Welcome to today's short webinar

'GCSE (9-1) Maths - Content and specification overview'.

We'll begin at 16:00.

Choosing OCR GCSE (9-1) Maths

Neil Ogden | Maths Subject Advisor

Our Subject Advisors

MATHS TEAM

Neil Ogden

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Caroline Hodgson

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GCSE (9-1)

Specification

MATHEMATICS

J560

For first assessment in 2017

Qualification Accredited

OCR
Oxford Cambridge and RSA

Version 1.6 (February 2024)

ocr.org.uk/gcsemaths
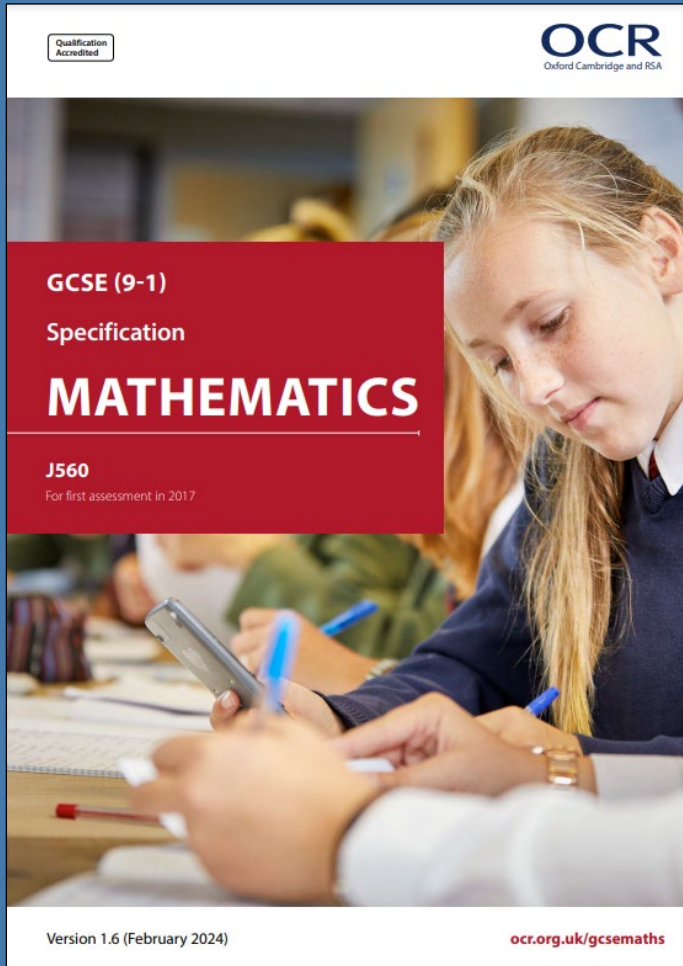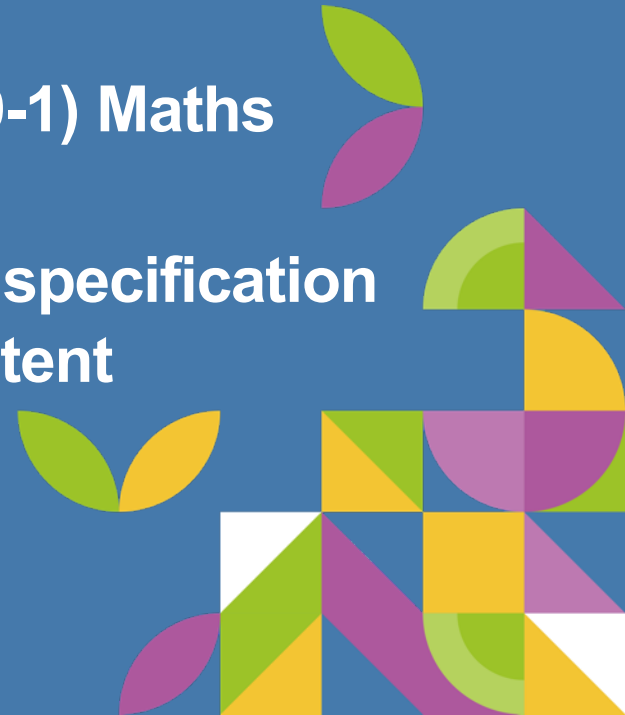
OCR GCSE (9-1) Maths

The qualification specification and content

OCR GCSE (9-1) Mathematics

- A syllabus developed by teachers specifically for teachers, laying out the required content clearly in terms of both topic area and difficulty, facilitating progression through the content.

