

## Year 11H Term 1 - Further Trigonometry and Further Statistics

Year group: 11H	Subject: Further Trigonometry and Further Statistics
<b>Prior learning- linked to National curriculum</b>	In KS4 Students will have previously covered a Trigonometry unit (year 10 Term 3) and a Statistics unit (Year 10 Term 1). This unit seeks to expose students to the grade 6 and up topics that are needed for students to achieve those higher grades.
<b>Rationale</b>	<p>This unit is placed early in year 11 because there is much content needed in year 10 in order for students to be successful. Beyond the standard pre-requisite material, in Further trigonometry students will need to be comfortable in rearranging equations, substituting into formulae and using trig ratios. This content is something that will start to enable students to access the higher grades, and apply concepts in more abstract ways.</p> <p>The further statistics unit seeks to enable students to see far beyond the basic ways to represent data and analyse some of the nuances that may be presented to them. The different representations used in this unit rely on students having a good grasp of plotting coordinates, formula relationships and comparing distributions. All of these concepts are covered at points in year 10, setting the scene for these two units.</p>
<b>Vocabulary:</b>	<p><b>Further Trigonometry:</b> Cosine, sine, tangent, formulae</p> <p><b>Further Statistics:</b> Continuous, Discrete, Average, Histogram, Cumulative, Box plot, Quartiles, Median, Mean, Mode</p>
<b>Cultural Capital:</b>	Trigonometry has played a crucial role in navigation for centuries, In addition to this there is a lot of historical significance with different ancient civilisations such as the Greeks and Indians. In addition to this, students will have access to some architectural and artistic motifs which rely on trigonometry. Those interested in the fine details of music production will appreciate work on Sine waves and can explore how this is used in music production.

	<p>Statistics is a key topic that allows students to have data literacy understanding key events and equipping them critique information. All areas of research rely heavily on statistics including social sciences, medicine and any cultural studies. In short our society is moving much more towards a data driven environment, so an understanding of how this works really equips students for the future.</p>
<p><b>Key assessments- name the assessments</b></p>	<p><b><u>Further Trigonometry:</u></b>  Sine rule  Cosine rule  3d Pythagoras and trigonometry  <b><u>Further statistics</u></b>  Box plots  Histograms  Cumulative frequency graphs  Unit wrapper covering the above topics</p>
<p><b>What do children know/ can do now (EDSM)</b></p>	<p>Emerging students will be able to apply right angled trigonometry in basic situations. In addition they will be able to read some representations of data and draw some basic conclusions</p> <p>Mastered students will be able to apply right angled and non-right angled trigonometry in a range of scenarios with a high level of accuracy. Furthermore they will be able to accurately read a range of different representations in data, critique and compare different distributions, as well as different representations. and will also be able to use pre-existing knowledge to apply to new scenarios and draw accurate conclusions from the data</p>
<p>What <b>amendments</b> are you going to make following evaluation of this module?</p>	

**TOPICS in RED- Grade 3 - 5**

**TOPICS in AMBER - Grade 6 -7**

**TOPICS in GREEN - Grade 8 -9**

**Further Statistics**

- |  |
|--|
| <ul style="list-style-type: none"><li>● <b>Understand how to take a simple random sample.</b></li><li>● Understand how to take a stratified sample.</li></ul>  |
| <ul style="list-style-type: none"><li>● Draw and interpret cumulative frequency tables and diagrams.</li><li>● Work out the median, quartiles and interquartile range from a cumulative frequency diagram.</li></ul> |
| <ul style="list-style-type: none"><li>● Find the quartiles and the interquartile range from stem-and-leaf diagrams.</li><li>● Draw and interpret box plots.</li></ul>  |
| <ul style="list-style-type: none"><li>● Understand frequency density.</li><li>● Draw histograms.</li></ul>   |
| <ul style="list-style-type: none"><li>● Interpret histograms.</li></ul>  |

- Compare two sets of data.

## Further Trigonometry

- Understand and use upper and lower bounds in calculations involving trigonometry.

- Understand how to find the sine of any angle.

- Know the graph of the sine function and use it to solve equations.

- Understand how to find the cosine of any angle.

- Know the graph of the cosine function and use it to solve equations.

- Understand how to find the tangent of any angle.

- Know the graph of the tangent function and use it to solve equations.

- Find the area of a triangle and a segment of a circle.

- Use the sine rule to solve 2D problems.

- Use the cosine rule to solve 2D problems.

- Solve bearings problems using trigonometry.

- Use Pythagoras' theorem in 3D.

- Use trigonometry in 3D.

- Recognise how changes in a function affect trigonometric graphs.

- Recognise how changes in a function affect trigonometric graphs.