GCE

Mathematics A

H240/02: Pure Mathematics and Statistics

A Level

Mark Scheme for June 2025

OCR (Oxford Cambridge and RSA) is a leading UK awarding body, providing a wide range of qualifications to meet the needs of candidates of all ages and abilities. OCR qualifications include AS/A Levels, Diplomas, GCSEs, Cambridge Nationals, Cambridge Technicals, Functional Skills, Key Skills, Entry Level qualifications, NVQs and vocational qualifications in areas such as IT, business, languages, teaching/training, administration and secretarial skills.

It is also responsible for developing new specifications to meet national requirements and the needs of students and teachers. OCR is a not-for-profit organisation; any surplus made is invested back into the establishment to help towards the development of qualifications and support, which keep pace with the changing needs of today's society.

This mark scheme is published as an aid to teachers and students, to indicate the requirements of the examination. It shows the basis on which marks were awarded by examiners. It does not indicate the details of the discussions which took place at an examiners' meeting before marking commenced.

All examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

Mark schemes should be read in conjunction with the published question papers and the report on the examination.

© OCR 2025

MARKING INSTRUCTIONS

PREPARATION FOR MARKING
RM ASSESSOR

1. Make sure that you have accessed and completed the relevant training packages for on-screen marking: *RM Assessor Online Training: OCR Essential Guide to Marking*.

2. Make sure that you have read and understood the mark scheme and the question paper for this unit. These are available in RM Assessor

3. Log-in to RM Assessor and mark the **required number** of practice responses ("scripts") and the **required number** of standardisation responses.

MARKING

1. Mark strictly to the mark scheme.

2. Marks awarded must relate directly to the marking criteria.

3. The schedule of dates is very important. It is essential that you meet the RM Assessor 50% and 100% (traditional 40% Batch 1 and 100% Batch 2) deadlines. If you experience problems, you must contact your Team Leader (Supervisor) without delay.

4. If you are in any doubt about applying the mark scheme, consult your Team Leader by telephone, email or via the RM Assessor messaging system.

5. **Crossed-Out Responses**
   Where a candidate has crossed out a response and provided a clear alternative then the crossed-out response is not marked. Where no alternative response has been provided, examiners may give candidates the benefit of the doubt and mark the crossed-out response where legible.

Rubric Error Responses – Optional Questions
Where candidates have a choice of question across a whole paper or a whole section and have provided more answers than required, then all responses are marked and the highest mark allowable within the rubric is given. Enter a mark for each question answered into RM Assessor, which will select the highest mark from those awarded. *(The underlying assumption is that the candidate has penalised themselves by attempting more questions than necessary in the time allowed.)*

Multiple-Choice Question Responses
When a multiple-choice question has only a single, correct response and a candidate provides two responses (even if one of these responses is correct), then no mark should be awarded (as it is not possible to determine which was the first response selected by the candidate).
When a question requires candidates to select more than one option/multiple options, then local marking arrangements need to ensure consistency of approach.

Contradictory Responses
When a candidate provides contradictory responses, then no mark should be awarded, even if one of the answers is correct.

Short Answer Questions (requiring only a list by way of a response, usually worth only one mark per response)
Where candidates are required to provide a set number of short answer responses then only the set number of responses should be marked. The response space should be marked from left to right on each line and then line by line until the required number of responses have been considered. The remaining responses should not then be marked. Examiners will have to apply judgement as to whether a 'second response' on a line is a development of the 'first response', rather than a separate, discrete response. *(The underlying assumption is that the candidate is attempting to hedge their bets and therefore getting undue benefit rather than engaging with the question and giving the most relevant/correct responses.)*

Short Answer Questions (requiring a more developed response, worth two or more marks)
If the candidates are required to provide a description of, say, three items or factors and four items or factors are provided, then mark on a similar basis – that is downwards (as it is unlikely in this situation that a candidate will provide more than one response in each section of the response space).

Longer Answer Questions (requiring a developed response)
Where candidates have provided two (or more) responses to a medium or high tariff question which only required a single (developed) response and not crossed out the first response, then only the first response should be marked. Examiners will need to apply professional judgement as to whether the second (or a subsequent) response is a 'new start' or simply a poorly expressed continuation of the first response.

6. Always check the pages (and additional objects if present) at the end of the response in case any answers have been continued there. If the candidate has continued an answer there, then add the annotation 'SEEN' to confirm that the work has been seen and mark any responses using the annotations in section 11.

7. There is a NR (**No Response**) option. Award NR (No Response):

   - if there is nothing written at all in the answer space
   - OR if there is a comment which does not in any way relate to the question (e.g., 'can't do', 'don't know')
   - OR if there is a mark (e.g., a dash, a question mark) which is not an attempt at the question.

   Note: Award 0 marks – for an attempt that earns no credit (including copying out the question).

8. The RM Assessor **comments box** is used by your Team Leader to explain the marking of the practice responses. Please refer to these comments when checking your practice responses. **Do not use the comments box for any other reason.**

9. Assistant Examiners will send a brief report on the performance of candidates to their Team Leader (Supervisor) via email by the end of the marking period. The report should contain notes on particular strengths displayed as well as common errors or weaknesses. Constructive criticism of the question paper/mark scheme is also appreciated.

10. For answers marked by levels of response: Not applicable in F501
    To determine the level – start at the highest level and work down until you reach the level that matches the answer
    To determine the mark within the level, consider the following

Descriptor	Award mark
On the borderline of this level and the one below	At bottom of level
Just enough achievement on balance for this level	Above bottom and either below middle or at middle of level (depending on number of marks available)
Meets the criteria but with some slight inconsistency	Above middle and either below top of level or at middle of level (depending on number of marks available)
Consistently meets the criteria for this level	At top of level

11. **Annotations**

Annotation	Meaning
✓and ✗	
BOD	Benefit of doubt
FT	Follow through
ISW	Ignore subsequent working
M0, M1	Method mark awarded 0, 1
A0, A1	Accuracy mark awarded 0, 1
B0, B1	Independent mark awarded 0, 1
SC	Special case
^	Omission sign
MR	Misread
BP	Blank Page
Seen	
Highlighting	

Other abbreviations in mark scheme	Meaning
dep*	Mark dependent on a previous mark, indicated by *. The * may be omitted if only one previous M mark
cao	Correct answer only
oe	Or equivalent
rot	Rounded or truncated
soi	Seen or implied
www	Without wrong working
AG	Answer given
awrt	Anything which rounds to
BC	By Calculator
DR	This question included the instruction: In this question you must show detailed reasoning.