GCSE (9–1) content Ref.	Subject content	Initial learning for this qualification will enable learners to...	Foundation tier learners should also be able to...	Higher tier learners should additionally be able to...	DfE Ref.
3.02	**Standard form**				
3.02a	Standard form	Interpret and order numbers expressed in standard form. Convert numbers to and from standard form. e.g. $1320 = 1.32 \times 10^3$, $0.00943 = 9.43 \times 10^{-3}$			N9
3.02b	Calculations with numbers in standard form	Use a calculator to perform calculations with numbers in standard form.	Add, subtract, multiply and divide numbers in standard form, without a calculator. *[see also Laws of indices, 3.01c]*		N9
3.03	**Exact calculations**				
3.03a	Exact calculations	Use fractions in exact calculations without a calculator.	Use multiples of π in exact calculations without a calculator.	Use surds in exact calculations without a calculator.	N2, N8
3.03b	Manipulating surds			Simplify expressions with surds, including rationalising denominators. e.g. $\sqrt{12} = 2\sqrt{3}$ $\frac{1}{\sqrt{3}} = \frac{\sqrt{3}}{3}$ $\frac{1}{\sqrt{3}+1} = \frac{\sqrt{3}-1}{2}$	N8

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1 → **2** → **3** →

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OCR GCSE (9-1) Mathematics

- In the OCR Specification, the first column of content is the 'Initial learning' column.
  - Much 'Initial learning' also appears at KS3.
  - 'Initial learning' content should be accessible to all, including lower ability, GCSE candidates.
- Some topics only include content in the 'Initial learning' column.

GCSE (9–1) content Ref.	Subject content	Initial learning for this qualification will enable learners to...	Foundation tier learners should also be able to...	Higher tier learners should additionally be able to...	DfE Ref.
2.02	Decimal fractions				
2.02a	Decimals and fractions	Express a simple fraction as a terminating decimal or vice versa, without a calculator. e.g. $0.4 = \frac{2}{5}$ Understand and use place value in decimals.	Use division to convert a simple fraction to a decimal. e.g. $\frac{1}{6} = 0.16666...$	Convert a recurring decimal to an exact fraction or vice versa. e.g. $0.4\dot{1} = \frac{41}{99}$	N10, N2
2.02b	Addition, subtraction and multiplication of decimals	Add, subtract and multiply decimals including negative decimals, without a calculator.			N2
2.02c	Division of decimals	Divide a decimal by a whole number, including negative decimals, without a calculator. e.g. $0.24 \div 6$	Without a calculator, divide a decimal by a decimal. e.g. $0.3 \div 0.6$		N2

OCR GCSE (9-1) Mathematics

- The second column in the OCR Specification is the 'Foundation tier additional' column.
  - To reach grades 4 and 5 on the Foundation tier, students should be familiar with 'Foundation tier additional' content.
- Some 'Foundation tier additional' topics build up from content in the 'Initial Learning' column.
- Some topics get introduced at 'Foundation tier additional'.

