

## Programme of study for Year 11 Foundation Maths

Autumn (1 <sup>st</sup> term)	Autumn (2 <sup>nd</sup> term)	Spring (1 <sup>st</sup> term)	Spring (2 <sup>nd</sup> Term)	Summer (1 <sup>st</sup> term)	Summer (2 <sup>nd</sup> term)
Other timing: From: September To: October	Other timing: From: November To: December	Other timing: From:            To:	Other timing: From:            To:	Other timing: From:            To:	Other timing: From:            To:
<b>Topic / Key Question:</b> <ul style="list-style-type: none"> <li>- Circles, cylinders, cones and spheres</li> <li>- Fractions and reciprocals</li> <li>- Indices and standard form</li> </ul>	<b>Topic / Key Question:</b> <ul style="list-style-type: none"> <li>- Similarity and congruence in 2D</li> <li>- Vectors</li> <li>- Rearranging equations, graphs of cubic and reciprocal functions and simultaneous equations.</li> </ul>	<b>Topic / Key Question:</b>  Any topics remaining to be completed from half term 2 will be completed in this half-term.	<b>Topic / Key Question:</b>  Revision will be focused around topics the class have generally underperformed in their final mocks	<b>Topic / Key Question:</b>  Revision Revision will be focused around topics the class have generally underperformed in their final mocks	<b>Topic / Key Question:</b>  Examination period:  Yr 11 are on study leave
<b>Skills:</b> A01: Use, recall and apply standard techniques  A02: From given mathematical information: Reason, interpret & communicate mathematically  A03: Solve problems or evaluate methods and solutions within mathematics and in other contexts	<b>Skills:</b> A01: Use, recall and apply standard techniques  A02: From given mathematical information: Reason, interpret & communicate mathematically  A03: Solve problems or evaluate methods and solutions within mathematics and in other contexts	<b>Skills:</b> A01: Use, recall and apply standard techniques  A02: From given mathematical information: Reason, interpret & communicate mathematically  A03: Solve problems or evaluate methods and solutions within mathematics and in other contexts	<b>Skills:</b> A01: Use, recall and apply standard techniques  A02: From given mathematical information: Reason, interpret & communicate mathematically  A03: Solve problems or evaluate methods and solutions within mathematics and in other contexts	<b>Skills:</b> A01: Use, recall and apply standard techniques  A02: From given mathematical information: Reason, interpret & communicate mathematically  A03: Solve problems or evaluate methods and solutions within mathematics and in other contexts	

Key Learning Outcomes:	Key Learning Outcomes:	Key Learning Outcomes:	Key Learning Outcomes:	Key Learning Outcomes:	Key Learning Outcomes:
<p>Recall the definition of a circle. Identify and draw parts of a circle including: tangent, chord and segments.</p> <p>Recall and use two formulas for circumference  <math>C = \pi \times d</math>  <math>C = 2 \times \pi \times r</math>            And  <math>A = \pi r^2</math></p> <p>Use <math>\pi</math> is approximately 3.142 or the <math>\pi</math> button on a calculator.</p> <p>Give answers to a question on area and circumference of a circle in terms of <math>\pi</math>.</p> <p>Find the radius or diameter, given the area or circumference of a circle.</p> <p>Calculate perimeters and areas of composite shapes made from circles, semi-circles and parts of a circle.</p> <p>Calculate the arc length,</p>	<p>Use the basic congruence criteria for triangles (SSS, SAS, ASA and RHS)</p> <p>Solve angle problems involving congruency.</p> <p>Identify shapes that are similar, including all circles or all regular polygons with equal number of sides.</p> <p>Understand similarity of triangles and of other plane shapes, use this to make geometrical inferences and solve angle problems using similarity.</p> <p>Identify the scale factor of an enlargement of a shape as a ratio of 2 corresponding sides.</p> <p>Understand the effect of enlargement on perimeter of shapes.</p> <p>Solve problems to find missing lengths in similar shapes.</p>	<p>Same as half-term 2</p>			