Subject-specific Marking Instructions

a Annotations must be used during your marking. For a response awarded zero (or full) marks a single appropriate annotation (cross, tick, M0 or ^) is sufficient, but not required.

For responses that are not awarded either 0 or full marks, you must make it clear how you have arrived at the mark you have awarded and all responses must have enough annotation for a reviewer to decide if the mark awarded is correct without having to mark it independently.

It is vital that you annotate standardisation scripts fully to show how the marks have been awarded.

Award NR (No Response)

- if there is nothing written at all in the answer space and no attempt elsewhere in the script
- OR if there is a comment which does not in any way relate to the question (e.g. 'can't do', 'don't know')
- OR if there is a mark (e.g. a dash, a question mark, a picture) which isn't an attempt at the question.

Note: Award 0 marks only for an attempt that earns no credit (including copying out the question).

If a candidate uses the answer space for one question to answer another, for example using the space for 8(b) to answer 8(a), then give benefit of doubt unless it is ambiguous for which part it is intended.

b An element of professional judgement is required in the marking of any written paper. Remember that the mark scheme is designed to assist in marking incorrect solutions. Correct solutions leading to correct answers are awarded full marks but work must not always be judged on the answer alone, and answers that are given in the question, especially, must be validly obtained; key steps in the working must always be looked at and anything unfamiliar must be investigated thoroughly. Correct but unfamiliar or unexpected methods are often signalled by a correct result following an apparently incorrect method. Such work must be carefully assessed. When a candidate adopts a method which does not correspond to the mark scheme, escalate the question to your Team Leader who will decide on a course of action with the Principal Examiner.
If you are in any doubt whatsoever you should contact your Team Leader.

c The following types of marks are available.

M
A suitable method has been selected and *applied* in a manner which shows that the method is essentially understood. Method marks are not usually lost for numerical errors, algebraic slips or errors in units. However, it is not usually sufficient for a candidate just to indicate an intention of using some method or just to quote a formula; the formula or idea must be applied to the specific problem in hand, e.g. by substituting the relevant quantities into the formula. In some cases the nature of the errors allowed for the award of an M mark may be specified.
A method mark may usually be implied by a correct answer unless the question includes the DR statement, the command words "Determine" or "Show that", or some other indication that the method must be given explicitly.

A
Accuracy mark, awarded for a correct answer or intermediate step correctly obtained. Accuracy marks cannot be given unless the associated Method mark is earned (or implied). Therefore M0 A1 cannot ever be awarded.

B
Mark for a correct result or statement independent of Method marks.

Unless otherwise indicated, marks once gained cannot subsequently be lost, e.g. wrong working following a correct form of answer is ignored. Sometimes this is reinforced in the mark scheme by the abbreviation isw. However, this would not apply to a case where a candidate passes through the correct answer as part of a wrong argument.

d When a part of a question has two or more 'method' steps, the M marks are in principle independent unless the scheme specifically says otherwise; and similarly where there are several B marks allocated. (The notation 'dep*' is used to indicate that a particular mark is dependent on an earlier, asterisked, mark in the scheme.) Of course, in practice it may happen that when a candidate has once gone wrong in a part of a question, the work from there on is worthless so that no more marks can sensibly be given. On the other hand, when two or more steps are successfully run together by the candidate, the earlier marks are implied and full credit must be given.

e The abbreviation FT implies that the A or B mark indicated is allowed for work correctly following on from previously incorrect results. Otherwise, A and B marks are given for correct work only – differences in notation are of course permitted. A (accuracy) marks are not given for answers obtained from incorrect working. When A or B marks are awarded for work at an intermediate stage of a solution, there may be various alternatives that are equally acceptable. In such cases, what is acceptable will be detailed in the mark scheme. If this is not the case please, escalate the question to your Team Leader who will decide on a course of action with the Principal Examiner.
Sometimes the answer to one part of a question is used in a later part of the same question. In this case, A marks will often be 'follow through'. In such cases you must ensure that you refer back to the answer of the previous part question even if this is not shown within the image zone. You may find it easier to mark follow through questions candidate-by-candidate rather than question-by-question.

f We are usually quite flexible about the accuracy to which the final answer is expressed; over-specification is usually only penalised where the scheme explicitly says so.

- When a value **is given** in the paper only accept an answer correct to at least as many significant figures as the given value.
- When a value **is not given** in the paper accept any answer that agrees with the correct value to **3 s.f.** unless a different level of accuracy has been asked for in the question, or the mark scheme specifies an acceptable range.
  NB for Specification B (MEI) the rubric is not specific about the level of accuracy required, so this statement reads "2 s.f".

Follow through should be used so that only one mark in any question is lost for each distinct accuracy error.
Candidates using a value of 9.80, 9.81 or 10 for *g* should usually be penalised for any final accuracy marks which do not agree to the value found with 9.8 which is given in the rubric.

g Rules for replaced work and multiple attempts:

- If one attempt is clearly indicated as the one to mark, or only one is left uncrossed out, then mark that attempt and ignore the others.
- If more than one attempt is left not crossed out, then mark the last attempt unless it only repeats part of the first attempt or is substantially less complete.
- if a candidate crosses out all of their attempts, the assessor should attempt to mark the crossed out answer(s) as above and award marks appropriately.

h For a genuine misreading (of numbers or symbols) which is such that the object and the difficulty of the question remain unaltered, mark according to the scheme but following through from the candidate's data. A penalty is then applied; 1 mark is generally appropriate, though this may differ for some units. This is achieved by withholding one A or B mark in the question. Marks designated as cao may be awarded as long as there are no other errors.
If a candidate corrects the misread in a later part, do not continue to follow through. Note that a miscopy of the candidate's own working is not a misread but an accuracy error.

i If a calculator is used, some answers may be obtained with little or no working visible. Allow full marks for correct answers, provided that there is nothing in the wording of the question specifying that analytical methods are required such as the bold "In this question you must show detailed reasoning", or the command words "Show" or "Determine". Where an answer is wrong but there is some evidence of method, allow appropriate method marks. Wrong answers with no supporting method score zero. If in doubt, consult your Team Leader.

j If in any case the scheme operates with considerable unfairness consult your Team Leader.