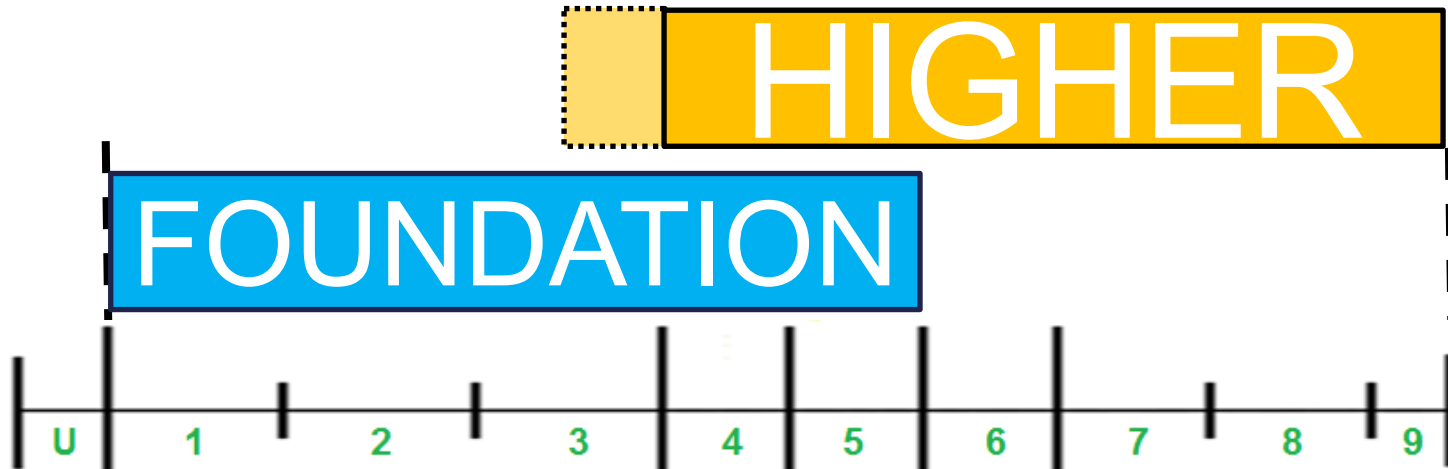| GCSE (9–1) content Ref.	Subject content	Initial learning for this qualification will enable learners to...	Foundation tier learners should also be able to...	Higher tier learners should additionally be able to...	DfE Ref.
6.03	Algebraic equations				
6.03a	Linear equations in one unknown	Solve linear equations in one unknown algebraically. e.g. Solve $3x - 1 = 5$	Set up and solve linear equations in mathematical and non-mathematical contexts, including those with the unknown on both sides of the equation. e.g. Solve $5(x - 1) = 4 - x$ Interpret solutions in context.	[Examples may include manipulation of algebraic fractions, 6.01g]	A3, A17, A21
6.03b	Quadratic equations		Solve quadratic equations with coefficient of x^2 equal to 1 by factorising. e.g. Solve $x^2 - 5x + 6 = 0$. Find x for an x cm by $(x + 3)$ cm rectangle of area 40cm^2.	Know the quadratic formula. Rearrange and solve quadratic equations by factorising, completing the square or using the quadratic formula. e.g. $2x^2 = 3x + 5$ $\dfrac{2}{x} - \dfrac{2}{x+1} = 1$	A18

OCR GCSE (9-1) Mathematics

- The third column in the OCR Specification is the 'Higher tier additional' column.
  - To reach grades 7, 8 and 9, students should be familiar with 'Higher tier additional' content.
- Some 'Higher tier additional' topics build on content in the 'Initial Learning' and/or 'Foundation tier additional' columns.
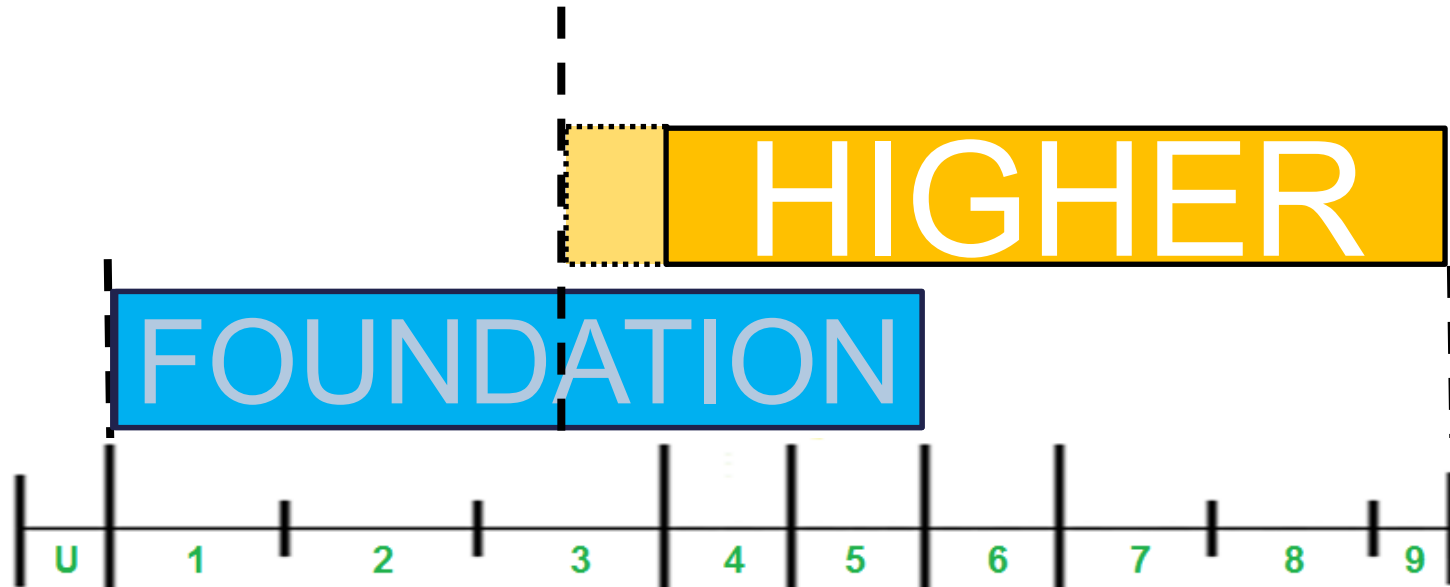- Some topics get introduced at 'Higher tier additional'.

3

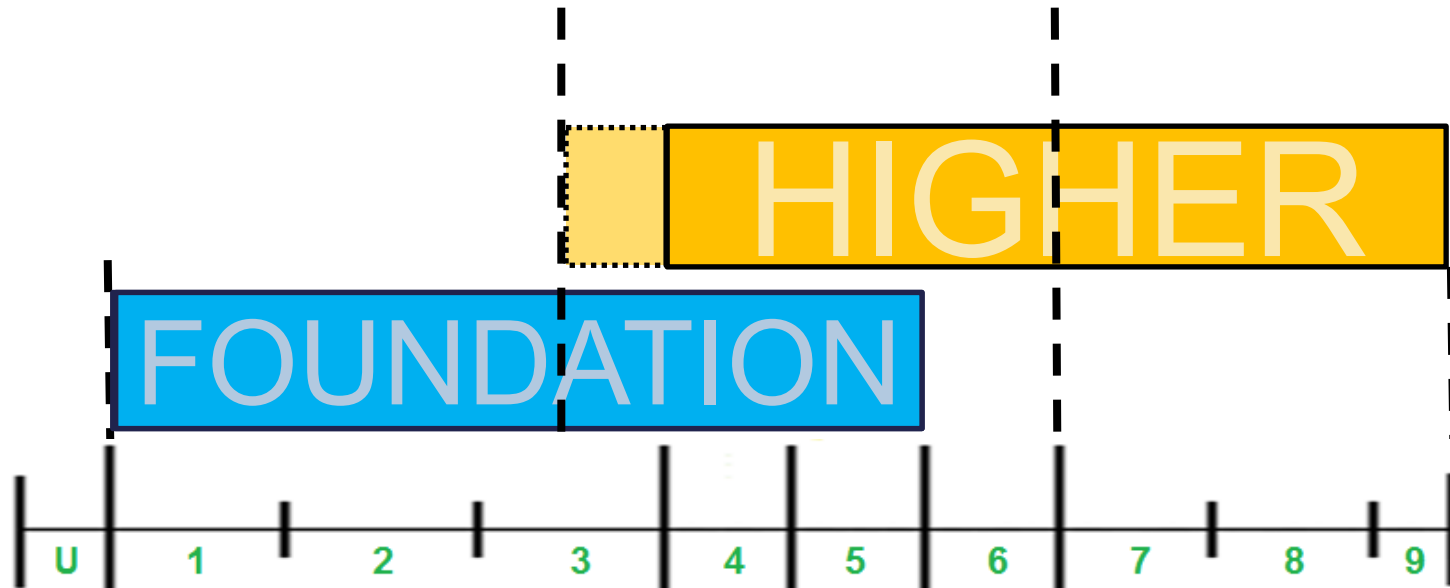| GCSE (9–1) content Ref.	Subject content	Initial learning for this qualification will enable learners to...	Foundation tier learners should also be able to...	Higher tier learners should additionally be able to...	DfE Ref.
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Assessment of content in GCSE (9-1) Mathematics

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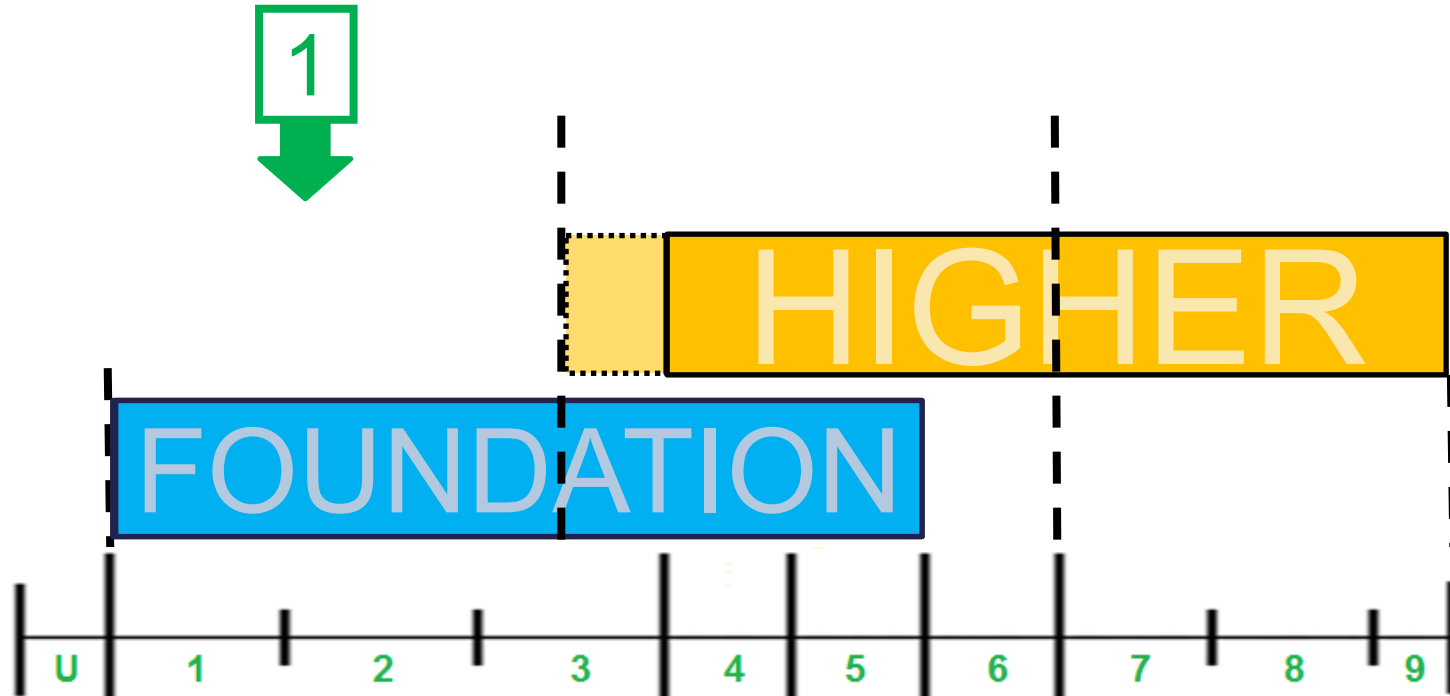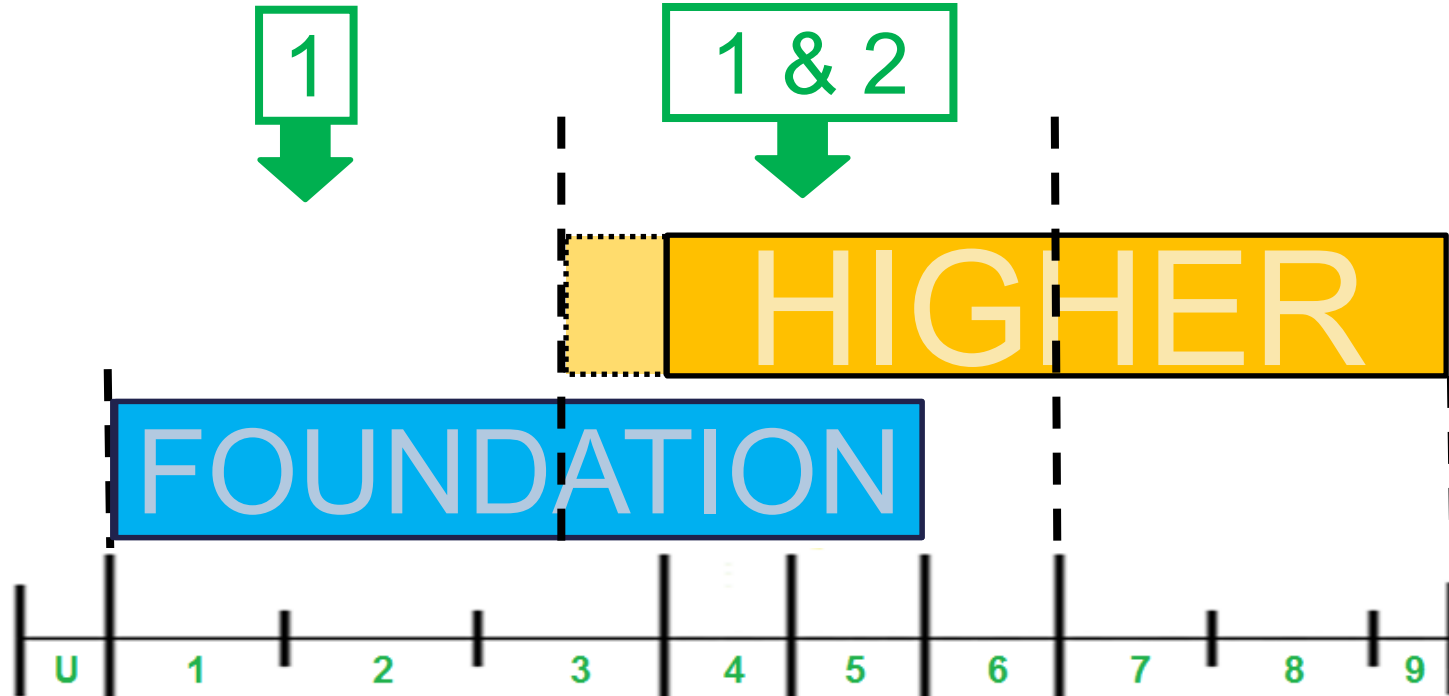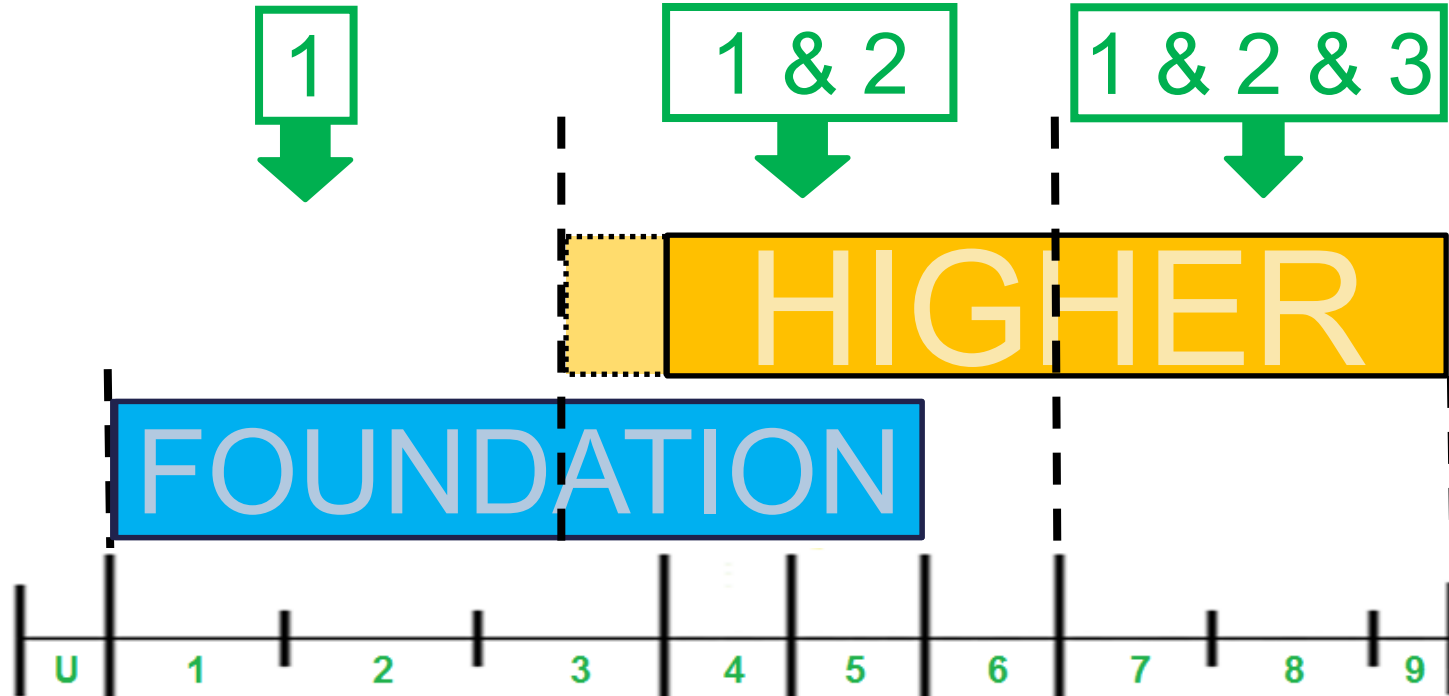# Assessment of content in GCSE (9-1) Mathematics

