it in the form y = mx + c
 | **Gradient** – steepness. The gradient of a line tells us how steep the line is. | * Students will need to know how to rearrange formulae
 | Exam Prep 3 |
| **To learn how to find and use the equation of a straight line** | * Students will know how to find the gradient and y-intercept for a straight line representing a real-life situation and explain what the two represent in context
* Students will know how to determine the equation of a straight line from two pairs of coordinates
 |  | * Students will need to know how to calculate gradient between two coordinates
 | Exam Prep 3 |
| **To learn how to find the equation of parallel and perpendicular lines** | * Students will know that parallel lines have the same gradient
* Students will know how to find the equation of a straight line that is parallel to another given line
* Students will know that the gradients of two perpendicular lines are negative reciprocals of one another
* Students will know how to find the equation a straight line that is perpendicular to another given line
* Students will know how to solve more complex problems involving parallel and perpendicular lines
 | **Parallel –** parallel lines are two lines that are side by side and have the same distance continuously between them.**Perpendicular –** at a right angle to**Reciprocal** – The reciprocal of a number is 1 divided by the number | * Students will need to know how to calculate gradient
* Students will need to know how to find the reciprocal of an integer
* Students will need to know how to find the reciprocal of a fraction
 | Exam Prep 3 |
| **To learn how to solve problems involving midpoints and find the length of a line** | * Students will know how to find the midpoint of a line
* Students will know how to use the midpoint to find the coordinates of the end of a line
* Students will know how to solve coordinate problems involving midpoints
* Students will know how to find the length of a line using Pythagoras’ Theorem
 | **Midpoint -** the exact middle point. | * Students will need to know how to use Pythagoras’ theorem to work out the hypotenuse of a right-angled triangle
 | Exam Prep 3 |
| **To learn how to solve problems involving the equation of straight lines** | * Students will know how to solve more complex problems involving coordinates, the equation of straight lines, parallel lines, perpendicular lines and midpoints etc.
* Students will know how to find the x-intercept for a straight line
 | **X-intercept** – the x-intercept tells us where a graph crosses the x-axis, this where y = 0 | * Students will need to know how to find the equation of a straight line, parallel lines, perpendicular lines and midpoints
 | Exam Prep 3 |
| **To learn how to solve simultaneous equations graphically** | * Students will know how to solve linear simultaneous equations and estimate solutions to linear simultaneous equations graphically where straight lines are given and where they need to be drawn
 |  | * Students will need to know how to draw straight graphs
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| **To learn how to solve linear simultaneous equations**  | * Students will know how to solve linear simultaneous equations or find estimates to their solutions given two straight lines drawn on a graph
* Students will know how to solve linear simultaneous equations by drawing two straight lines and identifying the x- and y- values for the point of intersection
* Students will know how to use elimination to solve linear simultaneous equations algebraically
* Students will know how to solve linear simultaneous equations representing a real-life situation and interpret the solution in the context of the problem
 | **Simultaneous –** occurring, operating, or done at the same time.**Simultaneous equations –** equations involving two or more unknowns that are to have the same values in each equation.**Linear Equation –** an equation between two variables that can be written in the form y=mx+c. Linear equations give a straight line when plotted on a graph. | * Students will need to know how to solve linear equations
* Students will need to know how to substitute into formulae
 | Exam Prep 3 |
| **To learn how to show regions represented by inequalities graphically** | * Students will know how to draw and plot inequalities on a graph, using shading to identify the region that satisfies the inequality. Students will know that to do this they must shade/cross out the part of the graph that **does not** satisfy the inequality.
* Students will know how to draw more than one inequality on a graph and identify the region that satisfies all inequalities.
* Students will know how to identify coordinates that satisfy multiple inequalities using graphs
 |  | * Students will need to know how to plot straight line graphs
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| **To learn how to identify the inequalities represented by a region on a graph** | * Students will know how to identify the inequalities that are satisfied by a region on a graph
 |  | * Students will need to know how to find the equation of a line
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