

Year: 11

Subject: Maths

| <i>Spring Term</i> | | |
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| <i>Overarching Topic:</i> | | |
| <i>What has come before and what comes later:</i> | <i>Circles and sectors, volume and surface area, simultaneous equations, Pythagoras' theorem and trigonometry, direct and inverse proportion</i> | <i>Combinatorics, Venn diagrams and probability, advanced angles, 2D Pythagoras' theorem and trigonometry extended into 3D, Advanced trigonometry, trigonometric graphs and their transformations</i> |
| | <i>Foundation</i> | <i>Higher</i> |
| <i>The Big Questions (What questions will students be able to answer upon mastery of the topic?)</i> | <p><i>Can you round numbers and measures to an appropriate degree of accuracy?</i></p> <p><i>Can you estimate answers to problems?</i></p> <p><i>Can you check calculations using appropriate approximations and estimation?</i></p> <p><i>Can you use inequality notation to specify simple error intervals due to truncation or rounding?</i></p> <p><i>Can you apply and interpret limits of accuracy?</i></p> <p><i>Can you apply and use systematic listing strategies?</i></p> <p><i>Can you enumerate sets and combinations of sets systematically, using Venn diagrams and tree diagrams?</i></p> <p><i>Can you apply ideas of randomness, fairness, and equally likely events to calculate expected outcomes of multiple future events?</i></p> <p><i>Can you calculate the probability of independent and dependent combined events, including tree diagrams and other representations?</i></p> <p><i>Can you plot and interpret graphs?</i></p> <p><i>Can you plot and interpret graphs of non-standard functions in real contexts, to find approximate solutions to</i></p> | <p><i>Can you recognise, sketch, and interpret graphs of simple cubic functions and reciprocal graphs?</i></p> <p><i>Can you recognise, sketch, and interpret graphs of exponential functions and reciprocal graphs?</i></p> <p><i>Can you sketch translations and reflections of a given function?</i></p> <p><i>Can you interpret simple expressions as functions with inputs and outputs?</i></p> <p><i>Can you interpret the reverse process at the inverse function?</i></p> <p><i>Can you interpret the succession of two functions as a composite function?</i></p> <p><i>Can you use $y=mx+c$ to identify parallel and perpendicular lines?</i></p> <p><i>Can you find the equation of the line through two given points, or through one point with a given gradient?</i></p> <p><i>Can you identify and interpret gradients and intercepts of linear functions graphically and algebraically?</i></p> <p><i>Can you recognise and use the equation of a circle with centre at the origin?</i></p> |

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| | <p>problems such as simple kinematic problems involving distance, speed and acceleration?</p> <p>Can you use compound units such as speed, rates of pay and unit pricing?</p> <p>Can you change freely between compound units?</p> <p>Can you interpret the gradient of a straight-line graph as a rate of change?</p> <p>Can you simplify and manipulate algebraic expressions by factorising quadratics expressions of the form x^2+bx+c including the difference of two squares?</p> <p>Can you deduce roots of quadratic functions algebraically?</p> <p>Can you solve quadratic equations algebraically by factorising?</p> <p>Can you recognise, sketch, and interpret graphs of quadratic functions?</p> <p>Can you find approximate solutions to quadratic equations using a graph?</p> <p>Can you identify roots, intercepts, turning points of quadratic functions graphically?</p> <p>Can you recognise, sketch, and interpret graphs of simple cubic functions and the reciprocal functions?</p> <p>Can you apply addition and subtraction of vectors, multiplication of vectors by a scalar, and diagrammatic and column representations of vectors?</p> | <p>Can you find the equation of a tangent to a circle at a given point?</p> <p>Can you plot and interpret graphs?</p> <p>Can you interpret graphs of non-standard functions in real contexts, to find approximate solutions to problems such as simple kinematic problems involving distance, speed acceleration?</p> <p>Can you interpret the gradient at a point on a curve at the instantaneous rate of change?</p> <p>Can you apply the concepts of average and instantaneous rate of change in numerical, algebraic, and graphical contexts?</p> <p>Can you calculate or estimate gradients of graphs and areas under graphs, and interpret results in cases such as distance-time graphs, velocity-time graphs and graphs in financial contexts?</p> <p>Can you find approximate solutions to equations numerically using iteration?</p> <p>Can you work with general iterative processes?</p> <p>Can you apply addition and subtraction of vectors, multiplication of vectors by a scalar, and diagrammatic and column representations of vectors?</p> <p>Can you use vectors to construct geometric arguments and proofs?</p> |
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