

Subject	Year 12 Core Knowledge – Autumn/Spring/Summer term	How to support students' learning
Maths	<p>Autumn Term</p> <p>Polynomials –</p> <ol style="list-style-type: none"> 1. Use factor theorem to solve problems. <p>Differentiation –</p> <ol style="list-style-type: none"> 2. Understand how to find the second derivative. <p>Coordinate Geometry -</p> <ol style="list-style-type: none"> 3. Show a line is a tangent to a circle. <p>Integration -</p> <ol style="list-style-type: none"> 4. Find an equation given the gradient function and a point. <p>Polynomials -</p> <ol style="list-style-type: none"> 5. Use factor theorem to factorise and sketch. <p>Differentiation -</p> <ol style="list-style-type: none"> 6. Find stationary points and determine their nature. <p>Coordinate Geometry -</p> <ol style="list-style-type: none"> 7. Understand and use the equation of a circle, centre, radius, intersection of a circle and a line, and perpendicular line. <p>Differentiation -</p> <ol style="list-style-type: none"> 8. Demonstrate how to differentiate with negative/fractional powers. 9. Differentiate to find tangents of curves. <p>Spring/Summer Term</p> <p>Binomial Expansion -</p> <ol style="list-style-type: none"> 10. Use binomial expansion to find a particular term. <p>Polynomials -</p> <ol style="list-style-type: none"> 11. Use the factor theorem to find a missing coefficient. 12. Find all the linear factors of a cubic expression. 	<ul style="list-style-type: none"> • If students need support with their learning, almost everything they need can be found on Integral Maths. They have a unique login for this and are regularly set homework tasks. There is a wealth of videos and resources which they can use to independently recap any topics in which they've struggled. • For past exam papers; https://www.physicsandmathstutor.com and www.mathsgenie.co.uk offers a range of past papers, mark schemes and model answers. If students need support or guidance with any of this, their class teacher can direct them to the appropriate content.

Equations & Inequalities -

13. Find a linear graph that can be used to solve a quadratic equation graphically by finding the intersection of another given quadratic and the linear graph that's to be found.
14. Use a quadratic graph and a linear graph to solve another quadratic equation graphically.
15. Shade a region that satisfies 4 inequalities.

Trigonometry -

16. Solve a basic trigonometric equation and find all solutions in a given range.
17. Solve a trigonometric equation using the Pythagorean identity and find all solutions in a given range.

Integration -

18. Determine the equation of a curve given the gradient function and a point.
19. Find an expression for the value of an integral in terms of a given variable.

Exponentials & Logarithms -

20. Substitute into an exponential model to find the value of a population at a given time.
21. Solve an exponential equation to find the time at which the population reaches a certain value.
22. Show that, using a logarithmic model, a graph can be drawn as a straight line.
23. Plot given points and draw a line of best fit.
24. Use a line of best fit to find the gradient and intercept and then use the logarithmic equation to find missing variables for the logarithmic model.

Quadratic Functions -

25. Use the discriminant to find the range of values for a constant for

	<p>which the simultaneous equations have real solutions.</p> <p>26. Give a geometrical interpretation of a particular value of a variable for a pair of simultaneous equations.</p>	
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