

Year10  
**FOUNDATION SYLLABUS**  
**UNIT 1, STATISTICS & NUMBER**

Examination Wednesday 9<sup>th</sup> November PM, 1 hour. Calculator allowed.

Topic	Details
Collecting and Organisation Data	Collection of data <ul style="list-style-type: none"> <li>• Specify the problem and planning</li> <li>• Collecting data</li> <li>• Processing and presenting the data</li> <li>• Interpreting and discussing the results</li> </ul> Hypothesis Design an experiment or survey (Questionnaires) Data collection sheets Types of data (qualitative, discrete and continuous) Primary and secondary data Observation, controlled experiment, data logging questionnaires and surveys Identify Bias
Percentages	The meaning of a percentage Changing percentages to fractions and decimals Changing fractions and decimals to percentages Comparing fractions Expressing one quantity as a percentage of another Finding a percentage of a quantity Percentage change More complicated % problems
Presentation of Data 1	Bar Charts Comparing data Tally charts Pie charts/Drawing pie charts Stem and leaf diagrams Bar charts, dual bar charts Line graphs Frequency polygons Histograms with equal class intervals Design and use two-way tables (grouped and ungrouped data) Interpret information from charts and diagrams

Averages and Range	<p>Range and types of average</p> <p>Frequency distributions</p> <p>Calculating averages from diagrams</p> <p>Grouped frequency distributions</p> <p>Comparing distributions using average and range</p> <p>Which is the best average to use?</p> <p>Finding median and range from a stem and leaf diagram.</p> <p>Statistical functions on a calculator</p>
Fractions	<p>Equivalent fractions</p> <p>Simplifying fractions</p> <p>Types of fractions</p> <p>Finding fractions of quantities</p> <p>Adding and subtracting fractions</p> <p>Multiplying and dividing fractions</p> <p>Problems involving fractions</p> <p>Fractions on a scientific calculator</p> <p>Fractions and decimals</p>
Ratio	<p>Ratio</p> <p>Equivalent ratios</p> <p>Simplifying a ratio</p> <p>Sharing in a given ratio</p> <p>Proportion</p> <p>Unitary method</p>
Language of algebra	<p>Distinguish between equation, formula and expression</p> <p>'term'</p>
Approximations and estimation	<p>Approximations</p> <p>Rounding to the nearest 10, 100, 1000</p> <p>Rounding in real life problems</p> <p>Rounding up to 3 decimal places</p> <p>Rounding using 1 significant figure</p> <p>Choosing a suitable degree of accuracy</p>
Presentation of data 2	<p>Frequency diagrams</p> <p>Frequency polygons</p> <p>Misleading graphs</p>
Scatter Graphs	<p>Scatter graphs</p> <p>Correlation (weak, strong, positive and negative)</p> <p>Line of best fit, by eye</p> <p>Identify rogue values</p> <p>Not valid outside the plotted range</p> <p>Understand what these represent</p>

Probability	<p>What is probability?</p> <p>Impossible, very unlikely, evens, likely, very likely and certain</p> <p>Probability and the probability scale</p> <p>Combining two events</p> <p>List possible events for 2 events in a systematic way</p> <p>Calculating probabilities using equally likely outcomes</p> <p>Compare experimental data and theoretical probabilities</p> <p>Estimating probabilities using relative frequency</p> <p>More trials improve the reliability of results</p> <p>Repeating an experiment usually will lead to different outcomes</p> <p>Sample size generally leads to better estimates of probability and population characteristics</p> <p>Probabilities add to 1</p> <p>Probability of an event not happening</p>
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Year10  
GCSE HIGHER SYLLABUS  
UNIT 1, STATISTICS & NUMBER

Examination Wednesday 9<sup>th</sup> November PM, 1 hour. Calculator allowed.