Question			Answer	Mark	AO	Guidance
1			**DR**			
			$(x-2)(x+5)[\leq 0]$	**M1**	**1.1**	Rearrange and attempt to solve quadratic inequality or equation Some evidence of finding critical values (e.g. factorising or formula etc.) must be seen. This mark is not implied by correct answers.
			$x=-5$ or $x=2$	**A1**	**1.1**	For both values (may be seen later e.g. embedded in an incorrectly formed inequality or implied by the final A1)
			$-5 \leq x \leq 2$	**A1**	**1.1**	Condone equivalent forms, e.g. $x \leq 2$ **and** $x \geq -5$ but do not accept open interval(s)
				[3]		Answers only without working scores 0/3

Question			Answer	Mark	AO	Guidance
2	(a)		**DR** $x^2 - 5 = 8^{\frac{2}{3}}$ $x^2 - 5 = 4$ or $x^2 = 9$ $x = \pm 3$	 **M1** **A1** **A1** **[3]**	 **2.1** **1.1** **1.1**	Attempt to raise both sides to power $\frac{2}{3}$ (May see $\sqrt[\frac{3}{2}]{8}$) May be implied by $x^2 - 5 = 4$ or $x^2 = 9$ www (e.g. A0 if $8^{\frac{3}{2}} = 4$ seen).
2	(b)		**DR** $3y = \ln 2$ $y = \frac{1}{3}\ln 2$ or 0.231 (3 sf)	 **M1** **A1** **[2]**	 **2.1** **1.1**	Attempt to take logs of both sides. SC**B1** for correct answer without working (max 1/2).
2	(c)		**DR** $(x^2)^2 - 3(x^2) - 4 = 0$ $\Rightarrow (x^2 - 4)(x^2 + 1) = 0$ or $u = x^2 \Rightarrow u^2 - 3u - 4 = 0$ $\Rightarrow (u - 4)(u + 1) = 0$ $x^2 = 4$ (or $u = 4$) $x = \pm 2$ $x^2 = -1$ has no roots	 **M1** **A1** **A1** **B1** **[4]**	 **2.1** **1.1** **1.1** **1.1**	For recognising the given quartic as a quadratic in x^2 or $u = x^2$ **and** attempting to solve (allow a sign error in factorisation). **One** of these four lines of working must be seen (oe), but the other may be implied by later correct work. Condone missing $= 0$. Or $(x + 2)(x - 2)$ seen (NB this mark not implied by correct answers) Or $x = 2$ **and** $x = -2$ (and no other solutions e.g. A0 if $x = 4$ seen) Accept equivalents but there must be an indication that there are no (real) solutions from $x^2 = -1$ (e.g. 'N/A' or 'X' etc.) Or $x = \pm i$ If **M0** then allow SC**B2** for $(x - 2)(x + 2) \Rightarrow x = \pm 2$ (max. 2/4) Answers only without working scores 0/4

Question			Answer	Mark	AO	Guidance
3	(a)	(i)		M1	2.1	Correct formula oe with ≥ 4 y-values correct or omitting the $2\times$ May see $\frac{1}{2}\times 0.5\times\{1.732..+2.645\ldots+2(1.803\ldots+2+2.291\ldots\}$
			$\frac{1}{2}\times 0.5\times\left\{\sqrt{3}+\sqrt{7}+2\left(\sqrt{3.25}+2+\sqrt{5.25}\right)\right\}$	A1	1.1	All correct. May see $\sqrt{\frac{13}{4}}$ and $\sqrt{\frac{21}{4}}$ oe
			$=4.14$ (3sf)	A1 [3]	1.1	awrt 4.14 Answer only without working scores 0/3
3	(a)	(ii)	$\left[0.5\times\left(\sqrt{3}+\sqrt{3.25}+2+\sqrt{5.25}\right)=\right]3.91$ (3sf)	B1	1.1	$0.5\times(1.7321+1.8023+2+2.2913)$ awrt 3.91
			$\left[0.5\times\left(\sqrt{3.25}+2+\sqrt{5.25}+\sqrt{7}\right)=\right]4.37$ (3sf)	B1 [2]	1.1	$0.5\times(1.8028+2+2.2913+2.6458)$ awrt 4.37 Allow B1B1 for these values seen anywhere (e.g. may see lower/upper switched). Must be evaluated.
3	(b)			M1	1.2	M1 for a partial or incomplete expression, e.g. missing (0,2) $\lim_{\delta x\to 0}\sum\left(\sqrt{x^2+3}\right)\delta x$. Allow any expression involving $\lim, \Sigma, \sqrt{x^2+3}$ (or y) **and** δx for this mark.
			$\lim_{\delta x\to 0}\sum_{[x=]0}^{2}\left(\sqrt{x^2+3}\right)\delta x$	A1 [2]	2.5	oe (must be in terms of x, not y).

