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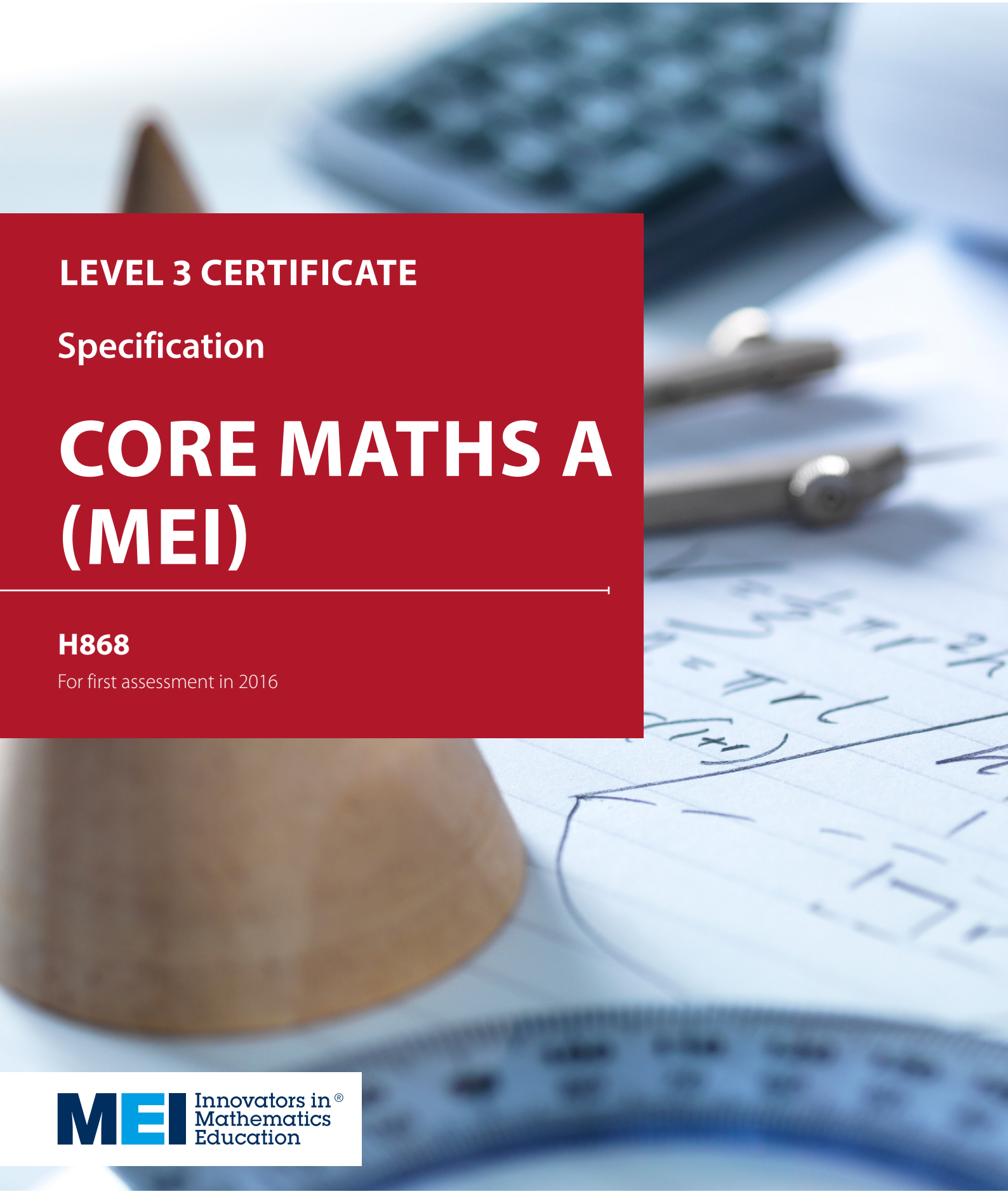

LEVEL 3 CERTIFICATE

Specification

CORE MATHS A (MEI)

H868

For first assessment in 2016

MEI Innovators in Mathematics Education

Version 2.4 (January 2024)

ocr.org.uk/coremaths

Disclaimer

Specifications are updated over time. Whilst every effort is made to check all documents, there may be contradictions between published resources and the specification, therefore please use the information on the latest specification at all times. Where changes are made to specifications these will be indicated within the document, there will be a new version number indicated, and a summary of the changes. If you do notice a discrepancy between the specification and a resource please contact us at: resources.feedback@ocr.org.uk

We will inform centres about changes to specifications. We will also publish changes on our website. The latest version of our specifications will always be those on our website (ocr.org.uk) and these may differ from printed versions.

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Contents

Introducing…
Core Maths – Level 3 Certificate in Core Maths A (MEI) (For first assessment in 2016)

Core Maths is a descriptor for a range of level 3 qualifications that have been introduced by the Department for Education (DfE) to increase post-16 participation in mathematics, it is not a qualification title in itself. OCR and Mathematics in Education and Industry (MEI) have jointly developed two new qualifications designed to meet the Core Maths requirements: Level 3 Certificate in Core Maths A (MEI) and Level 3 Certificate in Core Maths B (MEI). The intention for our qualifications is to prepare learners who have different goals to tackle a wide variety of mathematical problems. In particular, we want to emphasise and encourage these key outcomes:

- Sound understanding of mathematical concepts, skills and techniques from GCSE and beyond
- Fluency in procedural skills, common problem-solving skills and strategies
- Confidence in applying mathematical and statistical thinking and reasoning in a range of new and unfamiliar contexts to solve real-life problems
- Competency in interpreting and explaining solutions of problems in context.

Contact the team

We have a dedicated team of people working on our Level 3 Certificate in Core Maths A (MEI) qualification.

If you need specialist advice, guidance or support, get in touch as follows:

01223 553998

maths@ocr.org.uk

@OCR_maths

Teaching and learning resources

We recognise that the introduction of a new specification can bring challenges for implementation and teaching. Our aim is to help you at every stage and we're working hard to provide a practical package of support in close consultation with teachers and other experts, so we can help you to make the change.

Designed to support progression for all

Our resources are designed to provide you with a range of teaching activities and suggestions so you can select the best approach for your particular students. You are the experts on how your students learn and our aim is to support you in the best way we can.

We want to…

- Support you with a body of knowledge that grows throughout the lifetime of the specification
- Provide you with a range of suggestions so you can select the best activity, approach or context for your particular students
- Make it easier for you to explore and interact with our resource materials, in particular to develop your own schemes of work
- Create an ongoing conversation so we can develop materials that work for you.

Plenty of useful resources

You'll have four main types of subject-specific teaching and learning resources at your fingertips:

- Delivery Guides
- Transition Guides
- Topic Exploration Packs
- Lesson Elements.

Along with subject-specific resources, you'll also have access to a selection of generic resources that focus on skills development and professional guidance for teachers.

Skills Guides – we've produced a set of Skills Guides that are not specific to Core Maths A (MEI), but each covers a topic that could be relevant to a range of qualifications – for example, communication, legislation and research. Download the guides at **ocr.org.uk/skillsguides**

Active Results – a free online results analysis service to help you review the performance of individual students or your whole school. It provides access to detailed results data, enabling more comprehensive analysis of results in order to give you a more accurate measurement of the achievements of your centre and individual students. For more details refer to **ocr.org.uk/activeresults**

Support and Advice

This specification is accompanied by a complete support package provided by OCR and MEI.

- Advice is always available from OCR and MEI.
- INSET provided by OCR and MEI.
- The MEI annual three-day conference.
- MEI branch meetings.
- Regular newsletter from MEI.

Professional Development

Take advantage of our improved Professional Development Programme, designed with you in mind. Whether you want to come to events, look at our new digital training or search for training materials, you can find what you're looking for all in one place at the CPD Hub.

An introduction to the new specification

We will be running events to introduce and help you deliver our Level 3 Certificate in Core Maths A (MEI) qualification.

These events are designed to help prepare you for first teaching and to support your delivery at every stage.

Watch out for details at **cpdhub.ocr.org.uk**

To receive the latest information about the training we'll be offering, please register for Level 3 Certificate email updates at **ocr.org.uk/updates**

1 Why choose an OCR Level 3 Certificate in Core Maths A (MEI)?

1a. Why choose an OCR qualification?

Choose OCR and you've got the reassurance that you're working with one of the UK's leading exam boards. Our Level 3 Certificate in Core Maths A (MEI) has been developed in consultation with teachers, employers, higher education and recognised, learned and professional bodies to provide learners with a qualification that's relevant to them and meets their needs.

We're part of the Cambridge Assessment Group, Europe's largest assessment agency and a department of the University of Cambridge. Cambridge Assessment plays a leading role in developing and delivering assessments throughout the world, operating in over 150 countries.

We work with a range of education providers, including schools, colleges, workplaces and other institutions in both the public and private sectors. Over 13,000 centres choose our A Levels, Level 3 Certificates, GCSEs and vocational qualifications including Cambridge Nationals and Cambridge Technicals.

Our Specifications

We believe in developing specifications that help you bring the subject to life and inspire your students to achieve more.

