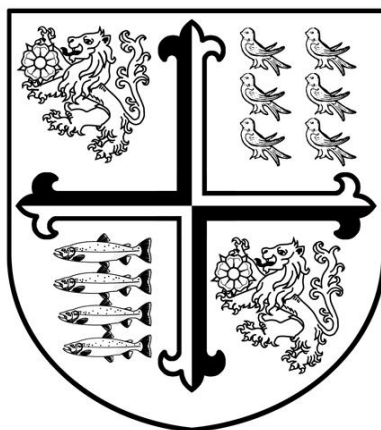




Core Mathematics Exam Preparation

Exam Board: Pearson Edexcel

Specification: H868

<https://www.ocr.org.uk/Images/173575-specification-accredited-core-maths-a-mei-h868.pdf>

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Mathematics Department: Assessment Criteria for Y12 Core Maths

Unit 1 - Probability and Risk (Paper 1, Introduction to Quantitative Reasoning)	Assessed: w/c 21/09/26	Data Deadline: w/c 12/10/26
Unit Description This unit focuses on measuring how likely events are to happen and using this to plan for the possibility of adverse events (risks). Content Criteria By the end of the topic, students should be able to: • Understand risk given as a probability or as 1 in n or as a description such as “once in n years” • Interpret a risk assessment understanding that it involves measures of both likelihood and impact. • Identify relevant equally likely outcomes in appropriate contexts. • Count equally likely outcomes in appropriate contexts and hence estimate a probability. • Estimate probability from long-run relative frequency. • Interpret two-way tables and use them to calculate or estimate probability. • Understand the meaning of the terms sample and population • Understand the difference between dependent and independent events and be able to calculate probability in simple cases. • Work with a tree diagram when calculating or estimating a probability, including conditional probability. • Interpret sample data in terms of possible properties of the parent population. • Understand about the variability of data and be able to describe the main features of a distribution.		

Unit 2 – Working with Formulae and Spreadsheets (Paper 1, Introduction to Quantitative Reasoning)	Assessed: w/c 21/09/26	Data Deadline: w/c 12/10/26
Unit Description This unit focuses on using algebra. Usually this will involve working with formulae: substituting values for variables or turning them into equations that need to be solved. The work can often be made easier by using a spreadsheet. Content Criteria By the end of the topic, students should be able to: • Represent a situation mathematically using a formula or equation. • Substitute values into a formula given in symbols, words or as a flow chart. • Read information from a standard spreadsheet. • Enter formulae and data into a spreadsheet, knowing that a standard spreadsheet formula starts with =. • Interpret simple formulae on a spreadsheet given in terms of cell references. • Copy a formula and to ensure that only the required cell addresses increment. • Solve equations. • Use a spreadsheet to find a numerical solution of an equation. • Change the subject of a formula.		

Unit 3 – Percentages (Paper 1, Introduction to Quantitative Reasoning)	Assessed: w/c 12/10/26	Data Deadline: w/c 09/11/26
Unit Description This unit focuses on using percentages in a variety of different context, for example working out a sale price, calculating interest earned on an investment or comparing different proportions. Content Criteria By the end of the topic, students should be able to: • Use a standard calculator (scientific or graphical). • Do calculations involving percentages in context. • Find relevant information from tables. • Do calculations involving increase and decrease by percentages in context. • Know how to use percentages to work with appreciation or depreciation. • The use of an index number to compare a number or value to that in a base year. • Know how to use percentages to work with appreciation or depreciation • Work out an average annual percentage growth (or reduction) rate for a given change over a period.		