Question			Answer	Mark	AO	Guidance
4	(a)					Allow "=" throughout Q4
			LHS $\equiv \cos^2\theta + \sin^2\theta + 2\cos\theta\sin\theta$	M1	2.1	M1 for expanding correctly
			$[\cos^2\theta + \sin^2\theta \equiv 1$ hence$]$			
			$(\cos\theta + \sin\theta)^2 \equiv 1 + \sin 2\theta$ **AG**	A1	2.4	Must see final statement www
			Alternative method			
			$1 + \sin 2\theta \equiv \cos^2\theta + \sin^2\theta + 2\cos\theta\sin\theta$	M1		
			$1 + \sin 2\theta \equiv (\cos\theta + \sin\theta)^2$ **AG**	A1		Must see final statement www
				[2]		
4	(b)		LHS $\equiv \left[\frac{1}{\cos 2\theta} +\right] \frac{\sin 2\theta}{\cos 2\theta}$	M1	3.1a	For writing $\tan 2\theta$ as $\frac{\sin 2\theta}{\cos 2\theta}$ or $\frac{2\tan\theta}{1-\tan^2\theta}$. May be seen embedded or implied by next A1 (Allow this mark if $\sec 2\theta$ still used)
			$\equiv \frac{1+\sin 2\theta}{\cos 2\theta}$ or $\frac{1+\sin 2\theta}{\cos^2\theta - \sin^2\theta}$	A1	1.1	May see $1 + 2\cos\theta\sin\theta$ for the numerator here
			$\equiv \frac{(\cos\theta+\sin\theta)^2}{\cos^2\theta-\sin^2\theta}$	A1	2.1	Allow A1 for correct numerator or correct denominator seen in terms of θ, not 2θ. Allow this mark even if subsequently √ incorrectly.
			$\equiv \frac{(\cos\theta+\sin\theta)^2}{(\cos\theta-\sin\theta)(\cos\theta+\sin\theta)}$			
			$\equiv \frac{\cos\theta+\sin\theta}{\cos\theta-\sin\theta}$ **AG**	A1	2.2a	correctly obtained www, ie must see previous line
			Alternative method			
			RHS $\equiv \frac{(\cos\theta+\sin\theta)^2}{(\cos\theta-\sin\theta)(\cos\theta+\sin\theta)}$	M1		or $\frac{(\cos\theta+\sin\theta)^2}{\cos^2\theta-\sin^2\theta}$ seen
			$\equiv \frac{1+\sin 2\theta}{\cos^2\theta-\sin^2\theta}$	A1		correct numerator seen
			$\equiv \frac{1+\sin 2\theta}{\cos 2\theta}$	A1		correct denominator seen in terms of 2θ, not θ
			$\equiv \sec 2\theta + \tan 2\theta$ **AG**	A1		correctly obtained www, ie must see previous line
			Alternative method using *t*-formulae			
			LHS $\equiv \frac{1+t^2}{1-t^2} + \frac{2t}{1-t^2}$ $(t = \tan\theta)$	M1		
			$\equiv \left[\frac{(1+t)^2}{1-t^2}\right] \equiv \frac{(1+t)^2}{(1-t)(1+t)}$	A1		
			$\equiv \frac{1+t}{1-t}$	A1		
			$\equiv \frac{\cos\theta+\sin\theta}{\cos\theta-\sin\theta}$ **AG**	A1		www
				[4]		

Question			Answer	Mark	AO	Guidance
5			**DR**			
			Centre $(0,1)$ and radius $= 5$	**B1**	**3.1a**	Both soi (i.e. may be seen embedded in equation)
			$x^2 + (y-1)^2 = 25$	**M1**	**1.1**	FT their centre and radius. **OR** allow 5 instead of 25
			$(12-2y)^2 + (y-1)^2 = 25$ or $x^2 + \left(6 - \frac{x}{2} - 1\right)^2 = 25$ or $x^2 + 25 - 5x + \frac{1}{4}x^2 = 25$ oe	**M1**	**1.1**	Substitute from line into their circle equation in any form to reach an equation in *x* or *y* only (substitution must be correct for this mark).
			$5y^2 - 50y + 120 = 0$ or $y^2 - 10y + 24 = 0$ or $\frac{5}{4}x^2 - 5x = 0$ oe	**M1**	**1.1**	Rearrange their quadratic to a 2- or 3-term quadratic $= 0$ (this mark may be implied by correct values for *x* or *y* i.e. either of the next two A marks). The $= 0$ may be implied by correct solutions to their quadratic. Condone one error in the terms.
			$y = 4$ or $y = 6$	**A1**	**1.1**	Both seen
			$x = 4$ or $x = 0$	**A1**	**1.1**	Both seen
			$AB^2 = (4-0)^2 + (6-4)^2 [= 20]$	**M1**	**3.1a**	FT their coordinates (must see this step oe)
			$AB = 2\sqrt{5}$ or $\sqrt{20}$	**A1**	**1.1**	From fully correct working (dep on all previous marks)
			Alternative method			
			Centre $C(0,1)$ and radius $= 5$	**B1**		Both soi
			Perp from $(0,1)$ to mid-pt of chord is	**M1**		Attempt find equation of perpendicular
			$y = 2x + 1$	**A1**		Correct equation
			Solve $y = 2x + 1$ and $x + 2y = 12$	**M1**		
			Meet at $M(2,5)$	**A1**		
			$CM = \sqrt{20}$	**M1**		
			$AM = \sqrt{5^2 - 20} [= \sqrt{5}]$	**M1**		
			$AB = 2\sqrt{5}$ or $\sqrt{20}$	**A1**		From fully correct working (dep on all previous marks)
				[8]		

Question			Answer	Mark	AO	Guidance
6	(a)	(i)	$\left[\frac{dy}{dx} =\right] 12x^3 - 12x^2 - 12x + 12$	M1 A1 [2]	1.1 2.1	Attempt $\frac{dy}{dx}$, $\geq$ 3terms correct All correct (ISW if candidates go on to divide by 12, but this answer oe must be seen)
		(ii)	$\left[\frac{dy}{dx} = 0\right] \Rightarrow 12x^3 - 12x^2 - 12x + 12 = 0$ $\Rightarrow 12(x^3 - x^2 - x + 1) = 0$ $x = 1$ and $x = -1$	M1 A1 [2]	1.1 1.1	Setting their $\frac{dy}{dx} = 0$ and attempt to solve (i.e. reach one or more values for x). May be implied by correct answers And no others. May be done **BC** Sight of $x = 1$ and $x = -1$ (and no other solutions) 2/2 ISW any attempt to find corresponding y values.
6	(b)		$\left[\frac{d^2y}{dx^2} =\right] 36x^2 - 24x - 12 = 0$ oe $x = 1$ and $x = -\frac{1}{3}$ Only one of these $[x = 1]$ gives a stationary point oe	M1 A1* A1 dep* [3]	2.1 1.1 2.2a	FT their $\frac{dy}{dx}$ ($\geq$ 2 terms correct when differentiating their $\frac{dy}{dx}$ a second time). May be implied by A1 but if both correct roots not seen must be set $= 0$ for this mark. Allow $x^3 - x^2 - x + 1 \Rightarrow 3x^2 - 2x - 1 = 0$ A1 for both correct roots and no others, i.e. points of inflection Statement needed. Dependent on previous A1. Accept e.g.: • One of these $\left[x = -\frac{1}{3}\right]$ is not a stationary point A1 • $x = -\frac{1}{3}$ is not a stationary point A1 • Categorising both points (i.e. $x = 1$ is stationary and a point of inflection, $x = -\frac{1}{3}$ is not stationary…) A1 But not "only one of these is a point of inflection" A0

Question			Answer	Mark	AO	Guidance
7	(a)	(i)	3rd term of AP is $a + 2d$ $ar = a + 2d \Rightarrow r = \dfrac{a+2d}{a}$ **AG**	**B1** **[1]**	**2.1**	Must see $a + 2d$ (either on its own or as one side of an equation) before this answer.
		(ii)	$\dfrac{a+3d}{a+2d} = \dfrac{a+2d}{a}$ oe $[a^2 + 3ad = a^2 + 4ad + 4d^2]$ $\Rightarrow d = -\dfrac{a}{4}$	**M1** **A1**	**3.1a** **1.1**	May be implied by A1. May see $a(a+3d) = (a+2d)^2$ oe or $a\left(\frac{a+2d}{a}\right)^2 = a + 3d$ Must be d in terms of a so do not accept $a = -4d$ for this mark.
			Alternative method $ar - a = 2(ar^2 - ar)$ $r - 1 = 2r(r-1)$ or $1 = 2r$ $\Rightarrow r = \dfrac{1}{2} \Rightarrow d = a \times \left(\dfrac{1}{2}\right)^2 - a \times \dfrac{1}{2}$ $\Rightarrow d = -\dfrac{a}{4}$	**M1** **A1**		May be implied by A1. (NB $ar - a = 2d$ with **(a)(i)** substituted is not sufficient) Must be d in terms of a so do not accept $a = -4d$ for this mark.
				[2]		
7	(b)		$r = \frac{a-\frac{a}{2}}{a}$ or $\frac{a-\frac{3a}{4}}{a-\frac{a}{2}}$ or $\frac{-4d+2d}{-4d}$ oe $= \dfrac{1}{2}$	**M1** **A1** **[2]**	**1.1** **1.1**	FT their expression from **(a)(ii)** with $r = \frac{a+2d}{a}$ or $r = \frac{a+3d}{a+2d}$ May be implied by A1. Must see $\frac{1}{2}$ in their answer for **(b)** to score these marks.

Question			Answer	Mark	AO	Guidance
8			**DR**			Condone missing 'dx' or 'du' throughout all methods.
			$x\ln(3-2x)+\int\frac{2x}{3-2x}\mathrm{d}x$	**M1***	**3.1a**	Attempt integration by parts – must have correct parts, possibly with $\int x\times(-2)\times\frac{1}{3-2x}\mathrm{d}x$ not yet simplified. Allow a sign error or missing $(-)2$. No limits needed for M1M1A1 (first 3 marks)
			$=x\ln(3-2x)\ +\int(-1+\frac{3}{3-2x})\mathrm{d}x$	**M1** dep***	**3.1a**	Attempt partial fractions; allow one sign error
			$=x\ln(3-2x)\ -x-\frac{3}{2}\ln(3-2x)[+c]$	**A1**	**1.1**	
			$\left(\frac{1}{2}\ln 2-\frac{1}{2}-\frac{3}{2}\ln 2\right)-\left(-\frac{3}{2}\ln 3\right)$ oe	**M1** dep**	**2.1**	Attempt substitute correct limits $0,\frac{1}{2}$ and subtract (allow one slip). FT their integral. Dependent on **both** previous M marks.
			$=\frac{3}{2}\ln 3-\ln 2-\frac{1}{2}$ or $\ln\frac{3\sqrt{3}}{2}-\frac{1}{2}$ oe	**A1**	**1.1**	For any correct exact form, including $\left(\frac{1}{2}\ln 2-\frac{1}{2}-\frac{3}{2}\ln 2\right)-\left(-\frac{3}{2}\ln 3\right)$, need not be simplified. ISW Answer 0.45477… scores A0 unless exact answer also seen
			Alternative method using substitution following correct setup of integration by parts			If candidates apply integration by parts and then use substitution, apply this method. (NB candidates can switch from this back to the main method if they revert correctly from u to x so look for limits used correctly in either x or u as appropriate).
			$x\ln(3-2x)+\int\frac{2x}{3-2x}\mathrm{d}x$	**M1***		Attempt integration by parts – must have correct parts, possibly with $\int x\times(-2)\times\frac{1}{3-2x}\mathrm{d}x$ not yet simplified. Allow a sign error or missing '2'. No limits needed for M1M1A1 (first 3 marks)
			$=x\ln(3-2x)+\int\frac{3-u}{u}\left(-\frac{1}{2}\right)\mathrm{d}u$	**M1** dep***		Using e.g. $u=3-2x$, allow one sign error.
			$=\frac{3-u}{2}\ln(u)-\frac{1}{2}[3\ln u-u]$	**A1**		Ignore any additional constant term e.g. $+c$ or $+k$ for any k.
			$=\frac{1}{2}\ln 2-\frac{1}{2}(3\ln 2-2)+\frac{1}{2}(3\ln 3-3)$	**M1** dep**		Attempt to substitute transformed limits 3,2 and subtract (condone swapped limits). FT their integral. Dep on **both** previous M marks.
			$=\frac{3}{2}\ln 3-\ln 2-\frac{1}{2}$ or $\ln\frac{3\sqrt{3}}{2}-\frac{1}{2}$ oe	**A1**		For any correct exact form, including $\left(\frac{1}{2}\ln 2-\frac{1}{2}-\frac{3}{2}\ln 2\right)-\left(-\frac{3}{2}\ln 3\right)$, need not be simplified. ISW Answer 0.45477… scores A0 unless exact answer also seen

			Alternative method for Q8 applying substitution first			If candidates start by applying a substitution, then apply this method.
				M1*		Attempting to integrate by substitution using e.g. $u = 3 - 2x$ (no limits required for this mark). Allow a sign error or missing $-\frac{1}{2}$.
			$-\frac{1}{2}\int_3^2 \ln u \, \mathrm{d}u$	**A1**		Fully correct integral with transformed limits (may be seen later, condone swapped limits).
			$= -\frac{1}{2}\left[u \ln u - \int u \frac{1}{u} \mathrm{d}u\right]$	**M1 dep***		Use of integration by parts. This mark is not implied by later correct working – must see this form or e.g. $\ln u, \frac{1}{u}, u$ and 1 as setup for integration by parts. Ignore limits for this mark. Condone a sign error or missing $-\frac{1}{2}$.
			$= -\frac{1}{2}[u \ln u - u]_3^2$	**A1**		oe but must be correct
			$= -\ln 2 + 1 + \frac{3}{2}\ln 3 - \frac{3}{2}$ oe	**A1**		For any correct form (as above). ISW NB candidates who do not show evidence of integration by parts used anywhere can score max. 2/5 under this method. Answer 0.45477… scores A0 unless exact answer also seen
			Alternative method for Q8 assuming formula for $\int \ln x \, \mathrm{d}x$ (without substitution) (Only 2 marks, since this Q is DR and required integration by parts)			If no evidence of integration by parts, or of substitution, then apply this method.
			$-\frac{1}{2}[(3-2x)\ln(3-2x) - (3-2x)]_0^{\frac{1}{2}}$	**M1**		Allow $k[(3-2x)\ln(3-2x) - (3-2x)]_0^{\frac{1}{2}}$
			$= \frac{1}{2}\ln 2 - \frac{1}{2} - \frac{3}{2}\ln 2 + \frac{3}{2}\ln 3$ oe	**A1**		ISW
				[5]		Answer 0.45477… scores A0 unless exact answer also seen

