

# YEAR 12 / 13 | LEVEL 3 MATHEMATICAL STUDIES (CORE MATHS)

The scheme of work follows the AQA Level 3 Mathematical Studies (Core Maths) specification which builds on prior knowledge from GCSE.

Students will cover the compulsory section of the course and the Statistical Techniques module.

The final examination consists of 2 papers, each of which is 1 hour 30 minutes.

The curriculum and assessment of students at this stage of education has been carefully designed to promote deep learning of mathematics and develop students into analytical and logical problem solvers.

#### The aims are to:

- » Consolidate and build on students' mathematical knowledge and understanding from their GCSE studies to develop further mathematical understanding and competence in the application of mathematics to real life problems.
- » Develop confidence in representing and analysing authentic situations mathematically, and in applying mathematics to address related questions and issues.
- » Build skills in mathematical thinking, reasoning and communication.
- » To support the mathematical content in other Level 3 qualifications, for example GCE A Level Biology, Business Studies, Computing, Geography, Psychology, BTEC Business, Health and Social Care, IT.
- » To prepare students for the range of varied contexts that they are likely to encounter in vocational and academic study, future employment and life.

## HALF TERM 1

### All students will know:

#### Statistics

- » Methods and limitations of different sampling techniques
- » How to construct and interpret diagrams for discrete and continuous data including box plots, cumulative frequency and histograms.
- » How to compare distributions by calculating measures of central tendency, quartiles, percentiles, IQR, variance and standard deviation.

#### Maths for personal finance

- » Numerical calculations, using expressions, limits of accuracy and finding approximate solutions
- » Percentages, percentage change, simple and compound interest

### All students will be assessed:

Class assessments on all the topics covered during this half term.

### Reading skills needed for this unit:

Hodder AQA Level 3 Mathematical Studies

Collins AQA Level 3 Mathematical Studies Student Book

### Key vocabulary:

Discrete, continuous, grouped, systematic, simple random, convenience, independent, mean, median, mode, range, standard deviation, correlation, line of best fit, outliers, frequency density, stem and leaf, census, statistic, parameter, central tendency, distribution, standard deviation, variance, percentiles, regression, round, truncate, estimate, bounds.

## HALF TERM 2

### All students will know:

#### Maths for personal finance

- » Interest rates, APR, AER
- » Repayments and credit, student loans and mortgages
- » Graphical representations, drawing and interpreting graphs in financial contexts
- » Taxation, working with income tax, NI and VAT
- » Financial problems understand and find solutions to more complex financial problems involving inflation, retail price index and consumer price index, exchange rates

#### Estimation

- » Modelling and estimation
- » Fermi estimation

### All students will be assessed:

Class assessments on all the topics covered during this half term.

### Reading skills needed for this unit:

Hodder AQA Level 3 Mathematical Studies

Collins AQA Level 3 Mathematical Studies Student Book

### Key vocabulary:

Multiplier, interest, simple, compound, term, annual equivalent rate (AER), repayment, annual percentage rate (APR) inflation, consumer price index (CPI), retail price, National Insurance (NI), exchange rate, modelling, assumption.

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## HALF TERM 3

### All students will know:

#### Critical Analysis of Data and Models

- » Present logical and reasoned arguments in context from given data and models
- » Communicate mathematical approaches and solutions
- » Critical analysis of data and models

#### Statistics

- » The Normal Distribution, properties, notation
- » Calculating probabilities from the normal distribution.
- » Modelling with the normal distribution

### All students will be assessed:

Class assessments on all the topics covered during this half term.

### Reading skills needed for this unit:

Hodder AQA Level 3 Mathematical Studies

Collins AQA Level 3 Mathematical Studies Student Book

Edexcel AS/A Level Mathematics Statistics Year 1 (e - Book).

### Key vocabulary:

Mean, standard deviation, variance, symmetrical, probability, Z value, standardized score, frequency, continuous, parameter, confidence interval

## HALF TERM 4

### All students will know:

#### Statistics

#### Correlation and Regression

- » Plot and use scatter graphs
- » Understand correlation does not always imply causation
- » Calculate and understand PMCC
- » Plot and use regression lines
- » Calculate PMCC and the equation of a regression line

### All students will be assessed:

Class assessments on all the topics covered to date.

### Reading skills needed for this unit:

Hodder AQA Level 3 Mathematical Studies

Collins AQA Level 3 Mathematical Studies Student Book

Edexcel AS/A Level Mathematics Statistics Year 1 (e - Book).

### Key vocabulary:

Correlation, positive, negative, weak, correlation coefficient, PMCC, regression, extrapolate, interpolate, regression line, y intercept, explanatory variable, dependent variable, outlier, gradient.

## HOW STUDENTS CAN BE SUPPORTED AT HOME

Pearson Active Learn e-books, videos of class assessment model answers, independent studyguide with suggested websites, videos and reading lists. Researching current affairs or topics they are interested in and linking this to the mathematics involved.

## HALF TERM 5

### All students will know:

Exam preparation and revision

A review of key GCSE skills and how they may be used in an examination context.

When pre-release material is released, pupils will spend time studying these, critically analysing graphs, tables and the language used throughout.

Will begin to predict types of questions that could be asked in both Paper 1 and Paper 2A

### All students will be assessed:

#### External assessment

#### Reading skills needed for this unit:

Hodder AQA Level 3 Mathematical Studies

Collins AQA Level 3 Mathematical Studies Student Book

Edexcel AS/A Level Mathematics Statistics Year 1 (e - Book).

### Key vocabulary:

Evaluate, comment, construct, compare

## ENRICHMENT OPPORTUNITIES

Links to many opportunities via PADLET "GettingStarted with Core Maths" such as QUIBBANS, AMSP resources and exam board resources.

The course can be tailored to include student interests and current affairs so news articles etc. can be incorporated into teaching resources.