Unit 4 – Roughly Speaking (Paper 1, Introduction to Quantitative Reasoning)	Assessed: w/c 12/10/26	Data Deadline: w/c 09/11/26
Unit Description This unit focuses on knowing the rough size of a quantity. This will often involve estimation. This unit looks at some of the calculation that might be involved and the level of accuracy that would be reasonable, given the situation. Content Criteria By the end of the topic, students should be able to: • Make a rough estimate of a quantity from available information. • Use estimates when checking calculations. • Make and justify upper and lower bounds for a calculation. • Interpret and present error bounds and tolerances on diagrams and in writing, understanding that different levels of tolerance are appropriate in different situations. • Identify simplifying assumptions that allow a situation to be modelled. • Develop or choose a simple mathematical model for a real-world situation. • Use a model to make predictions or get information about a situation. • Compare outcomes from a model with actual data, information, experience or common sense and comment on the appropriateness of the model. • Appraise the assumptions underlying a model critically. • Understand that a simple model can give useful answers but may need to be improved. • Communicate mathematical results clearly and effectively.		

Unit 5 – Financial Problem Solving (Paper 1, Introduction to Quantitative Reasoning)	Assessed: w/c 30/11/26	Data Deadline: w/c 04/01/27
Unit Description This unit focuses on how to make financial decisions and some of the issues involved. It uses some of the content learnt in Unit 3 – Percentages. Content Criteria By the end of the topic, students should be able to: • Use a standard calculator (scientific or graphical). • Decide what information is needed to address a financial situation. • Know how to obtain the necessary information. • Process the information to provide one or more possible solutions. • Decide which, if any, of the solutions are appropriate. • Use foreign exchange rate information to make calculations, including calculations for currency exchange with commission or a fee. • Do calculations involving percentages in context; the use of an index number to compare a number or value to that in a base year. • Know how to use percentages to work with appreciation or depreciation. • Understand and use the language of finance. • Work out the regular outgoing cost for a financial decision. • Use a spreadsheet to cost a project or business proposal, recognising that some costs are more predictable than others over time. • Use a demand curve as a model for the relationship between price and demand. • Find relevant information from tables.		

Unit 6 – Working with Data (Paper 1, Introduction to Quantitative Reasoning)	Assessed: w/c 30/11/26	Data Deadline: w/c 04/01/27
Unit Description This unit focuses on the skills needed to understand and interpret the ideas involved in data and methods to present them. Content Criteria By the end of the topic, students should be able to: • Decide what data need to be collected in order to answer a question requiring statistical evidence. • Use a suitable method for collecting data, taking ethical considerations into account, and judge whether data are of sufficient quality. • Process and present the data and provide an answer to the original question. • Interpret the answer to the question and decide whether it is realistic. • Interpret a scatter diagram for bivariate data, draw a line of best fit by eye when it is appropriate to do so and understand that extrapolation might not be justified. • Read information from a table and to construct a table to present information. • Select and calculate appropriate measures of central tendency and to interpret them. • Calculate a weighted mean and recognise when it is appropriate to do so. • Understand and use the language describing types of data. • Read information from a table and to construct a table to present information. • Select and calculate appropriate measures of central tendency and to interpret them. • Use and interpret statistical diagrams appropriate to a variety of types of data. • Use appropriate measures of spread and to interpret them. • Use a spreadsheet to draw graphs and standard statistical diagrams and interpret graphs produced on spreadsheets. • Identify when a statistical diagram is misleading and explain how it could be improved.		

Unit 7 – Representing the Real World Graphically (Paper 1, Introduction to Quantitative Reasoning)	Assessed: w/c 30/11/26	Data Deadline: w/c 04/01/27
Unit Description This unit focuses on creating and using graphs that represent real world situations. Content Criteria By the end of the topic, students should be able to: • Know that the independent variable is plotted on the horizontal axis of a graph. • Use a graph to construct a table of values. • Work with graphs drawn from a variety of contexts. • Find the gradient of a straight-line graph and interpret it in context, taking account of the scales on the axes and using appropriate units. • Estimate the gradient of a curve at a point by drawing a tangent and interpret it as a rate of change. • Construct a table of values for a graph from a simple formula and use it to plot the graph. • Understand the relationship between a straight-line graph and the formula connecting the variables graphed. • Recognise graphs of direct and inverse proportion. • Linearise the graph of a relationship where the dependent variable is directly proportional to some function of the independent variable.		

Unit 8 – It's Normal (Paper 1, Introduction to Quantitative Reasoning)	Assessed: w/c 04/01/27	Data Deadline: w/c 04/01/27
Unit Description This unit focuses on looking symmetrical charts for continuous data that are not grouped but still do have frequency by area. It uses some of the content learnt in Unit 4 – Roughly Speaking and Unit 5 – Working with Data. Content Criteria By the end of the topic, students should be able to: • Know that the Normal distribution is a model which can be used for real data and recognise a Normal curve. • Identify skewness from a histogram, frequency chart or box and whisker plot. • Know that, for a Normal distribution, values more than three standard deviations from the mean are very unusual; know that approximately 95% of the data lie within two standard deviations of the mean and that 68% (just over two thirds) lie within one standard deviation of the mean. • Interpret sample data in terms of possible properties of the parent population. • Understand about the variability of data and be able to describe the main features of a distribution. • Use the mean and standard deviation to calculate a z-score and use z-scores for comparison or quality control. • Interpret a Normal probability plot from statistical software.		

Unit 9 – Working with Exponentials (Paper 1, Introduction to Quantitative Reasoning)	Assessed: w/c 04/01/27	Data Deadline: w/c 04/01/27
Unit Description This unit focuses on working with very large and very small numbers. Content Criteria By the end of the topic, students should be able to: • Interpret large or small numbers in standard form, including the use of a spreadsheet or calculator. • Calculate with numbers in standard form. • Explore exponential growth and decay, including interpreting output from a spreadsheet. • Represent and interpret exponential growth or decay in a graph. • Solve equations of the forms $x^5 = 35$ and $1.05^x = 8.2$. • Use and interpret a logarithmic scale on a graph.		

Unit 10 – Measures and Scaling (Paper 1, Introduction to Quantitative Reasoning)	Assessed: w/c 04/01/27	Data Deadline: w/c 04/01/27
Unit Description This unit focuses on shapes that are found in everyday life and how to interpret measurements associated with them. Content Criteria By the end of the topic, students should be able to: • Recognise and use relationships between lengths, areas, weights and volumes of similar figures to model real-world situations. • Work with commonly used units and know that quantities being compared should have the same units; this includes compound units. • Interpret diagrams, maps and scale drawings and be able to use them in problem solving. • Work with time, length, area and volume to meet given regulations. • Understand the terms displacement, distance, velocity, speed and acceleration; perform associated calculations. • Work with representations of 3-D objects in 2-D.		

Unit 11 – Fermi Estimates (Paper 2, Critical Maths)	Assessed: w/c 08/02/27	Data Deadline: w/c 08/03/27
Unit Description This unit focuses on making estimates of quantities with little or no information about their size. This can be done using some facts along with reasonable assumptions. Content Criteria By the end of the topic, students should be able to: • Make reasonable estimates of quantities typically encountered in everyday life. • Know the rough size of the population of a large UK city, the UK, and the world. • Know the rough size and seating capacity of common means of transport such as cars, buses, trains, and know typical speed limits on UK roads. • Calculate an estimate with limited information (a Fermi estimate) using quantitative understanding of the world. • Decide what information is needed to address a problem. • Make, and justify, simplifying assumptions in order to solve a problem. • Communicate the solution to someone who understands the problem. • Estimate the probability of an event. • Make reasonable estimates of units typically encountered in everyday life: Lengths, areas, and volumes. • Recognise when the order of magnitude of an answer is reasonable. • Evaluate different strategies for problem solving. • Recognise that a “good enough” solution to a problem can save time and money compared to a more accurate solution. • Criticise or refine a proposed solution to a problem.		

Unit 12 – Probability in Medicine and Law (Paper 2, Critical Maths)	Assessed: w/c 08/02/27	Data Deadline: w/c 08/03/27
Unit Description This unit focuses on situations in real life where understanding probability is important. It uses some of the content learnt in Chapter 1 - Probability and Risk. Content Criteria By the end of the topic, students should be able to: • Know that a conditional probability of event A given event B is different from the conditional probability of event B given event A in relevant contexts. • Interpret statements about population proportions in terms of probability and use them to make further deductions. • Understand that an event with small probability is not surprising in a sufficiently large population. • Recognise common examples of incorrect reasoning in probability and be able to explain the errors.		

Unit 13 – Is it for Real? (Paper 2, Critical Maths)	Assessed: w/c 08/02/27	Data Deadline: w/c 08/03/27
Unit Description This unit focuses on recognising when something is made to deceive or mislead people. Content Criteria By the end of the topic, students should be able to: • Have a correct and critical understanding of the use of percentages including use of percentage change in a probability. • Identify and comment on possible sources of bias or error when solving a problem. • Evaluate critically information in public statements such as news reports and political comments. • Evaluate a decision by referring to data. • Recognise and explain when statistical diagrams are misleading and when statistical summary measures are being misinterpreted. • Understand that neither correlation nor association implies causation. • Evaluate different strategies for problem solving. • Decide what information is needed to address a problem. • Identify and comment on possible sources of bias or error when solving a problem. • Criticise or refine a proposed solution to a problem. • Recognise situations where regression to the mean might occur.		

Unit 14 – Business and Risk (Paper 2, Critical Maths)	Assessed: w/c 08/02/27	Data Deadline: w/c 08/03/27
Unit Description This unit focuses on making sound financial decisions, taking account of the risks involved. The financial decisions may be about personal choices such as borrow or investing money, or decisions around running a business. Content Criteria By the end of the topic, students should be able to: • Make, and justify, simplifying assumptions in order to solve a problem. • Interpret the solution to a problem effectively in terms of the original problem. • Use data to make and justify a decision. • Criticise or refine a proposed solution to a problem. • Decide what information is needed to address a problem. • Criticise or refine a proposed solution to a problem. • Estimate the probability of an event. • Understand expected number as the average number of occurrences in the long run. • Identify and comment on possible sources of bias or error when solving a problem.		

Unit 15 – Making Decisions (Paper 2, Critical Maths)	Assessed: w/c 08/02/27	Data Deadline: w/c 08/03/27
Unit Description This unit focuses on using the available information when making decisions. It includes realising that in some situations, more information is needed before an informed decision can be made and that sometimes assumptions are required. Content Criteria By the end of the topic, students should be able to: • Evaluate different strategies for problem solving. • Communicate the solution to someone who understands the problem. • Criticise or refine a proposed solution to a problem. • Use numerical values to decide whether a general statement is realistic. • Compare two quantities by reasoning, without working out the value of either. • Use data to make and justify a decision. • Interpret the solution to a problem effectively in terms of the original problem. • Evaluate a decision by referring to data.		

Unit 16 – Trialling, Sampling and Bias (Paper 2, Critical Maths)	Assessed: w/c 15/03/27	Data Deadline: 12/04/27
Unit Description This unit focuses on learning how to decide whether an effect is caused by an intervention, such as a particular treatment in medicine. Content Criteria By the end of the topic, students should be able to: • Know what randomised controlled trials are and understand their importance in trying to establish causation. • Understand the concepts and importance of “blind” and “double blind” in statistical trials. • Understand that proportions from small samples are more variable than those from large samples.		

Unit 17 – Problem solving with the Normal distribution (Paper 2, Critical Maths)	Assessed: w/c 15/03/27	Data Deadline: 12/04/27
Unit Description This unit focuses on situations where there are variables with distributions that are Normal or sufficiently near Normal for it to be a good enough model to provide useful results. The Normal distribution is often used as a model when solving problems. It uses some of the content learnt in Chapter 8 – It’s Normal. Content Criteria By the end of the topic, students should be able to: • Know that, for large samples of a fixed size, sums of independent observations are distributed approximately Normally. • Understand that proportions from small samples are more variable than those from large samples. • Know that, for an experiment which can be modelled by the toss of a fair coin, for n repetitions of the experiment, on average $\frac{n}{2}$ occurrences will happen and that the standard deviation is $\frac{\sqrt{n}}{2}$. • Be able to recognise when a problem is similar to one which has already been solved.		