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Content & Assessment Objective weightings

Content area	Weighting	
	Higher	Foundation
Number	15%	25%
Algebra	30%	20%
Ratio, proportion and rates of change	20%	25%
Geometry and measures	20%	15%
Probability	15%	15%
Statistics		

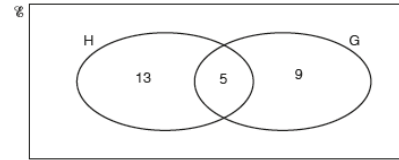| Assessment Objective		Weighting	
		Higher	Foundation
AO1	**Use and apply standard techniques** Learners should be able to: • accurately recall facts, terminology and definitions • use and interpret notation correctly • accurately carry out routine procedures or set tasks requiring multi-step solutions.	40%	50%
AO2	**Reason, interpret and communicate mathematically** Learners should be able to: • make deductions, inferences and draw conclusions from mathematical information • construct chains of reasoning to achieve a given result • interpret and communicate information accurately • present arguments and proofs • assess the validity of an argument and critically evaluate a given way of presenting information. Where problems require learners to 'use and apply standard techniques' or to independently 'solve problems' a proportion of those marks should be attributed to the corresponding Assessment objective.	30%	25%
AO3	**Solve problems within mathematics and in other contexts** Learners should be able to: • translate problems in mathematical or non-mathematical contexts into a process or a series of mathematical processes • make and use connections between different parts of mathematics • interpret results in the context of the given problem • evaluate methods used and results obtained • evaluate solutions to identify how they may have been affected by assumptions made. Where problems require learners to 'use and apply standard techniques' or to 'reason, interpret and communicate mathematically' a proportion of those marks should be attributed to the corresponding Assessment objective.	30%	25%

Content differences between OCR and other boards

- Venn diagrams

OCR J560 will **not** include Venn diagram notation, e.g. $\cap$, $\cup$.

Questions will be asked using words.

10 (a) This Venn diagram shows the number of students in a Year 10 tutor group who study History (H) and Geography (G).

There are 29 students in the tutor group.

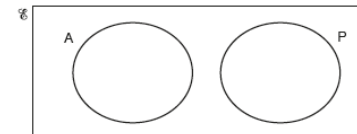(i) How many students in the tutor group do not study History or Geography?

(a)(i) .... [2]

(ii) How many students in the tutor group study History?

(ii) .... [1]

(iii) One of the 29 students is selected at random.
What is the probability that they study Geography but do not study History?

(iii) .... [1]

(b) This diagram represents students in a tutor group who study Art (A) and Physics (P).

How many students study both Art and Physics?

(b) .... [1]

Content differences between OCR and other boards

- Stem and leaf diagrams

  OCR J560 does **not** require students to know about stem and leaf diagrams.

- Frequency polygons

  OCR J560 does **not** require students to know about frequency polygons.

Content differences between OCR and other boards

- The Petersen capture–recapture method

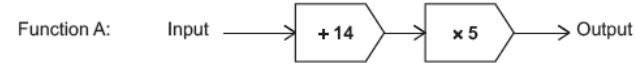> OCR J560 does **not** require students to know about the Petersen capture–recapture method.

Content differences between OCR and other boards

- Function notation

  OCR J560 will **not** include function notation, e.g. f(x), gf(x).

  Questions will use forms such as function machines.

17 Here is a function.

Function A: Input $\longrightarrow$ [+ 14] $\longrightarrow$ [× 5] $\longrightarrow$ Output

(a) The **output** of function A is x.

   Write an algebraic expression, in terms of x, for the input of function A.

   (a) .... [2]

(b) A number, k, is put into function A.
     The output is also k.

   Find the value of k.

   (b) $k =$ .... [3]

Content differences between OCR and other boards

- Iteration

OCR J560 considers iteration at GCSE to be using systematic sign-change methods to find approximate solutions to equations.

Questions will **not** be set requiring iteration formulae.

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11 (a) Show that one solution of the equation $x^3 + 2x - 5 = 0$ lies between 1 and 2. **[2]**

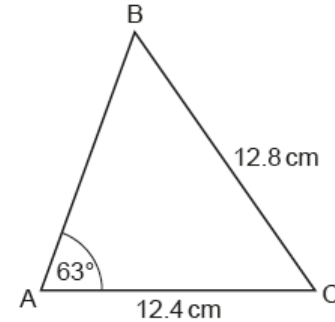**(b)** Find this solution correct to 1 decimal place.
Show your working.

(b) ....[4]

Content differences between OCR and other boards

- Trigonometry

  OCR J560 does **not** require students to know about the ambiguous case when using the sine rule.

(b) Calculate angle ACB in this triangle.

Not to scale

Sign up to our next short webinar…

GCSE (9-1) Maths – Support & resources

Wednesday 11 December

16:00-16:30

Next steps

1   **Download** the specification & resources
ocr.org.uk/gcsemaths / Teach Cambridge

2   **Book** onto CPD Training
ocr.org.uk/gcsemathscpd

3   **Sign up** to teach
ocr.org.uk/teachwithocr

4   **Get the latest** information & updates about new support
ocr.org.uk/updates / @OCR_Maths

5   **Keep in touch**
maths@ocr.org.uk / @OCR_Maths / 01223 553 998

Any questions?