We've created teacher-friendly specifications based on extensive research and engagement with the teaching community. They're designed to be straightforward and accessible so that you can tailor the delivery of the course to suit your needs. We aim to encourage learners to become responsible for their own learning, confident in discussing ideas, innovative and engaged.

We provide a range of support services designed to help you at every stage, from preparation through to the delivery of our specifications. This includes:

- A wide range of high-quality creative resources including:
    - Delivery Guides
    - Transition Guides
    - Topic Exploration Packs
    - Lesson Elements
    - …and much more.
- Access to Subject Advisors to support you throughout the lifetime of the specification.
- CPD/Training for teachers to introduce the qualifications and prepare you for first teaching.
- Active Results – our free results analysis service to help you review the performance of individual learners or the whole centre.

All Level 3 qualifications offered by OCR are accredited by Ofqual, the Regulator for qualifications offered in England. The accreditation number for OCR's Level 3 Certificate in Core Maths A (MEI) is QN: 601/4783/0.

1b. Why choose an OCR Level 3 Certificate in Core Maths A (MEI)?

OCR's new Level 3 Certificate in Core Maths A (MEI) course has been developed jointly by Mathematics in Education and Industry (MEI) and OCR. This is a well-established partnership which provides a firm foundation for curriculum and qualification development.

MEI is a long established, independent curriculum development body. MEI provides advice and CPD relating to all the curriculum and teaching aspects of the course. It also provides teaching resources, which for this specification can be found on the website (**www.mei.org.uk**).

Core Maths

OCR's Level 3 Certificate in Core Maths A (MEI) meets the requirements defined by the Department for Education (DfE) in their *Core Maths qualifications: Technical guidance* document, published in July 2014.

It has been approved by the DfE as a performance measure which is to be included in performance tables from 2017.

Qualification purpose

This qualification is designed to support post-16 learners with the mathematical and statistical needs of their further study of other subjects, as well as for employment and everyday life.

The needs of learners preparing for a variety of technical and professional roles are met through learning about mathematical modelling, costing, risk and the use of spreadsheets. Financial problem solving is a part of the qualification; this is important for all learners, irrespective of their future ambitions.

This qualification gives learners the mathematical skills to tackle problems in a variety of authentic situations*. It enables learners to strengthen the mathematical knowledge and skills which they have learnt at GCSE so that they can apply them to the problems which they will encounter in further study, life and employment. The use of technology – in particular, spreadsheets – is an integral part of the course.

Using mathematics creatively to address authentic problems, communicating, thinking clearly and evaluating quantitative statements are features of this qualification. The ability to reason confidently using quantitative information and to check the accuracy of statements made by others is important for all future study and employment as well as for effective participation in everyday life.

Aims and learning outcomes

The intention of our qualification is to prepare learners who have different goals in terms of their educational and employment progression to tackle mathematical problems.

OCR's aim is to emphasise and encourage the following widely recognised and desirable outcomes:

- sound understanding of mathematical concepts, skills and techniques from GCSE (9–1) and beyond
- fluency in procedural skills, common problem solving skills and strategies
- confidence in applying mathematical and statistical thinking and reasoning in a range of new and unfamiliar contexts to solve real life problems
- competency in interpreting and explaining solutions of problems in context.

*In this specification, authentic contexts, situations or problems should be understood to mean "similar to those which students may encounter in future life, work or study". See Appendix 5d.

1c. What are the key features of this specification?

OCR's Level 3 Certificate in Core Maths A (MEI) should encourage learners to be inspired, motivated and challenged by following a broad, coherent, practical, satisfying and worthwhile course of study. It should provide insight into and experience of how mathematics works, stimulating learners' curiosity and encouraging them to engage with mathematics in their everyday lives.

OCR's Level 3 Certificate in Core Maths A (MEI) is:

Research-led

- Research, international comparisons and engagement with both teachers and the wider education community have been used to enhance the reliability, validity and appeal of our assessment tasks.
- It will encourage the teaching of interesting mathematics, aiming for mastery leading to positive exam results.

Learner-focused

- OCR's specification and assessment consists of maths fit for the modern world and presented in authentic contexts.
- It will allow learners to develop mathematical independence built on a sound base of conceptual understanding.
- It will be a springboard for future progress and achievement in a variety of subjects and in future employment.

Teacher-centred

- The specification will be accompanied by an extensive teacher support package provided by MEI and OCR.
- Support and resources will focus on empowering teachers, exploring teaching methods and classroom innovation alongside more direct teaching resources.
- All MEI specifications are supported by a very large purpose-built website designed to help learners and teachers.
- OCR's assessment will be valid and reliable, recognising positive achievement in learning.

Dependable

- OCR's high-quality assessments are built on sound educational principles and a belief that the utility, richness and power of mathematics should be made evident and accessible to all learners.
- An emphasis on learning and understanding mathematical concepts underpinned by a sound, reliable and valid assessment.

1d. How do I find out more information?

If you are already using OCR specifications you can contact us at: **www.ocr.org.uk**

If you are not already a registered OCR centre then you can find out more information on the benefits of becoming one at: **www.ocr.org.uk**

Get in touch with one of OCR's Subject Advisors:

Email: **maths@ocr.org.uk**

Customer Contact Centre: 01223 553998

Visit our Online Support Centre at: **support.ocr.org.uk**

Advice is also available from MEI; contact details can be found on **www.mei.org.uk**

2 The specification overview

2a. Overview of Level 3 Certificate in Core Maths A (MEI) (H868)

Learners must complete both components (01 and 02) to be awarded the OCR Level 3 Certificate in Core Maths A (MEI).

*Indicates synoptic assessment is included in both components. A minimum of 25% of assessment for this qualification will be synoptic.

Content Overview	Assessment Overview	
• Modelling • Statistics • Finance • Working with exponentials • Working with graphs and gradients • Geometry and measures • Risk • Estimation • Problem solving • Communicating solutions • Use of technology	Introduction to Quantitative Reasoning (01)* 72 marks 2 hour written paper	**50%** of total Level 3 Certificate
	Critical Maths (02)* 60 marks 2 hour written paper	**50%** of total Level 3 Certificate

2b. Content of Level 3 Certificate in Core Maths A (MEI) (H868)

This is a linear qualification. The content is split between two components: Introduction to Quantitative Reasoning and Critical Maths.

In Introduction to Quantitative Reasoning learners are taught to use a modelling cycle, a statistical problem solving cycle and a financial problem solving cycle. They are also taught to use spreadsheets to work on a variety of problems.

In Critical Maths, learners work on a greater variety of problems – the emphasis is on them using and extending their understanding of mathematics, selecting appropriate ways of reasoning and developing a high level of fluency that will enable them to see the world around them through mathematical eyes. By the end of the course, learners should be asking "what does that mean?" and "does that sound about right?" whenever they encounter a quantitative situation or statement.

Format of question papers

Question papers will have answer spaces provided; there may be more space than learners need.

Tables given for learners to complete may have more rows and/or columns than are needed.

Pre-release material

Pre-release material will be made available in advance of the examinations. It will be relevant to some (but not all) of the questions in an examination paper. The purpose of the pre-release material is to familiarise learners with contexts and data in advance of the examination so that they are able to engage in problem solving during the examination.

In Introduction to Quantitative Reasoning and Critical Maths the pre-release material will be specific to certain examination questions, allowing learners to become familiar with particular contexts that will then be used for authentic problem solving. This pre-release material will be published in mid-March for the examinations in June of that year. A printed copy of the pre-release material will be provided in the examination.

Competence statements

Competence statements are designed to help users by clarifying the requirements, but the following points need to be noted.

- Content that is covered by a competence statement may be tested in an examination question without further guidance being given.
- Many examination questions will require learners to use two or more competence statements at the same time without further guidance being given.

Competence statements have an implied prefix of the words: 'A learner should …'

Each competence statement has a unique reference code. For example, in the code IQRq1, IQR refers to the component Introduction to Quantitative Reasoning; q refers to 'use of technology' (see next page) and 1 means that it is the first such competence statement in the list.

The letters used in assigning reference codes to competence statements are as follows:

a	algebra
e	estimation
f	financial problem solving
g	graphs
l	large and small numbers
m	geometry & measures
n	numerical problem solving
p	mathematical processes (e.g. modelling)
q	use of technology
s	statistical problem solving
u	probability (uncertainty)

Notes, notation and exclusions

The notes, notation and exclusions columns in the specification are intended to assist teachers and learners.

- The notes column provides examples and further detail for some competence statements.
- The notation column shows the notation and terminology that learners are expected to know, understand and be able to use.
- The exclusions column lists content which will not be tested, for the avoidance of doubt when interpreting competence statements.

Use of technology

Learners are expected to use a calculator (scientific or graphical) in the examinations. However, some questions may ask learners to work without a calculator; in such cases no credit will be given for answers with insufficient working. Questions may include printouts from spreadsheets which learners will need to complete or interpret.