Topic	Details
Averages and Range	Range & averages - mode, median, mean Effect of extreme data on the median, mean & range Adding data to effect the mean (guarantee a score) and range. Calculating averages from i) a frequency distribution table ii) a frequency diagram Grouped frequency distributions i) modal ii) Estimating averages; median & mean Comparing distributions Which is the best average to use? Statistical functions on the calculator (mean of grouped data) Inter-quartile range (IQR) from a list and a table Box Plots from a list and a table
Fractions, Decimals and Percentages	Equivalent fractions Fractions in lowest term (cancelling common factors) Interpret fractions, decimals & percentages as operators. Fraction calculations Decimal calculations Percentage problems using a multiplier Percentage of an amount One amount as a percentage of another Percentage as parts per 100, using to compare proportions Percentage Increase/Decrease Compound Interest Percentage Change $(\text{Change}/\text{original amount}) \times 100$ Reverse Percentage 10% of 20% of 30% of 600 Problems where a nominal starting amount must be used
Cumulative frequency	Cumulative frequency (CF) table Cumulative frequency graphs Calculating averages from cumulative frequency graphs Inter-quartile range from CF graphs Box plots from CF graphs Comparing distributions
Ratio	Using ratio Links to fractions and percentages Sharing in a ratio Using ratio to find 1:?

Topic	Details
BIDMAS	The Order of Operations BIDMAS when solving equations Using calculator functions eg brackets, the ANS button
Estimation	Rounding to specified accuracy (2dp, 1 sig fig etc.) Deciding on an appropriate degree of accuracy Calculate and use upper and lower bounds in calculations
Standard Index Form (SI Form)	Writing very large/small numbers Ordering numbers in SI Form Correcting standard form that is written incorrectly Calculating with SI Form and correcting Calculators and SI Form
Collecting and Organising Data	The statistical process 1. Specify the problem, formulate hypothesis Design an experiment to meet a brief 2. Collect the data Design data collection sheets to be used in: controlled experiment, observation, questionnaires and survey Types of data:-primary/secondary, qualitative/quantitative, discrete/continuous, grouped/ungrouped, Databases Sampling (random D, systematic D, quota D, stratified A) 3. Present the data(see separate sections) 4. Discussing the results Bias Identifying outliers/rogue values from graphs, lists and tables.
Presentation of Data 1	Design and use two way tables to present grouped and ungrouped data Extracting information from tables and lists Tally charts, pictograms, line graphs Bar charts Dual bar charts Percentage bar charts Pie charts Stem and leaf diagrams Scatter graphs Correlation Line of best fit draw by eye & use. (valid within measured range)
Presentation of Data 2	Frequency diagrams:- Histograms - with equal class intervals Frequency polygons Histograms - with unequal class intervals Calculating averages from histograms Comparing information from various graphs

Topic	Details
Probability	<p>What is probability?</p> <p>Vocabulary of the probability scale</p> <p>Fractions/Decimals/% and the probability scale</p> <p>Calculating probabilities using equally likely outcomes</p> <p>Estimating probabilities using relative frequency</p> <p style="padding-left: 40px;">impact of further trials</p> <p style="padding-left: 40px;">relative frequency diagrams</p> <p>Compare experimental and theoretical probabilities</p> <p>Mutually exclusive events (sum of probabilities = 1)</p> <p>Probability of an event not happening (<math>1 - P(\text{event happens})</math>)</p> <p>Combining two events (Probability space diagram)</p> <p>Identifying independent events</p> <p>Conditional(dependent) probability</p> <p>Using tree diagrams</p> <ul style="list-style-type: none"> <li>• Successive independent events</li> <li>• Successive dependent events</li> </ul>

# How to revise Maths!

The best way to revise maths is to do lots and lots of practice questions on the topics that you want to improve on.

Where should you get these questions from?

## **Past Papers**

Complete all the past papers you are given. Do not do them under test conditions unless your teacher tells you to. If you cannot answer a question, look back in your blue notebooks to find out how to do it. You have to 'look back', that is what 'revising' means. Complete each paper over and over again until you can obtain 100%.

## **Redo old homework exercises**

Read the class notes, redo the homework and check the answers against any corrections that are in your book. Do all the Review Exercises.

## **MyMaths**

Use the toolbars at the top of the MyMaths pages to search for the topic you are interested in and do the online homeworks or booster packs.

## **Get Mum/Dad/Grandma/Aunty/Uncle to make up questions**

Show an adult the type of questions that we have done in class and ask them to make up questions for you that are the same, but have different numbers in!

Your teacher will be doing some revision with you in class, but if you want to do well in the exam, you will need to do extra revision as well.

Good Luck!