<p>angles and areas of sectors of circles.</p> <p>Find the surface area and volume of a cylinder.</p> <p>Find the surface area, volume of spheres, pyramids, cones and composite solids.</p> <p>Add and subtract mixed number fractions.</p> <p>Multiply mixed number fractions.</p> <p>Divide mixed numbers by whole numbers.</p> <p>Divide whole numbers by mixed numbers.</p> <p>Find the reciprocal of an integer, decimal or fraction.</p> <p>Understand the reciprocal as multiplicative inverse. Where 0 has no reciprocal.</p> <p>Use index laws to simplify and calculate the value of numerical</p>	<p>Know the scale diagrams, including bearings and maps are 'similar' to real life examples.</p> <p>Understand and use column notation in relation to vectors.</p> <p>Be able to present information graphically given column vectors.</p> <p>Identify 2 column vectors which are parallel.</p> <p>Calculate using column vectors, and represent graphically the sum of 2 vectors.</p> <p>Calculate using column vectors, and represent graphically the difference of 2 vectors.</p> <p>Identify the difference between an equation and identity and understand the not equals symbol.</p> <p>Change the subject of a formula involving the use of square roots and</p>				
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<p>expressions (involving multiplication and division of integer powers and fractions.)</p> <p>Use numbers raised to the power of zero. (Including 0 to the power of 10.)</p> <p>Convert large and small numbers into standard form.</p> <p>Convert numbers in standard form into ordinary form.</p> <p>Add, subtract, multiply and divide numbers in standard form.</p> <p>Interpret a calculator display using standard form and know how to enter numbers in standard form using calculator functions.</p>	<p>squares.</p> <p>Answer 'show that' questions using consecutive integers (<math>n</math>, <math>n+1</math>, <math>n+2</math>) squares <math>a^2</math>, <math>b^2</math> even numbers <math>2n</math> and odd numbers <math>2n+1</math>.</p> <p>Solve problems involving inverse proportion using graphs, and read values from graphs.</p> <p>Find the equation of the line through 2 given points.</p> <p>Recognise, sketch and interpret graphs of simple cubic functions.</p> <p>Recognise, sketch and interpret graphs of the reciprocal function <math>y = \frac{1}{x}</math>, where <math>x</math> can not equal 0.</p> <p>Use graphical representations of indirect proportion to solve problems in context.</p> <p>Identify and interpret the gradient from an</p>				
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	<p>equation <math>ax+by = c</math>.</p> <p>Write simultaneous equations to represent a situation.</p> <p>Solve simultaneous equations (linear) both algebraically and graphically.</p> <p>Solve simultaneous equations representing real life examples, graphically and algebraically, and interpret the solution of context of the problem.</p>				
End of term 1 assessment to cover: Year 11 Mocks in November		End of term 2 assessment to cover: Year 11 mocks in January/February		End of year assessment to cover:	
<p><b>Rationale for sequence:</b> In KS3 students have been taught to calculate the area and circumference of a circle. Linking their prior knowledge about circle students are required to recall facts about circles and use and apply them to solve problems involving surface area and volume of other 3D shapes such as</p>	<p><b>Rationale for sequence:</b> In KS3 students are taught to recognise similar 2D shapes. They are also taught to find the scale factor between them. Students are also taught many other properties of 2D shapes such as angles facts.  In KS4 students will be linking prior knowledge</p>	<p><b>Rationale for sequence:</b> Same as half term 2</p>	<p><b>Rationale for sequence:</b></p>	<p><b>Rationale for sequence:</b></p>	<p><b>Rationale for sequence:</b></p>

<p>cylinders, cones and spheres.</p> <p>Understanding reciprocal requires understanding of fractions. Students are required to master and be fluent with calculations in fractions. This is because most mathematical concepts require students to be fluent with numbers including fractions in different problem solving contexts Furthermore understanding indices is a fundamental skill within algebra. Students are required to link laws of indices to simplifying algebra and calculation with standard form.</p> <p>Reciprocal and standard form are used regularly in other subjects such as science. In science students can link the knowledge of reciprocal to Hooke's law tension = <math>k(\text{constant}) \times x</math> (extension of spring); Students are also required to know the</p>	<p>of angle facts to show to shapes are congruent and give mathematical reasons for their arguments. The understanding of why 2D shapes are similar requires understanding of ratio and proportion. Students are required to learn them and can use them in problem solving questions and in many other concepts such as vectors, volume and other geometric problems. Congruency is link with other contexts such as geometric proofs and understanding it is important skills for students to learn.</p> <p>As students have learnt in KS3 that coordinates represent the position, in KS4 students are required to know that vector represent displacement. They are required to know how moving from one place to another always refers to displacement between two points. Calculating with vectors</p>				
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<p>weight of a molecule and the distance between the plants using standard form notations.</p>	<p>also link with trigonometry and Pythagoras. Students can find the magnitude of displacement and the angle of displacement using Pythagoras and trigonometric ratios respectively.</p> <p>Vectors appears in many other subject such physics and as well as in many real life contexts such as navigation and aviation.</p> <p>Rearranging formulae is one of the fundamental skill for students to master. In KS4 they are required to be fluent and confident.</p> <p>Rearranging skills links to solving equations which requires understanding of inverse operations so by practicing this students are recalling other concepts too.</p> <p>Graphing linear, quadratics equations are taught in previous years ( 8-10), In this terms students are required to use their</p>				
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Enrichment / opportunities to develop cultural capital (including careers, WRL and SMSC):

During the lesson a discussion will take place on the real-life scenarios the topic at hand students have come across or will face later in life when making decisions. These regular discussions allows teachers into an insight into the knowledge students have about life and how we can inform them further.