2c. Content of Introduction to Quantitative Reasoning (Component 01)

Component objectives

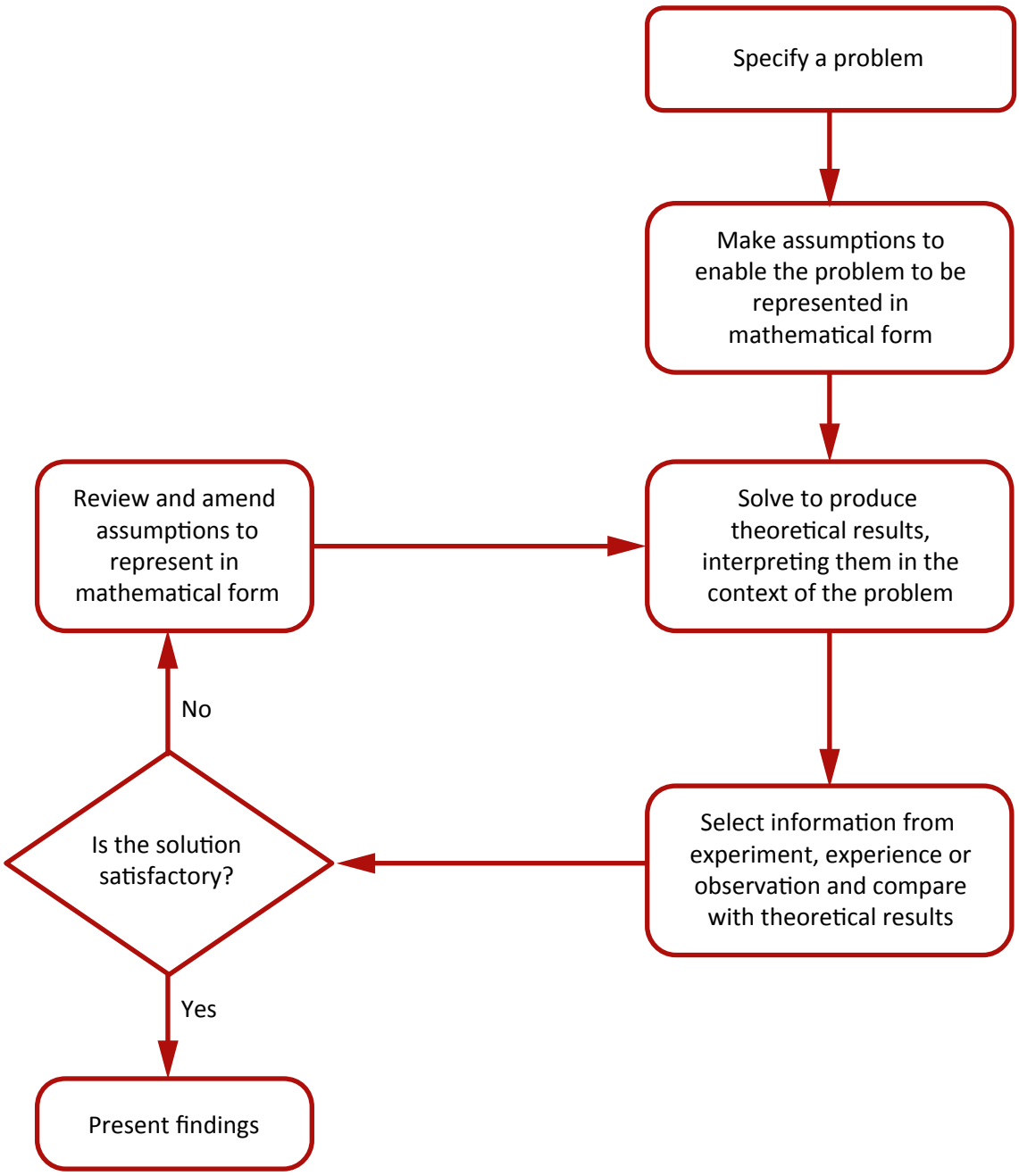
Learners should:

- consolidate and extend the mathematics they have learnt at GCSE
- develop transferable skills in mathematics
- be able to work fluently in a variety of contexts
- use problem solving cycles in modelling, statistics and financial mathematics
- apply common sense to check the outcomes of calculations
- use appropriate technology in their work.

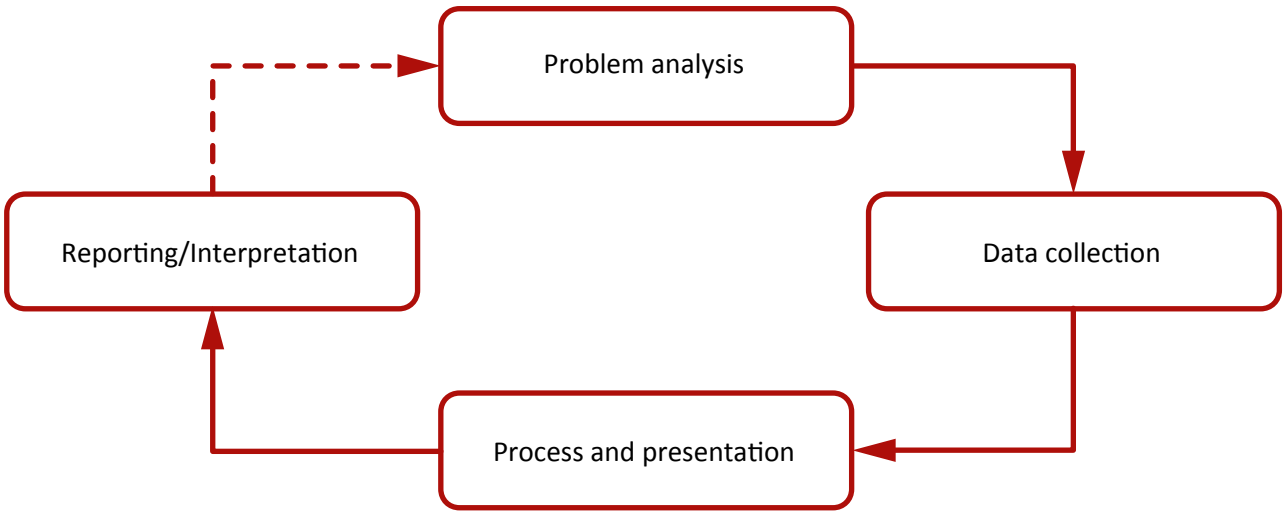
The Modelling Cycle

The examinations will assume that learners have used the full modelling cycle during the course.

Mathematics can be applied to a wide variety of **problems** arising from real situations but real life is complicated, and can be unpredictable, so some **assumptions** need to be made to simplify the situation and allow mathematics to be used. Once answers have been obtained, we need to **compare with experience** to make sure that the answers are useful. For example, the government might want to know how many primary school children there will be in the future so that they can make sure that there are enough teachers and school places. To find a reasonable estimate, they might **assume** that the birth rate over the next five years will be similar to that for the last five years and those children will go to school in the area they were born in. They would **evaluate** these assumptions by checking whether they fit in with **new data** and **review** the estimate to see whether it is still reasonable.