Question			Answer	Mark	AO	Guidance
9	(a)		4	B1 [1]	3.1a	
9	(b)		[Number of students scoring ≤ 45] $= 28$ [Number of students scoring ≤ 65] $= 130$ [Number of students scoring between 45-65 is:] $130 - 28 = 102$	M1 A1 [2]	3.1a 1.1	Two appropriate values in the following ranges (selected and used): Value in range [26,32] Value in range [128,134] Value in range [96,108] If no working seen, award 2/2 marks for a correct answer in [96,108]
9	(c)		No student scored more than 78 marks	B1 [1]	2.2a	Must include a value in range [76,80] Condone 'the maximum mark [scored by a student] was 78' but not 'the maximum possible mark was…'
9	(d)		69	B1 [1]	2.2a	Value in range [68,70]
9	(e)		The easier questions on Test 1 are easier than the easier questions on Test 2.	B1 [1]	3.2a	Must be referring to the easier questions but could refer to e.g. 'minimum mark' or 'starting score' or 'bottom of graph' Accept e.g.: • The easier questions on Test 2 are harder [than the easier questions on Test 1] • Lower-attaining (weaker) students scored better on Test 1 • On Test 2 some people have marks lower than… whereas on Test 1 the minimum mark was… • Test 1 had more easier questions (or Test 2 had fewer easier questions) But not e.g.: • Test 1 had easier questions. • References to A* boundary (i.e. harder questions)

9	(f)	(i)	$\bar{x} = \frac{34.5\times10+44.5\times40+54.5\times60+64.5\times33+74.5\times7}{150}$	M1	1.1	Correct method for mean soi, using attempted midpts soi (allow incorrect midpoints but not use of boundary values) Should see midpoints multiplied by frequencies and summation implied. NB $\Sigma x = 8045$, $\Sigma x^2 = 445467.5$ May be implied by correct answer (A1)
			$\bar{x} = 53.6$ (3sf) $s = 9.66$ (3sf)	A1 B1 [3]	1.1 1.1	awrt 53.6 awrt 9.66
9	(f)	(ii)	$53.6 \pm 2 \times 9.66$ [= 34.3 and 72.9]	M1	1.1	FT their **(f)(i)** i.e. $\bar{x} \pm 2 \times s$. Allow this mark for correct values seen.
			There may be outliers [in the 30-39 and 70-79 classes].	A1 [2]	2.2b	Dependent on correct values to 2sf (awrt 34 and 73) Accept "there are outliers at both ends" Condone 'there are outliers' SC**B1** for $53.6 \pm 3 \times 9.66 = 24.6$ *and* 82.6 (3sf) so no outliers (1/2)

Question			Answer	Mark	AO	Guidance
10	(a)		$\mathrm{P}(W \geq 7) = 1 - \mathrm{P}(W \leq 6)$ $[= 1 - 0.93355 \ldots]$ $= 0.0664$ (3sf)	M1 A1 [2]	1.1 1.1	May be implied by A1 or 0.066 or 0.067 (2sf). Allow $1 - \mathrm{P}(W \leq 7)[= 1 - 0.9812 \ldots]$ or 0.0188 for M1 Accept awrt 0.0664 or awrt 0.0665 [0.066447 ...]
10	(b)		0.106 (3sf)	B1 [1]	1.1	awrt 0.106
10	(c)		$\frac{30-25}{\sigma} = \Phi^{-1}(0.75)$ $\sigma = \left[\frac{5}{0.67449} =\right] 7.41$ (3sf)	M1 A1 [2]	3.4 1.1	Attempt to standardise and equate to $\Phi^{-1}(0.75)[= 0.67449]$ May be implied by A1. awrt 7.41 or 7.42

Question			Answer	Mark	AO	Guidance
11	(a)		$H_0: p = 0.95$ where p is the proportion of services that arrive on time $H_1: p < 0.95$	B1 B1	1.1 2.5	Allow probability or percentage. Allow use of any letter as long as the parameter is defined correctly e.g. allow '$p = 95\%$ where p is the % of services that arrive on time' or 'p = P(service arrives on time)' Deduct **one** B mark for each error as follows: • 2-tail **B1B0** undefined p **B1B0** • missing 0.95 or 95% **B0B0.** eg $H_0 = 0.95$ etc **B0B0**
			$X \sim B(50, 0.95)$ and $X = 44$	M1	3.3	Correct distribution and value of X, both may be stated or implied by an appropriate probability value e.g. by [$P(X \leq 44) =$ or $P(X < 45) =$]$\mathbf{0.0378}$ or [$P(X \leq 43) =$ or $P(X < 44) =$] $\mathbf{0.0118}$ or $\mathbf{0.962}$ or $\mathbf{0.988}$. Allow M1 for correct distribution and use of $X = 44$ even if within an incorrect statement (e.g. $P(X = 44) = 0.026$)
			$P(X \leq 44) = 0.0378$	A1	3.4	This whole statement must be correct (i.e. do not accept $P(X < 44)$) Accept 0.038 (2sf) or 0.0378 to 3sf or 0.0377 ... rot Accept $P(X > 44) = 0.96(22)$ or $P(X < 45) = 0.0378$ etc.
			$0.0378 < 0.05$	A1FT	1.1	FT their probability - correct comparison **for their value** e.g. $0.962 > 0.95$ FT hypotheses (e.g. 2-tail 0.025)
			Reject H_0	M1	1.1	Dependent on $P(X \leq 44)$ or $P(X < 44)$ soi (i.e. 0.0378 or 0.0118 or 0.962 or 0.988). Condone 'Accept H_1'
			There is sufficient evidence to suggest that the proportion of services arriving on time is less than 0.95	A1	2.2b	Conclusion must be in context, not definite and consistent with their comparison. Dependent on all previous M and A marks, except the first A1 (i.e. this mark can be given if 0.0378 value is given incorrectly) • Allow percentage or probability instead of proportion • Allow 95% instead of 0.95 • Allow 'sufficient evidence to suggest that Riley's claim is correct' • Condone 'significant' for 'sufficient' and 'it is likely that…' • Do not accept 'Show' or 'Prove' A0

				[7]		
11	**(b)**		E.g.: The proportion of services arriving on time may be different [at a different time of year, or may depend on the weather] so *p* may not be constant	**B1** [1]	**3.5b**	Must refer to one of the assumptions for using a binomial distribution i.e. • The probability/proportion may not be constant • The events may not be independent • There may not be a fixed number of trials • The trials may not have only 2 outcomes And explain correctly in context by referring to e.g. • Trains • Service • On time But candidates need not suggest a 'mechanism' for how this could come about (i.e. 'leaves on the line' or 'staff shortage' etc.). So accept e.g.: • "the proportion/probability of services arriving on time may not be constant" • "the event that a service arrives on time may not be independent" • "the service may be delayed for related reasons on consecutive [or connected] days so the events are not independent" • "the train service may not run on all 50 days sampled" • "the train service may be cancelled [meaning it is neither on time nor delayed] and so there is a third outcome" Do not accept statements about successive stations or successive trains (the question is about the same train service on successive days). Do not accept just 'the trains are not independent' – must refer to 'train times' or 'arrival on time' oe. Do not accept 'equal chance' without a reference to probability or proportion.

Question			Answer	Mark	AO	Guidance
12	(a)	(i)	$\frac{5}{9}$	B1 [1]	3.1a	awrt 0.556 (3sf)
12	(a)	(ii)	(6or7or8or9) nnnn: $\frac{4}{9}$ 59 nnn: $\frac{1}{9}\times\frac{1}{8}\left(=\frac{1}{72}\right)$ 58 (6or7or9) nn: $\frac{1}{9}\times\frac{1}{8}\times\frac{1}{7}\times 3\left(=\frac{3}{504}=\frac{1}{168}\right)$ $P(>58600)=\frac{4}{9}+\frac{1}{72}+\frac{1}{168}=\frac{13}{28}$ **AG**	M1 M1 M1 A1	3.1a 1.1 2.1 2.1	Allow $1-\frac{4}{9}$ or $\frac{5}{9}-\cdots$ (where $\cdots$ is any other correct work) May be included in an expression of the form $1-\cdots$. May be included in an expression of the form $1-\cdots$. Some indication of summation must be seen Or $1-\left(\frac{4}{9}+6\times\frac{1}{9}\times\frac{1}{8}+4\times\frac{1}{9}\times\frac{1}{8}\times\frac{1}{7}\right)=\frac{5}{9}-\frac{6}{72}\left(\frac{1}{12}\right)-\frac{4}{504}\left(\frac{1}{126}\right)$
			Alternative method 1 (6or7or8or9) (one from eight) (one from 7): 4×8×7 59 (1or2or3or4or6or7or8): 7 58 (6or7or9): 3 Total = 234 ÷ total all possible numbers: 9×8×7 = 504 $P(>58600)=\frac{234}{504}=\frac{13}{28}$ **AG**	M1 M1 M1 A1		**(counting possibilities for first three digits)** **AG**
			Alternative method (using permutations) (6or7or8or9) nnnn: $4\times{}^{8}P_4=6720$ 59 nnn: ${}^{7}P_3=210$ 58 (6or7or9) nn: $3\times{}^{6}P_2=90$ Total = 7020 $P(>58600)=\frac{7020}{{}^{9}P_5}=\frac{7020}{15120}=\frac{13}{28}$ **AG**	M1 M1 M1 A1		**AG**
				[4]		
12	(b)		$\frac{13}{28}\div\frac{5}{9}$ $=\frac{117}{140}$ or 0.836 (3 sf)	M1 A1FT [2]	3.1a 1.1	M1 for $\frac{13}{28}$ ÷their answer to **(i)** soi. Allow 0.464 for $\frac{13}{28}$ FT **(i)** (but A0 for answers outside [0,1])

Question			Answer	Mark	AO	Guidance
13	(a)		Those who were in the ranges 15 to 19 in 2001 were in the range 25 to 29 in 2011	B1 [1]	2.4	Accept e.g.: • "these ranges are the same width and 10 years apart" • "will include the same cohort for comparison"
13	(b)		None of the given ranges provide an appropriate pair of groups for comparison because the only pair that are two corresponding ranges 10 years apart are 65-74 and 75-84, where numbers will be decreasing.	B1 [1]	2.4	Accept e.g.: • "too old" • "not a stable group for comparison" • "there are not two [appropriate] ranges that are 10 years apart [and non-overlapping etc.]" • "ageing population means that the number of residents will be decreasing" • "ranges of 14[or 15] years are not useful for comparison" [as not everyone will have moved to the next class after 10] But not "age gaps too large" or "classes too wide" B0
13	(c)		Bristol because $(2011, 10 \text{ to } 14) < (2001, 0 \text{ to } 4)$ or $21703 < 23453$ or "the population of 10-14 in 2011 is **less than** the population of 0-4 in 2001"	B1 [1]	2.4	Bristol stated **and** explanation in words or values given (must refer to 'decrease' or 'less' or provide an inequality oe). If values are quoted then they may be rounded (to 2sf or better) but must be correct. Accept e.g. • **Decrease** in population of 1750
13	(d)(i)		Little change in overall numbers $5103 \rightarrow 5249$	B1 B1 [2]	2.3 1.1	For a correct statement in words or symbols. Accept e.g. • "the population is approximately the same" • "the population has only gone up slightly" (NB candidates who obtain incorrect values could score B1B0) For correctly using correct values from the table e.g. • Scale factor 1.03. • Accept 5103 and 5249 seen anywhere • Accept $1732 + 3517$ for 5249 (ISW incorrect addition) The statement $5103 \approx 5249$ scores B1B1.

13	**(d)(ii)**		Individuals may have moved out and been replaced by others	**B1** **[1]**	**2.3**	Or equivalent, e.g. may not be the same people Accept e.g. • "could have been large movement in and [equally] large movement out"

Question			Answer	Mark	AO	Guidance
14	(a)		$[X \sim \mathrm{N}(0.36, 0.12^2) \Rightarrow]$ $\mathrm{P}(0.3 < X < 0.4) = 0.322$ $[0.322^2] = 0.104$ (3sf)	 M1 A1 [2]	 3.3 3.4	 May be implied by A1. Allow this mark for awrt 0.32 awrt 0.104
14	(b)		$\bar{X} \sim \mathrm{N}\left(0.36, \frac{0.12^2}{40}\right)$ $\mathrm{P}(\bar{X} < 0.32) = 0.0175$ (3sf)	M1 A1 [2]	3.3 3.4	Must be seen. May see $\sigma^2 = 0.00036$. Condone $\bar{X} \sim \mathrm{N}\left(0.36, \frac{0.12}{\sqrt{40}}\right)$ for this mark only (i.e. M1A0). Accept $\mu = 0.36$ **and** $\sigma^2 = \frac{0.12^2}{40}$ or $\sigma = \frac{0.12}{\sqrt{40}}$. awrt 0.0175 Dep on correct distribution seen. Answer only without working (correct distribution) scores 0/2.
14	(c)		$\left[\bar{X} \sim \mathrm{N}\left(0.36, \frac{0.12^2}{40}\right)\right]$ $\mathrm{P}(\bar{X} < a) = 0.025$ or $a = 0.36 - 1.96 \times \frac{0.12}{\sqrt{40}}$ $a = 0.323$ $\mathrm{P}(\bar{X} > b) = 0.025$ or $b = 0.36 + 1.96 \times \frac{0.12}{\sqrt{40}}$ $b = 0.397$ $0.323 < \bar{X} < 0.397$ (3sf)	 M1 A1 M1 A1 A1 [5]	 3.1a 1.1 3.4 1.1 3.2a	Condone use of X for first four marks (but not final A1). Condone misuse of Φ^{-1} but only if correct distribution **and** correct values seen. Must see either of these steps (could be shown on a graph if accompanied by correct a to 1sf), or use of symmetry soi if b found first (i.e. $a = 0.36 - \lvert' b' - 0.36\rvert$). Or $P(\bar{X} < b)[= 1 - 0.025] = 0.975$ Must see either of these steps (could be shown on a graph if accompanied by correct b to 1sf), or use of symmetry soi if a found first (i.e. $b = 0.36 + \lvert' a' - 0.36\rvert$). Must be given correctly using $\bar{X}$ for this mark. Accept $\bar{X} > 0.323$ **and** $\bar{X} < 0.397$ Allow $\leq$ for $<$ SC**B2** for 0.323 and 0.397 without working (B1 for each max. 2/5)

<table>
<tr><th colspan="3">Question</th><th>Answer</th><th>Mark</th><th>AO</th><th>Guidance</th></tr>
<tr><td>15</td><td></td><td></td><td>$p + 2p + 4p + 8p = 1 \left[\Rightarrow p = \frac{1}{15}\right]$</td><td>M1</td><td>3.1a</td><td>May be implied by first A1 (which is implied by use of 4 correct probabilities).</td></tr>
<tr><td></td><td></td><td></td><td><table><tr><td>x</td><td>1</td><td>2</td><td>3</td><td>4</td></tr><tr><td>$\mathrm{P}(X = x)$</td><td>$\frac{1}{15}$</td><td>$\frac{2}{15}$</td><td>$\frac{4}{15}$</td><td>$\frac{8}{15}$</td></tr></table></td><td>A1</td><td>3.4</td><td>Soi</td></tr>
<tr><td></td><td></td><td></td><td>$\left(\frac{1}{15}\right)^2 \times \frac{4}{15} + \left(\frac{1}{15}\right)^2 \times \frac{8}{15} + \frac{1}{15} \times \frac{2}{15} \times \frac{8}{15} \times 2$
$\left[= \left(\frac{1}{15}\right) \times \left(\frac{4}{15} + \frac{8}{15}\right) + \frac{1}{15} \times \frac{2}{15} \times \frac{8}{15} \times 2\right]$</td><td>M1</td><td>3.4</td><td>FT their probabilities, dep $\Sigma p = 1$ Allow M1 if $\times$ 2 omitted or 2 $\times$ an additional term.
Allow this mark for $44p^3$ May see e.g.<table><tr><th>X_1</th><th>X_2</th><th>$X_1 + X_2$</th><th>X_3</th><th>P</th></tr><tr><td>1</td><td>1</td><td>2</td><td>3</td><td>$\left(\frac{1}{15}\right)^2 \times \frac{4}{15}$</td></tr><tr><td>1</td><td>1</td><td>2</td><td>4</td><td>$\left(\frac{1}{15}\right)^2 \times \frac{8}{15}$</td></tr><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>$\frac{1}{15} \times \frac{2}{15} \times \frac{8}{15}$</td></tr><tr><td>2</td><td>1</td><td>3</td><td>4</td><td>$\frac{2}{15} \times \frac{1}{15} \times \frac{8}{15}$</td></tr></table>Leading to an expression of the form given (3 or 4 terms each comprised of 3 of their probabilities multiplied together).</td></tr>
<tr><td></td><td></td><td></td><td>$= \frac{44}{3375}$</td><td>A1

[4]</td><td>1.1</td><td>Correct value from correct working implies all 4 marks (i.e. if candidates write $44p^3$ and $p = \frac{1}{15} \Rightarrow \mathrm{P}(\ldots) = \frac{44}{3375}$ then score 4/4)
Accept awrt 0.0130 (3sf)</td></tr>
</table>

Need to get in touch?

If you ever have any questions about OCR qualifications or services (including administration, logistics and teaching) please feel free to get in touch with our customer support centre.

Call us on

01223 553998

Alternatively, you can email us on

support@ocr.org.uk

For more information visit

ocr.org.uk/qualifications/resource-finder

ocr.org.uk

Twitter/ocrexams

/ocrexams

/company/ocr

/ocrexams

CAMBRIDGE
UNIVERSITY PRESS & ASSESSMENT

OCR is part of Cambridge University Press & