



# YEAR 10 Summer TERM 1

'An ambitious curriculum that meets the needs of all'

## Medium Term Planning – Unit 11 & 12

Collecting, representing and interpreting data      Non-calculator methods

### Curriculum Intent

#### UNIT :11 Data F & H (3 weeks)

*Previously met: Y7 & Y8: bar charts, pie charts, frequency tables. No data in Y9.*

To be able to:

- Use, describe, interpret and compare observed distributions of a single variable through appropriate graphical representation involving discrete, continuous and grouped data.
- Construct and interpret appropriate tables, charts, and diagrams, including frequency tables, bar charts, pie charts and pictograms for categorical data, and vertical line (or bar) charts for ungrouped and grouped numerical data.
- Describe, interpret and compare observed distributions of a single variable through appropriate graphical representation involving discrete, continuous and grouped data; and appropriate measures of central tendency (mean, mode and median) and spread (range, consideration of outliers).
- Infer properties of populations or distributions from a sample, whilst knowing the limitations of sampling.
- Interpret and construct tables and line graphs for time series data.
- **Construct and interpret diagrams for grouped discrete data and continuous data, i.e. histograms with equal and unequal class intervals and cumulative frequency graphs, and know their appropriate use.**
- Interpret, analyse and compare the distributions of data sets from univariate empirical distributions through appropriate graphical representation involving discrete, continuous and grouped data, **(including box plots).**
- Apply statistics to describe a population.
- Interpret, analyse and compare the distributions of data sets from univariate empirical distributions through appropriate measures of central tendency (including modal class) and spread **(including quartiles and inter-quartile range).**

### Skills/Assessment Objective Links

#### Links and interleaving

- Solve problems with line charts and bar charts.
- Construct and interpret pie charts.
- Recognise different types of data.
- Construct and interpret frequency tables, grouped and ungrouped, and two-way tables.
- Find the mean, mode, median and range.
- Identify outliers.
- Compare distributions using statistical measures.

- Find the mean from a grouped or ungrouped frequency table.
- Scatter graphs, correlation, lines of best fit.

## UNIT :12 Non-calculator methods **H (3) F (2)**

***Previously met: Y9: Financial maths, percentages, surds (higher)***

***Y7 & Y8: rounding, fractions, place value, non-calculator methods, number sense (Y7 & Y8)***

To be able to:

- Consolidate numerical and mathematical capability from KS3.
- Calculate exactly with fractions, **(surds)** and multiples of pi; **(simplify surd expressions involving squares and rationalise denominators)**.
- **Change recurring decimals into their corresponding fractions and vice versa.**
- Apply and interpret limits of accuracy when rounding and truncating, **(including upper and lower bounds)**.
- Develop their use of formal mathematical knowledge to interpret and solve problems, including in financial contexts.
- Make and use connections between different parts of mathematics to solve problems.

### **Links and interleaving**

- Perimeter and area of 2D shapes, including circles and compound shapes.
- Surface area and volume of 3D shapes.
- Interchange between fractions, decimals and percentages.
- Find the percentage of an amount.
- Use four operations with directed number.
- Add and subtract fractions.
- Order of operations.
- Calculate with money.
- Round to powers of 10 and given numbers of dp and sf.
- Use factors and multiples.
- Prime factorisation.
- HCF and LCM.
- Writing numbers in standard form.
- Rational and real numbers.

**Spiritual, moral, social, and cultural development**

**SMSC:** Making choices, looking for patterns which may reflect the natural world, supporting and collaborating with each other, realisation that mathematics is an international language and making cultural links as we explore the history of mathematics.

**PSHE/British Values:** Working collaboratively, being respectful during discussion and valuing contributions made by others

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|   | <b>Skills Builder: Key skills in numeracy used in all topic areas.</b>   |
| <b>Numeracy</b>                           | <b>Focus on key skills.</b>  |
| <b>Literacy</b>                           | <p><b>Vocabulary Tier 2: Command words displayed in the classroom and italicized/bold font used in shared resources/presentations. These are a constant focus in discussion and questioning,</b></p> <p><b>Vocabulary Tier 3: Title slide in all shared resource presentations show the key vocabulary for each topic.</b></p> <p><b>Reading: Underlining command words,</b></p> <p><b>Writing: Modelling solutions</b></p> <p><b>Oracy: Think, pair, share, discussion, verbal feedback (peer to peer), questioning, student modelling</b></p>  |
| <b>Becoming future ready</b>              | <p><b>Personal Skills:</b> As a Mathematics student you will learn many skills: you will gain opportunities to listen to others supportively and to use questioning to develop your own understanding, you will learn how to cope with challenging questions and how to build up your resilience, you will get the chance to work on your own and with others. You will develop problem solving skills and you will learn how to break a problem down into smaller more manageable steps. You will learn how to collaborate with others when solving problems and you will learn how to articulate your solution to a problem.</p> <p><b>Employability:</b> Mathematical skills are invaluable in the workplace. There are many transferable skills which are much valued by employers. Specific career paths for each topic are discussed at the beginning of each unit of work.</p>  |
| <b>Adaptation</b>                         | <ul style="list-style-type: none"> <li>• By progressive questioning: exploring pupils' understanding through interactive dialogue.</li> <li>• By outcome: different learners will produce different outcomes.</li> <li>• By resource: worksheets are clearly presented and accessible.</li> <li>• By intervention: by providing different levels of supervision and support.</li> <li>• By grouping/setting: according to prior attainment, gender, social preference, preferred learning style.</li> <li>• By offering optional activities: In class or as homework, to extend learning.</li> </ul>   |
| <b>QFT/SEND Provision</b>                 |  |
| <b>Implementation Curriculum Delivery</b> | <p><b><u>Unit 11 (Data)</u></b></p> <p>Pre-requisites</p> <ul style="list-style-type: none"> <li>• Grouped data (notation)</li> <li>• Bar charts, pictograms, line graphs</li> </ul> <p>Foundation Tier (up to Grade 5)</p> <ul style="list-style-type: none"> <li>• Brief recap on pie charts, other simple data graphs/charts including two-way tables and types of data.</li> <li>• Frequency polygons</li> <li>• Averages (including from frequency tables)</li> <li>• Stem and leaf</li> <li>• Scatter graphs/line of best fit</li> <li>• Compare distributions.</li> </ul> <p>Additional content for Higher Tier (up to Grade 9)</p> <ul style="list-style-type: none"> <li>• Stratified samples</li> <li>• Histograms</li> <li>• Cumulative frequency</li> <li>• Box plots</li> </ul> <p><b><u>Unit 12 (Non-calculator methods)</u></b></p> <p>Pre-requisites</p> <ul style="list-style-type: none"> <li>• Multiplication tables</li> <li>• Order of operations</li> <li>• Arithmetic</li> <li>• Fractions</li> </ul> <p>Foundation (up to Grade 5)</p> <ul style="list-style-type: none"> <li>• Decimal multiplication and division</li> <li>• Rounding/significant figures</li> </ul> |
| <b>Learning Outcomes (Knowledge)</b>      |  |

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|   | <ul style="list-style-type: none"> <li>• Estimation</li> <li>• Exact answers</li> <li>• Bounds and accuracy.</li> <li>• Financial maths</li> </ul> <p>Additional content for Higher Tier (up to Grade 9)</p> <ul style="list-style-type: none"> <li>• Upper and lower bounds</li> <li>• Rational and irrational numbers</li> <li>• Surds</li> </ul> |
| <b>Current learning to be developed in the future within:</b> | <p>Y11 Spring 5: Revisit data and probability.</p> <p>Y11 Spring 5: Product rule for counting</p>   |
| <b>Assessment</b>   | Refer to assessment maps for formative and summative assessment opportunities.  |
| <b>Impact</b>   | Attainment and Progress – Refer to assessment results / data review documentation.  |