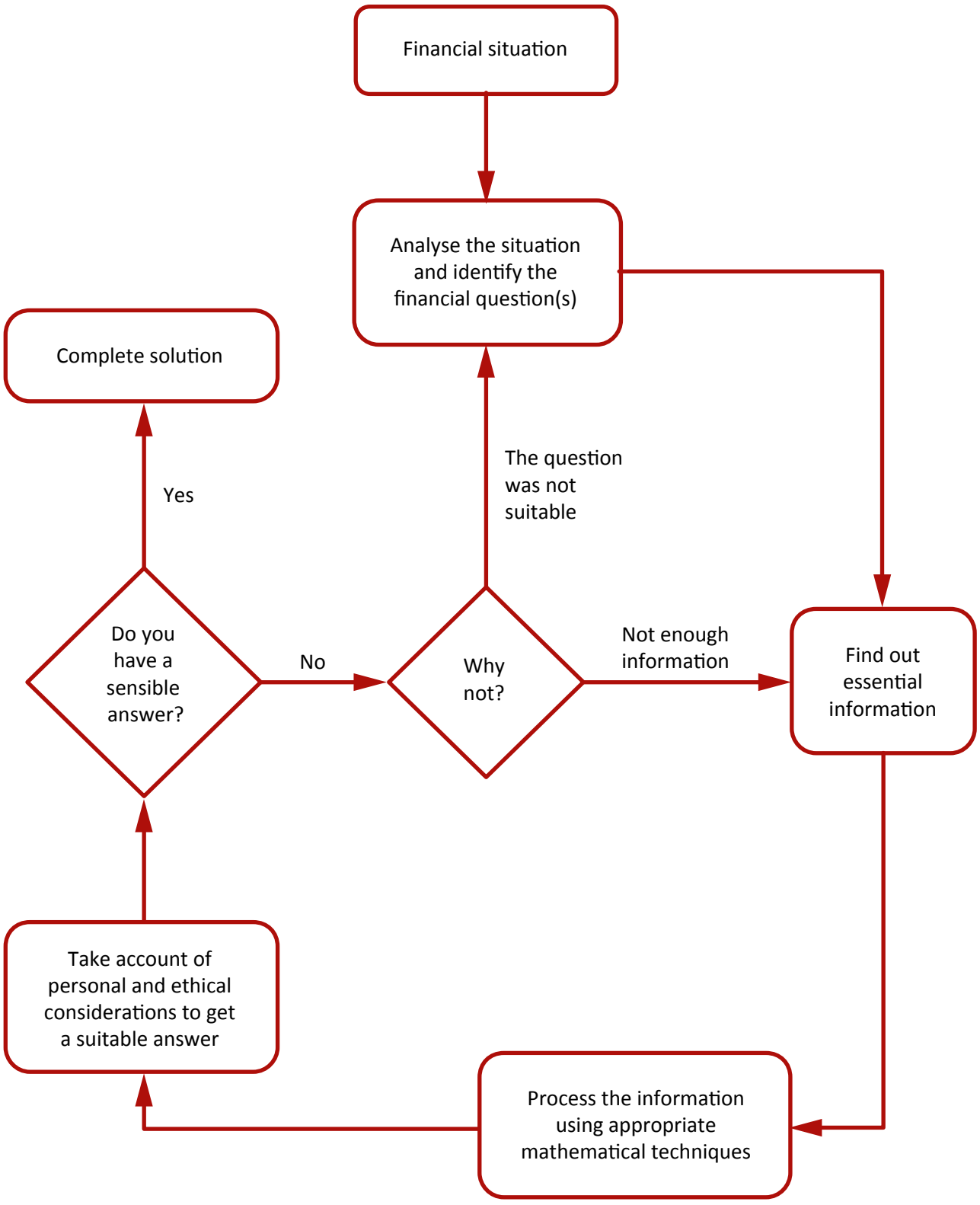


The Statistical Problem Solving Cycle



Process	Description
Problem analysis	This process involves the work at both the start and the end of the statistical problem solving cycle. The problem to be addressed needs to be formulated in a way which allows statistical methods to be used; decisions need to be made at this early stage to ensure that relevant data are collected. The problem may be stated as a research question or as a hypothesis. The analysis may involve considering whether there is an appropriate statistical distribution to use (e.g. the Normal distribution) or whether there is a standard statistical model (e.g. a straight line relationship in a scatter diagram) that can be applied. At the completion of the statistical problem solving cycle, there needs to be consideration of whether the original problem has been solved in a satisfactory way or whether it is necessary to repeat the problem solving cycle in order to gain a better solution. For example, reflection on the interpretation may show up a possible source of bias in data collection and the cycle may need to be repeated to eliminate the bias.
Data collection	Learners will need to decide how data will be collected when using their own (primary) data, taking account of practical and ethical considerations, and then collect the data. When using data collected by someone else (secondary data) learners should try to find out how the data have been collected to identify any possible sources of bias. The work may also involve taking a sample from a large secondary data set (e.g. the national census).
Process and presentation	This stage involves using suitable techniques, such as data displays and statistical summary measures, in order to make sense of the (primary or secondary) data collected in the previous stage. The techniques used should be those planned for at the analysis stage and any appropriate additional techniques. This stage ends with a provisional solution to the problem.
Reporting/ Interpretation	This stage of the process involves reporting the solution to the problem in a way which relates to the original research question or hypothesis. Communication should be in clear plain English which can be understood by someone who has an interest in the original problem but is not an expert in statistics. This should lead into reflection on the solution to consider whether it is satisfactory or further work is needed.

The Financial Problem Solving Cycle



Notes on the Financial Problem Solving Cycle

Financial situation

Examples of financial situations include the following:

- deciding what to do with income
- needing to find somewhere to live
- planning for the future.

Financial question

Examples of financial questions include the following:

- How much will that coat cost in the sale?
- How much will I earn after my wage rise?
- I am making earrings to sell; how much should I charge for them?
- Where should I borrow money to buy a car?
- Where should I invest my money?
- How much should I put aside for my pension each month?

Essential information

Examples of information which could be needed to answer the question include the following:

- the percentage reduction for a sale
- if someone wants to sell something, they need to know what it cost and how much someone else might be willing to pay
- asking an adviser about options for loans or investments.

Process the information

This could include the following:

- using a spreadsheet
- doing a calculation
- putting information into a table or chart
- using summary measures.

Personal and ethical considerations

Examples include the following:

- one shop might be cheaper than another but pay its workers low wages so people may prefer to shop at the more expensive shop
- I may want to buy a car but I need to think about how much spare money I have to repay a loan
- it may be cheaper to buy a larger pack of fruit than a smaller one but someone may get the smaller one to avoid waste.

Being unable to find an appropriate solution

There are various reasons why it may not be possible to give a satisfactory answer to the original question.

Here are some examples:

- The original question was too vague so it is not possible to tell whether it has been answered or not – the question should be made more specific in a second circuit of the cycle.
- It is not possible to find a satisfactory answer. For example, someone wants to buy a large house but cannot afford to repay the mortgage. The question should be amended: perhaps looking for a smaller house or considering shared ownership.
- It may not have been possible to find enough information to answer the question. Advice should be sought in a second circuit of the cycle.

Specification	Ref.	Competence Statements	Notes	Notation	Exclusions
USE OF TECHNOLOGY					
Calculators	IQRq1	Be able to use a standard calculator (scientific or graphical).			
Spreadsheets	q2	Be able to read information from a standard spreadsheet.			
	q3	Be able to enter formulae and data into a spreadsheet, knowing that a standard spreadsheet formula starts with =.	Formulae based on the 4 rules of arithmetic and other standard functions required by the rest of this specification, e.g. to the power of, square root.	e.g. =B2*(C2+D2) =C3^4 =SQRT(A10)	
	q4	Be able to interpret simple formulae on a spreadsheet given in terms of cell references.	Examples include money, number patterns and simple sequences.	e.g. =AVERAGE(A1:A9)	
	q5	Be able to copy a formula and to ensure that only the required cell addresses increment.		e.g. $A1, A1, A$1	
	q6	Be able to use a spreadsheet to find a numerical solution of an equation.	Equations in one variable, involving powers and/or roots using trial and improvement.		Fixed point iteration.
	q7	Be able to use a spreadsheet to draw graphs and standard statistical diagrams and interpret graphs produced on spreadsheets.	Including awareness of when graphs produced by a spreadsheet are misleading or incorrect.		

Specification	Ref.	Competence Statements	Notes	Notation	Exclusions
MODELLING					
The modelling cycle	IQRp1	Be able to identify simplifying assumptions that allow a situation to be modelled.			
	p2	Be able to develop or choose a simple mathematical model for a real-world situation.	Model in words, numerically, algebraically, diagrammatically or in a spreadsheet.		
	p3	Be able to use a model to make predictions or get information about a situation.	For example, use a simple demand curve (e.g. a linear model) to predict the change in revenue following a given change in price.		
	p4	Be able to compare the outcomes from a model with actual data, information, experience or common sense and comment on the appropriateness of the model.	For example, compare an exponential growth model with actual population figures. The information may be given in diagrammatic or graphical form.		
	p5	Be able to appraise the assumptions underlying a model critically.			
	p6	Understand that a simple model can give useful answers but may need to be improved.	Includes comparing outcomes from two models.		
	p7	Be able to communicate mathematical results clearly and effectively.	Including to a person or audience unfamiliar with the underlying mathematics.		

Specification	Ref.	Competence Statements	Notes	Notation	Exclusions
MODELLING					
Estimation	IQRe1	Be able to make a rough estimate of a quantity from available information.	This includes financial estimates such as conversion from a foreign currency to pounds without a calculator.		
	e2	Be able to use estimates when checking calculations.			
	e3	Be able to make and justify upper and lower bounds for a calculation.	Includes selecting and/or justifying an appropriate level of accuracy for an answer to a calculation.	Maximum, minimum, upper bound, lower bound	
	e4	Be able to interpret and present error bounds or tolerances on diagrams and in writing, understanding that different levels of tolerance are appropriate in different situations.	Error bounds may be required in percentage form.	12 ± 0.5 $340 \pm 10\%$ $8.5\,\text{cm} \leq D \leq 9.5\,\text{cm}$	
Algebra	IQRa1	Be able to represent a situation mathematically using a formula or equation.	Using both traditional algebra and spreadsheet notation.		
	a2	Be able to substitute values into a formula given in symbols, words or as a flow chart.	Formulae will be confined to the following cases (or simple combinations of these): • polynomials • simple rational expressions • exponential growth and decay • trigonometric functions (sin and cos).		
	a3	Be able to solve equations and change the subject of a formula.	In simple cases using the four operations, powers and roots. Solve more complex equations using trial and improvement or a graphical method.		Changing the subject of an exponential formula.

Specification	Ref.	Competence Statements	Notes	Notation	Exclusions
MODELLING					
Geometry & measures	IQRm1	Be able to recognise and use relationships between lengths, areas, weights and volumes of similar figures to model real-world situations.			
	m2	Be able to work with time, length, area and volume to meet given regulations.	e.g. In the context of meeting health and safety requirements. Regulations to be met will be given to learners.		
	m3	Be able to work with commonly used units and know that quantities being compared should have the same units; this includes compound units.	e.g. Units of time, speed. e.g. Units of speed are units of distance divided by units of time. e.g. Understanding that the units of quantities arise from the way they are calculated. Where appropriate, conversion factors between metric and imperial units will be given.		
	m4	Be able to interpret diagrams, maps and scale drawings and be able to use them in problem solving.			
	m5	Be able to work with representations of 3-D objects in 2-D.	Representations include plans and elevations, sketches and isometric drawings.		
	m6	Understand the terms displacement, distance, velocity, speed and acceleration; perform associated calculations.	Displacement as directed distance from a starting point; velocity as directed speed.		
Number	n1	Be able to use ratio and proportionality in authentic contexts.			

Specification	Ref.	Competence Statements	Notes	Notation	Exclusions
STATISTICS					
The statistics cycle	IQRs1	Be able to decide what data need to be collected in order to answer a question requiring statistical evidence.			
	s2	Be able to use a suitable method for collecting data, taking ethical considerations into account, and judge whether data are of sufficient quality.	The data may be primary or secondary, and may be read off a graph or diagram.		
	s3	Be able to process and present the data and so provide an answer to the original question.			
	s4	Be able to interpret the answer to the question and decide whether it is realistic.			
Data	s5	Understand and use the language describing types of data.	Primary, secondary; categorical, numerical; continuous, discrete.		
	s6	Be able to recognise values in primary or secondary data which are unlikely to be accurate.		Outlier	Formal criteria for outliers.
	s7	Be able to read information from a table and to construct a table to present information.	Includes grouping data using suitable class intervals.		
	s8	Understand the meaning of the terms sample and population.	The idea of random sampling.		The names of particular sampling methods will not be examined.
	s9	Be able to interpret sample data in terms of possible properties of the parent population.	e.g. Sample mean as an estimate of population mean.		
	s10	Understand about the variability of data and be able to describe the main features of a distribution.	Includes understanding that the average from a sample will generally be different from the population average. The main features include the central tendency (average) and spread.		

Specification	Ref.	Competence Statements	Notes	Notation	Exclusions
			STATISTICS		
Statistical diagrams and measures	IQRs11	Be able to use and interpret statistical diagrams appropriate to a variety of types of data.	Diagrams include: box and whisker plots, dot plots, scatter diagrams, bar charts, pie charts, histograms, frequency charts, cumulative frequency diagrams. Learners may be asked to complete these diagrams in the examination.	A frequency chart resembles a histogram with equal width bars but its vertical axis is frequency. A dot plot is similar to a bar chart but with stacks of dots in lines to represent frequency.	Calculation of frequency density.
	s12	Be able to identify when a statistical diagram is misleading and explain how it could be improved.	e.g. Improvement by clearer labelling or a better scale.		
	s13	Be able to identify skewness from a histogram, frequency chart or box and whisker plot.	In appropriate contexts. Positive and negative skewness.		Measures of skewness.
	s14	Be able to 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.	Including the terms association, correlation, line of best fit.		Learners will not be expected to calculate correlation coefficients or regression lines.
	s15	Be able to select and calculate appropriate measures of central tendency and to interpret them.	Mean, median, mode. Includes grouped data and calculation or estimation for data in a statistical diagram.	Number of data items = n Sample mean = $\overline{x}$	
	s16	Be able to use appropriate measures of spread and to interpret them.	Calculate range, inter-quartile range, semi inter-quartile range. Includes grouped data and calculation or estimation for data in a statistical diagram. Know that standard deviation is a measure of spread.		Learners will not be expected to calculate standard deviation.

Specification	Ref.	Competence Statements	Notes	Notation	Exclusions
STATISTICS					
Statistical diagrams and measures	IQRs17	Be able to calculate a weighted mean and recognise when it is appropriate to do so.			
The Normal distribution	s18	Know that the Normal distribution is a model which can be used for real data and recognise a Normal curve.	Know that the distribution is symmetrical about the mean for the population but understand that histograms for samples will usually not be exactly symmetrical.		
	s19	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.	Learners may be asked to estimate mean and standard deviation from a Normal curve.	μ for population mean σ for population standard deviation	Learners will not be expected to calculate Normal probabilities.
	s20	Be able to use mean and standard deviation to calculate a *z*-score and use *z*-scores for comparison or quality control.	Includes interpreting *z*-score as number of standard deviations away from the mean.	Standardised score; *z*-score; *z*-value	
	s21	Be able to interpret a Normal probability plot from statistical software.	A straight line indicates a Normal distribution.		

Specification	Ref.	Competence Statements	Notes	Notation	Exclusions
			FINANCE		
The financial cycle	IQRf1	Be able to decide what information is needed to address a financial situation.			
	f2	Know how to obtain the necessary information.	The information may be presented in a graph or diagram.		
	f3	Be able to process the information to provide one or more possible solutions.			
	f4	Be able to decide which, if any, of the solutions are appropriate.			
Percentages	f5	Be able to do calculations involving percentages in context; the use of an index number to compare a number or value to that in a base year.	Contexts include those outside finance. Examples of financial contexts include VAT, inflation and compound interest for savings or loans. Expected calculations include forward and reverse percentage increase and decrease, repeated and combined percentage change and finding a percentage change.		
	f6	Know how to use percentages to work with appreciation or depreciation.	Including comparison of an annual percentage depreciation (or appreciation) model with actual values over time.		
	f7	Be able to work out an average annual percentage growth (or reduction) rate for a given change over a period.	Contexts include those outside finance.		

Specification	Ref.	Competence Statements	Notes	Notation	Exclusions
			FINANCE		
Foreign exchange	IQRf8	Be able to use foreign exchange rate information to make calculations, including calculations for currency exchange with commission or a fee.	In the UK, "sell at 1.54, buy at 1.69" means that when converting from pounds to the currency, a customer gets 1.54 of the currency for £1, but when changing the currency to pounds, 1.69 of the currency is needed for £1.	"buy at"; "we buy"; "buy rate" are different ways of saying the same thing; similarly, "sell at"; "we sell"; "sell rate"	
	f9	Be able to decide which foreign exchange rate is most advantageous for a particular exchange without doing the calculations.	Deciding and justifying which exchange rate is most advantageous to the customer.		
Costing	f10	Be able to work out the regular outgoing cost for a financial decision.	Examples include the monthly cost of buying and running a car or renting and running a home.		
	f11	Be able to find relevant information from tables.			
	f12	Be able to use a spreadsheet to cost a project or business proposal, recognising that some costs are more predictable than others over time.	Learners may be asked to monitor whether a budget is being followed over time, and to calculate projected costs from the budget.		
	f13	Be able to use a demand curve as a model for the relationship between price and demand.		Demand curves have demand on the horizontal axis and price on the vertical axis.	
	f14	Understand and use the language of finance.	Words such as income, expenditure, budget, profit, loss, investment, tax, revenue, inflation, APR and AER.		

Specification	Ref.	Competence Statements	Notes	Notation	Exclusions
WORKING WITH EXPONENTIALS					
Standard form	IQRI1	Be able to interpret large or small numbers in standard form, including the use of a spreadsheet or calculator.	Standard form is sometimes called scientific notation.	3.1×10^8 3.1 E +08 3.1 E +008 3.1 EXP 08	
	I2	Be able to calculate with numbers in standard form.	e.g. Contexts such as astronomy, wavelengths, atoms or cells.		
Exponentials	I3	Be able to explore exponential growth and decay, including interpreting output from a spreadsheet.	Contexts include borrowing and saving money, bacterial growth and radioactive decay.		
	I4	Be able to represent and interpret exponential growth or decay in a graph.	Learners may be asked to plot or sketch exponential graphs.	Half life $y = ka^x$ with k and a constant	
	I5	Be able to solve equations of the forms $x^5 = 35$ and $1.05^x = 8.2$.	Trial and improvement for equations of form $1.05^x = 8.2$.		Use of logarithms to solve equations of the form $1.05^x = 8.2$.
Logarithmic scales	I6	Be able to use and interpret a logarithmic scale on a graph.	Learners should know that the value equidistant between a and b on a linear scale is the arithmetic mean $\left(\frac{a+b}{2}\right)$ but for a logarithmic scale it is the geometric mean $\left(\sqrt{ab}\right)$.		

Specification	Ref.	Competence Statements	Notes	Notation	Exclusions
WORKING WITH GRAPHS AND GRADIENTS					
Graphs	IQRg1	Know that the independent variable is plotted on the horizontal axis of a graph.		Dependent variable, response variable, independent variable, explanatory variable.	
	g2	Be able to construct a table of values for a graph from a simple formula and use it to plot the graph.	Includes trigonometric graphs (sin and cos) for angles in degrees.		
	g3	Be able to use a graph to construct a table of values.			
	g4	Be able to work with graphs drawn from a variety of contexts.	Includes graphs representing motion along a straight line, time series graphs, step graphs, periodic graphs, graphs of exponential growth and decay and piecewise graphs.		
	g5	Recognise graphs of direct and inverse proportion.			
	g6	Be able to linearise the graph of a relationship where the dependent variable is directly proportional to some function of the independent variable.	e.g. Plot y against x^2 to investigate a relationship of the form $y = ax^2$.		
	g7	Understand the relationship between a straight line graph and the formula connecting the variables graphed.			

Specification	Ref.	Competence Statements	Notes	Notation	Exclusions
WORKING WITH GRAPHS AND GRADIENTS					
Gradients	IQRg8	Be able to 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.	Includes finding units for the gradient from units on the axes.		
	g9	Be able to estimate the gradient of a curve at a point by drawing a tangent and interpret it as a rate of change.	Includes e.g. kinematics graphs and growth curves.		

Specification	Ref.	Competence Statements	Notes	Notation	Exclusions
RISK					
Probability	IQRu1	Be able to identify relevant equally likely outcomes in appropriate contexts.	Includes understanding when outcomes are not equally likely.		
	u2	Be able to count equally likely outcomes in appropriate contexts and hence estimate a probability.	Includes listing and use of tree diagrams to find number of outcomes.		Formal understanding of factorials, permutations and combinations.
	u3	Be able to estimate probability from long-run relative frequency.			
	u4	Be able to interpret two-way tables and use them to calculate or estimate probability.			
	u5	Understand the difference between dependent and independent events and be able to calculate probability in simple cases.	Contexts include games of chance and risk of suffering from diseases.		
	u6	Be able to work with a tree diagram when calculating or estimating a probability, including conditional probability.	Learners can choose to work with either frequencies or probabilities in tree diagrams.	Given that	Notation P(A), P(A|B) etc.
Risk	u7	Understand risk given as a probability or as 1 in *n* or as a description such as “once in *n* years”.	Includes moving between these forms.		
	u8	Be able to interpret a risk assessment, understanding that it involves measures of both likelihood and impact.			

2d. Content of Critical Maths (Component 02)

Component objectives

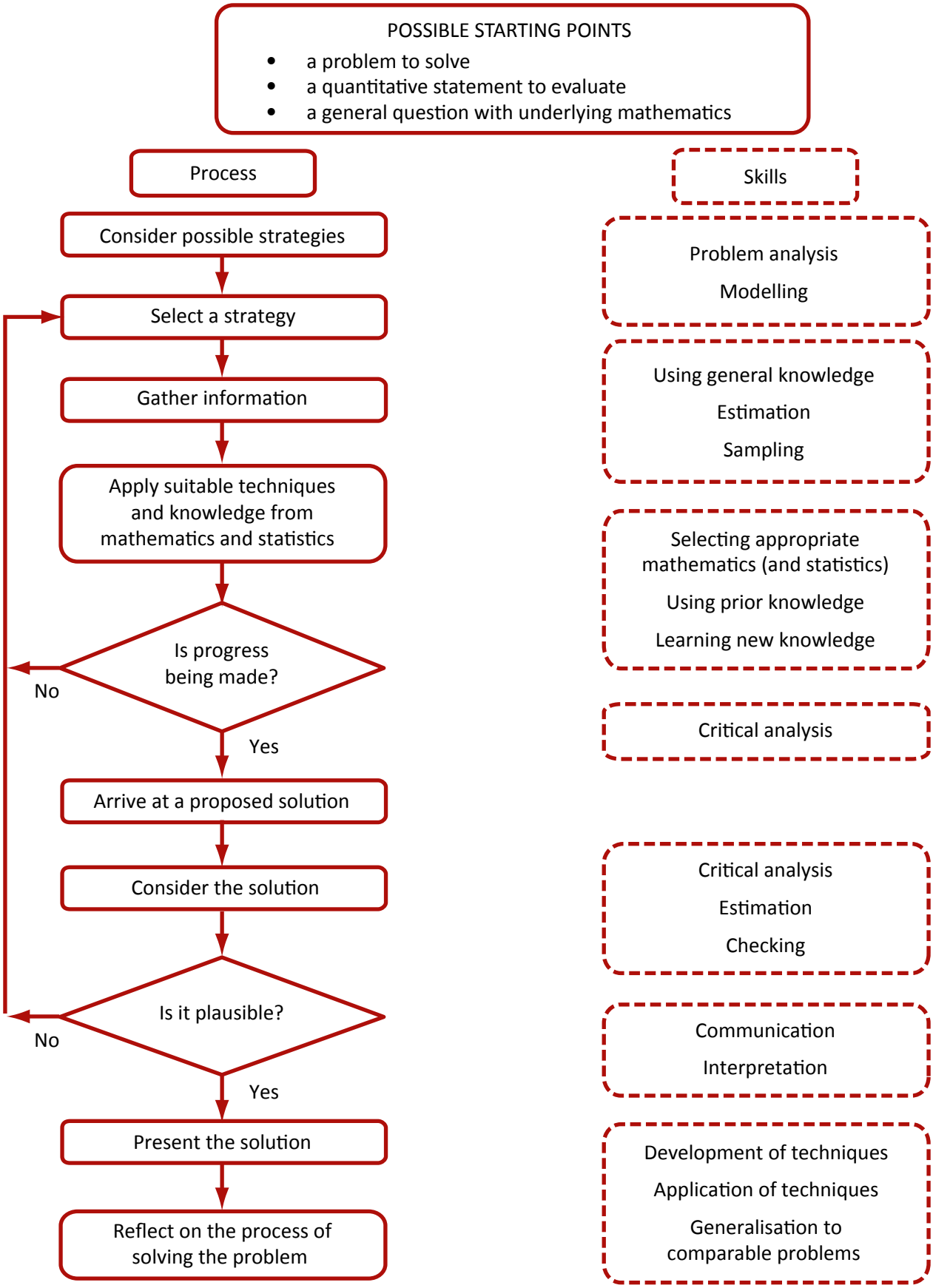
Learners should:

- engage in solving authentic problems appropriate to this level
- evaluate quantitative information
- recognise when mathematical and statistical analysis will be helpful
- improve their understanding of the applicability of mathematics
- develop skills of representing new situations mathematically
- think flexibly in problem solving
- develop the ability to use their mathematical and statistical knowledge to make logical and reasoned decisions and communicate them clearly
- develop the mathematical and statistical knowledge and skills they need to become educated citizens
- have the confidence to work on a problem where the method of solution is not obvious
- develop the facility for critical appraisal of their own and other people's mathematical work.

Assumed knowledge

Learners are expected to know the content of Introduction to Quantitative Reasoning.

Starting from a problem to solve, a quantitative statement to evaluate or a question that has mathematics underlying it, learners use a number of skills and processes in engaging in their reasoning. The skills and processes involved are illustrated in the diagram that follows.



Specification	Ref.	Competence Statements	Notes	Notation	Exclusions
PROBLEM SOLVING					
Strategies	CMp1	Be able to decide what information is needed to address a problem.			
	p2	Be able to make, and justify, simplifying assumptions in order to solve a problem.			
	p3	Be able to recognise when a problem is similar to one which has already been solved.	Learners may be asked to give examples related to problems which they have solved during the course.		
	p4	Evaluate different strategies for problem solving.			
	p5	Be able to compare two quantities by reasoning, without working out the value of either.	Contexts include finance, area, volume, speed, probability. e.g. Recognising that the probability of a car breaking down on a Monday is less than the probability of the car breaking down sometime during that week because that latter event includes the former event.		
	p6	Be able to use data to make and justify a decision.	e.g. Contexts include using data to produce a rank order.		
Communicating solutions to problems	p7	Be able to communicate the solution to someone who understands the problem.			
	p8	Be able to interpret the solution to a problem effectively in terms of the original problem.			

Specification	Ref.	Competence Statements	Notes	Notation	Exclusions
PROBLEM SOLVING					
Reflecting on solutions to problems	CMp9	Be able to identify and comment on possible sources of bias or error when solving a problem.			
	p10	Be able to evaluate critically information in public statements such as news reports and political comments.	e.g. Proportions and percentages.		
	p11	Be able to evaluate a decision by referring to data.			
	p12	Recognise that a “good enough” solution to a problem can save time and money compared to a more accurate solution.			
	p13	Be able to criticise or refine a proposed solution to a problem.			
	p14	Be able to use numerical values to decide whether a general statement is realistic.	Includes the consideration of extreme values.		

Specification	Ref.	Competence Statements	Notes	Notation	Exclusions
SOURCES OF INFORMATION					
Quantitative understanding of the world	CMe1	Be able to make reasonable estimate of quantities typically encountered in everyday life.	Quantities such as the following: • lengths, areas, volumes • estimates of adult height, weight and other body measurements • the time an adult would take to perform an everyday task.		
	e2	Know the rough size of the population of a large UK city, the UK and the world.	About a million, about 65 million, 7 billion respectively.		
	e3	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.	Speed limits in miles per hour.		
Fermi estimation	e4	Be able to calculate an estimate with limited information (a Fermi estimate) using quantitative understanding of the world.	e.g. Estimate how many dentists there are in Birmingham. Assumptions and reasoning should be communicated clearly.		
	e5	Recognise when the order of magnitude of an answer is reasonable.			
Probability estimation	e6	Be able to estimate the probability of an event.	e.g. What is the probability that a person you meet in Birmingham is a dentist?		
	e7	Understand expected number as the average number of occurrences in the long run.	Includes being able to estimate expected return from a game or investment.		

Specification	Ref.	Competence Statements	Notes	Notation	Exclusions
MATHEMATICAL AND STATISTICAL TECHNIQUES AND KNOWLEDGE					
Fallacies in statistics and probability	CMs1	Understand that an event with small probability is not surprising in a sufficiently large population.			
	s2	Recognise common examples of incorrect reasoning in probability and be able to explain the errors.	Recognise and explain the following: • the prosecutor's fallacy and the defendant's fallacy • the gambler's fallacy.		
	s3	Recognise and explain when statistical diagrams are misleading and when statistical summary measures are being misinterpreted.			
	s4	Understand that neither correlation nor association implies causation.	Including being able to suggest possible alternative explanations.		
	s5	Recognise situations where regression to the mean might occur.	e.g. The children of tall parents are, on average, shorter than their parents and vice versa.		

Specification	Ref.	Competence Statements	Notes	Notation	Exclusions
MATHEMATICAL AND STATISTICAL TECHNIQUES AND KNOWLEDGE					
Statistical experiments	CMs6	Know what randomised controlled trials are and understand their importance in trying to establish causation.			
	s7	Understand the concepts and importance of "blind" and "double blind" in statistical trials.			
	s8	Know that, for large samples of a fixed size, sums of independent observations are distributed approximately Normally.	e.g. The distribution of the number of successes in 100 Bernouilli trials. e.g. The distribution of the total score obtained when 50 dice are thrown.		
	s9	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 $\frac{\sqrt{n}}{2}$.	Learners should recognise when this is an appropriate model and be able to use it to decide what kinds of results are unusual in the context.		Formal language of hypothesis testing
	s10	Understand that proportions from small samples are more variable than those from large samples.			

Specification	Ref.	Competence Statements	Notes	Notation	Exclusions
MATHEMATICAL AND STATISTICAL TECHNIQUES AND KNOWLEDGE					
Understanding conditional probability in context	CMu1	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.	Questions will be asked in words in context. e.g. Recognising that the probability of testing positive for a disease given that the patient has the disease may not be the same as the probability of the patient having the disease given that he/she tests positive.		Notation P(A), P(A|B) etc.
	u2	Interpret statements about population proportions in terms of probability and use them to make further deductions.			
Working with percentages	CMn1	Learners should have a correct and critical understanding of the use of percentages including use of percentage change in a probability.	e.g. The risk of an adverse event increases from 1% to 2%. This might be described as either an increase of 1 percentage point or an increase of 100%.	Percentage points.	

2e. Prior knowledge, learning and progression

OCR's Level 3 Certificate in Core Maths A (MEI) qualification is designed to be useful for all learners in their everyday lives; it can be considered a 'mathematical literacy' course.

OCR's Level 3 Certificate in Core Maths A (MEI) qualification places emphasis on mathematical and statistical problem solving and is designed to support learners on academic, mixed and vocational programmes of study; to prepare them for higher education, employment, and their everyday lives as citizens. It is intended for:

- learners taking Level 3 courses, for whom GCE Mathematics is not appropriate
- learners who need support with mathematics for Level 3 or HE courses: for example, in business, biology, chemistry, computing, economics, geography, ICT, psychology, sociology or health and social care
- learners who need to continue with some mathematics because they intend at some stage to enter a teacher training or health professional training course
- learners who do not intend to continue their education and will be moving on to do apprenticeships or straight into employment.

It is expected that learners have achieved a GCSE (9–1) in Mathematics and are familiar with the GCSE (9–1) content which is in plain text in the subject content and assessment objectives.

The underlined and bold content from the GCSE Mathematics subject content and assessment objectives for GCSE (9–1) Mathematics for teaching from 2015, which are needed in this qualification have been specified in the content.

2f. Synoptic learning

Learners use mathematical and statistical skills and understanding to solve authentic problems throughout the course for Core Maths A. The nature of such problem solving is that learners need to decide what mathematical skills and understanding to use in order to address the problem. This requires a strong understanding and familiarity with the mathematics they have learnt and the ability to bring together mathematical knowledge which has been learnt at different times. Some problems can be solved more than one way. Learners should be encouraged to compare different possible solutions in order to strengthen their synoptic understanding of the course content and their ability to choose effective methods for addressing problems.

The two components can be taught alongside one another or learners can start on the Introduction to Quantitative Reasoning first; the knowledge, understanding and skills from that component continue to be used in Critical Maths which requires learners to develop their understanding further so that they have the confidence to understand, question and work with quantitative information wherever they encounter it in future life and work.

3 Assessment of OCR Level 3 Certificate in Core Maths A (MEI)

3a. Forms of assessment

Scheme of assessment

The Level 3 Certificate in Core Maths A (MEI) is a linear qualification with 100% external assessment comprising two timed written examination papers.

Paper 1

- 50% of the marks for the qualification covering the content of Introduction to Quantitative Reasoning.
- All questions are compulsory.
- One paper with six to nine questions set in a variety of contexts.

Paper 2

- 50% of the marks for the qualification covering the content of Critical Maths.
- All questions are compulsory.
- One paper with six to ten questions set in a variety of contexts.

Learners must take both of the papers in the same series.

At the time of setting, each examination paper will be designed so that 45–55% of the marks are available to E grade learners, 70–80% to C grade and 100% to A grade. Learners are not expected to gain all the marks available to them in order to achieve the grade; in timed written examinations, their performance is likely to fall below the performance they are capable of when given the sort of time they will have when solving and reflecting on authentic problems in future life and study.

Appropriate and efficient use of technology

The use of calculators (scientific or graphical) will be assessed. Learners will be expected to decide when it is appropriate to use a calculator. Calculations in authentic contexts are sometimes too complicated to be done without the use of a calculator.

Some questions may ask learners to work without a calculator; in such cases no credit will be given for answers with insufficient working. Questions may include printouts from spreadsheets which learners will need to complete or interpret.

Mathematical Formulae

All formulae which learners are required to know are either detailed in the specification content or should be known from GCSE.

Any other formulae required will be given in the assessment.

Details of the mathematical notation that will be used in question papers are contained in Appendix 5c.

3b. Assessment objectives (AO)

There are three assessment objectives in the OCR Level 3 Certificate in Core Maths A (MEI) and these are detailed in the table below. Learners are expected to demonstrate their ability to:

	Assessment Objective
AO1	**Use and apply standard techniques** • recall, select and use mathematical techniques accurately • use and interpret notation correctly • carry out routine procedures including tasks requiring multi-step solutions.
AO2	**Solve problems in authentic contexts** • structure a solution to a problem where the method is not obvious • identify the important variables/features in a situation • use and develop mathematical models of authentic situations • understand that these models may be more or less effective depending on how the situation has been simplified.
AO3	**Reason, interpret and communicate mathematically** • interpret results in the context of the given problem • evaluate methods used and results obtained • make deductions, inferences and draw conclusions from quantitative information • interpret and communicate information accurately • explain mathematical reasoning and conclusions • assess the validity of an argument and evaluate a given way of presenting information.

AO weightings in Level 3 Certificate in Core Maths A (MEI)

The relationship between the assessment objectives and the components are shown in the following table:

Component	% of Level 3 Certificate in Core Maths A (MEI)			
	AO1	AO2	AO3	Total
Introduction to Quantitative Reasoning (H868/01)	12.5–14.5%	17.5–22.5%	15–17.5%	50%
Critical Maths (H868/02)	12.5–14.5%	17.5–22.5%	15–17.5%	50%
	25–29%	35–45%	30–35%	100%

3c. Total qualification time

Total qualification time (TQT) is the total amount of time, in hours, expected to be spent by a learner to achieve a qualification. It includes both guided learning hours and hours spent in preparation, study, and assessment. The total qualification time for Core Maths A is 180 hours. The total guided learning time is 180 hours.

3d. Qualification availability outside of England

This qualification is available in England. For Wales and Northern Ireland please check the Qualifications in Wales Portal (QIW) or the Northern Ireland Department of Education Performance Measures / Northern Ireland Entitlement Framework Qualifications Accreditation Number (NIEFQAN) list to see current availability.

3e. Language

This qualification is available in English only. All assessment materials are available in English only and all candidate work must be in English.

3f. Assessment availability

There will be one examination series available each year in May/June to **all** learners. Learners must take both components in the same series. This qualification will be certificated from the June 2016 examination series onwards.

3g. Retaking the qualification

Learners can retake the qualification. They must retake both components of the qualification.

3h. Assessment of extended responses

The assessment materials for this qualification provide learners with the opportunity to demonstrate their ability to construct and develop a sustained and coherent line of reasoning and marks for extended responses are integrated into the marking criteria.

When solving problems using mathematics and statistics in future life, work and study, learners will sometimes be expected to work on a problem with little or no guidance about a suitable method of solution. It is a feature of this qualification that learners are expected to work on such problems during the course and some of the questions in examinations will require them to structure an approach and communicate a solution to a problem without guidance on how to proceed. They will need to be able to select the relevant information and to make use of their own knowledge in order to do so. Learners will sometimes be required to make and use assumptions in order to proceed, using the experience, knowledge and understanding gained during the course. When marking such questions, some credit will be given to learners who have used and communicated a reasonable approach, even if this is incomplete or an error is made.

More marks are available in the Introduction to Quantitative Reasoning paper than in the Critical Maths paper, because learners need additional time to interpret contexts and formulate their strategies in the Critical Maths paper. This also requires a higher level of synoptic thinking. Each paper counts for 50% of the final weighted mark.

3i. Synoptic assessment

- Synoptic assessment allows learners to demonstrate their understanding of different aspects of mathematics.
- Synoptic assessment involves the explicit drawing together of knowledge, skills and understanding from different aspects of the course. The emphasis of synoptic assessment is to encourage the understanding of mathematics as a discipline and as a way of addressing a variety of authentic problems.
- Synoptic assessment allows learners to demonstrate the understanding they have acquired from the course as a whole and their ability to integrate and apply that understanding. This level of understanding is needed for successful use of the knowledge and skills from this course in future life, work and study.
- Learners are required to know and understand the content of the whole course in the Critical Maths paper and make use of their GCSE knowledge in both papers.
- In both the examination papers, learners will be required to integrate and apply their understanding in order to address authentic problems which require both breadth and depth of understanding in order to reach a satisfactory solution.
- Learners will be expected to reflect on and interpret solutions, drawing on their understanding of different aspects of the course.

3j. Calculating qualification results

A learner's overall qualification grade for the Level 3 Certificate in Core Maths A (MEI) will be calculated by adding together their marks for the first component and their weighted marks for the second component to give their total weighted mark. This total weighted mark will then be compared to the qualification level grade boundaries for the relevant exam series to determine the learner's overall qualification grade.

4 Admin: what you need to know

The information in this section is designed to give an overview of the processes involved in administering this qualification so that you can speak to your exams officer. All of the following processes require you to submit something to OCR by a specific deadline.

More information about the processes and deadlines involved at each stage of the assessment cycle can be found in the Administration area of the OCR website. OCR's *Admin overview* is available on the OCR website at http://www.ocr.org.uk/administration

4a. Pre-assessment

Estimated entries

Estimated entries are your best projection of the number of learners who will be entered for a qualification in a particular series.

Estimated entries should be submitted to OCR by the specified deadline. They are free and do not commit your centre in any way.

Final entries

Final entries provide OCR with detailed data for each learner, showing each assessment to be taken. It is essential that you use the correct entry code, considering the relevant entry rules.

Final entries must be submitted to OCR by the published deadlines or late entry fees will apply.

All learners taking the Level 3 Certificate in Core Maths A (MEI) must be entered for H868.

Entry code	Title	Component code	Component title	Assessment type
H868	Level 3 Certificate in Core Maths A (MEI)	01	Introduction to Quantitative Reasoning	External Assessment
		02	Critical Maths	External Assessment

Entry exclusions

Learners cannot be entered for H868 Level 3 Certificate in Core Maths A (MEI) in the same examination series as H869 Level 3 Certificate in Core Maths B (MEI).

Collecting evidence of student performance to ensure resilience in the qualifications system

Regulators have published guidance on collecting evidence of student performance as part of long-term contingency arrangements to improve the resilience of the qualifications system. You should review and consider this guidance when delivering this qualification to students at your centre.

For more detailed information on collecting evidence of student performance please visit our website at: https://www.ocr.org.uk/administration/general-qualifications/assessment/

4b. Accessibility and special consideration

Reasonable adjustments and access arrangements allow learners with special educational needs, disabilities or temporary injuries to access the assessment and show what they know and can do, without changing the demands of the assessment. Applications for these should be made before the examination series. Detailed information about eligibility for access arrangements can be found in the JCQ *Access Arrangements and Reasonable Adjustments*.

Special consideration is a post-assessment adjustment to marks or grades to reflect temporary injury, illness or other indisposition at the time the assessment was taken.

Detailed information about eligibility for special consideration can be found in the JCQ *A guide to the special consideration process*.

4c. External assessment arrangements

Regulations governing examination arrangements are contained in the JCQ publication *Instructions for conducting examinations*.

Learners are permitted to use a scientific or graphical calculator for components 01 and 02. Calculators are subject to the rules in the document *Instructions for Conducting Examinations* published annually by JCQ (**www.jcq.org.uk**).

Head of Centre Annual Declaration

The Head of Centre is required to provide a declaration to the JCQ as part of the annual NCN update, conducted in the autumn term, to confirm that the centre is meeting all of the requirements detailed in the specification.

Any failure by a centre to provide the Head of Centre Annual Declaration will result in your centre status being suspended and could lead to the withdrawal of our approval for you to operate as a centre.

Private candidates

Private candidates may enter for OCR assessments.

A private candidate is someone who pursues a course of study independently but takes an examination or assessment at an approved examination centre. A private candidate may be a part-time student, someone taking a distance learning course, or someone being tutored privately. They must be based in the UK.

Private candidates need to contact OCR approved centres to establish whether they are prepared to host them as a private candidate. The centre may charge for this facility and OCR recommends that the arrangement is made early in the course.

Further guidance for private candidates may be found on the OCR website: **http://www.ocr.org.uk**

4d. Results and certificates

Grade scale

Level 3 Certificate in Core Maths A (MEI) is awarded on a scale A, B, C, D and E. Grades are indicated on certificates. However, results for learners who fail to achieve the minimum grade for the qualification will be recorded as *unclassified* (U) and this is not certificated.

Results

Results are released to centres and learners for information and to allow any queries to be resolved before certificates are issued.

Centres will have access to the following results information for each learner:

- the grade for the qualification
- the raw mark for each component
- the total weighted mark for the qualification.

The following supporting information will be available:

- weighted mark grade boundaries for the qualification.

Until certificates are issued, results are deemed to be provisional and may be subject to amendment. A learner's final results will be recorded on an OCR certificate.

The qualification title will be shown as 'OCR Level 3 Certificate in Core Maths A (MEI)'.

4e. Post-results services

A number of post-results services are available:

- **Review of results** – If you are not happy with the outcome of a learner's results, centres may request a review of marking.
- **Missing and incomplete results** – This service should be used if an individual subject result for a learner is missing, or the learner has been omitted entirely from the results supplied.
- **Access to scripts** – Centres can request access to marked scripts.

4f. Malpractice

Any breach of the regulations for the conduct of examinations and coursework may constitute malpractice (which includes maladministration) and must be reported to OCR as soon as it is detected.

Detailed information on malpractice can be found in the JCQ publication, *Suspected Malpractice in Examinations and Assessments*: *Policies and Procedures.*

5 Appendices

5a. Overlap with other qualifications

Component H868/01 – Introduction to Quantitative Reasoning is the same as Component H869/01 in Level 3 Certificate in Core Maths B (MEI).

5b. Avoidance of bias

Level 3 qualifications have been reviewed in order to identify any feature which could disadvantage learners who share a protected Characteristic as defined by the Equality Act 2010. All reasonable steps have been taken to minimise any such disadvantage.

5c. Mathematical Notation

1 Miscellaneous Symbols	
$=$	is equal to
$\neq$	is not equal to
$\approx$	is approximately equal to
$\propto$	is proportional to
$<$	is less than
$\leqslant$	is less than or equal to, is not greater than
$>$	is greater than
$\geqslant$	is greater than or equal to, is not less than
∞	infinity
2 Operations	
$a + b$	a plus b
$a - b$	a minus b
$a \times b$, ab, $a.b$	a multiplied by b
$a \div b$, $\frac{a}{b}$, a/b	a divided by b
$\sqrt{a}$	the positive square root of a
$\sum_{i=1}^{n} a_i$	$a_1 + a_2 + a_3 + \ldots + a_n$

3 Probability and Statistics	
$x_1, x_2, \ldots$	observations
$f_1, f_2, \ldots$	frequencies with which the observations $x_1, x_2, \ldots$ occur
$N(\mu, \sigma^2)$	Normal distribution with mean μ and variance σ^2
μ	population mean
σ^2	population variance
σ	population standard deviation
$\bar{x}$	sample mean
$s^2, \hat{\sigma}^2$	unbiased estimate of population variance from a sample
ϕ	probability density function of the standardised Normal variable with distribution N(0,1)
Φ	corresponding cumulative distribution function
ρ	product moment correlation coefficient for a population
r	product moment correlation coefficient for a sample

5d. Technical terms

The term ‘authentic’ is included in the Core Maths Technical Guidance document published by the DfE in July 2014.

“Core Maths qualifications should consolidate and build on students’ mathematical understanding and develop further mathematical understanding and skills in the application of maths to authentic problems, thereby offering progression from GCSE mathematics.”

Representing and analysing ‘authentic’ situations is described in that document.

“Use a variety of mathematical and statistical approaches to represent and analyse relatively well-defined situations, including complex and unfamiliar situations. This includes identifying and understanding quantifiable information and related assumptions in that situation, using mathematical and statistical representations and techniques appropriately, and deriving new information to draw meaningful conclusions about the situation.

Situations and problems should be drawn from physical/technical/scientific and human/behavioural/social domains and reflect a range of contexts including professional and academic settings.”

Summary of updates

Date	Version	Section	Title of section	Change
May 2018	1.1	Front cover	Disclaimer	Addition of Disclaimer
July 2019	2.0	Throughout	Multiple	Change of qualification code and title to H868 Core Maths A (MEI)
March 2020	2.1	1.d 4.e	How do I find out more information? Post-results services	Inclusion of Online Support Centre Enquiry about results changed to Review of results.
February 2021	2.2	Cover		Update to specification covers to meet digital accessibility standards
April 2023	2.3	3.c 5.d	Total qualification time Guided learning hours (GLH)	Insertion of new section Deletion of section
January 2024	2.4	3d, 3e 4a Checklist	Qualification availability, Language Pre-assessment	Inclusion of disclaimer regarding language and availability Update to include resilience guidance Inclusion of Teach Cambridge

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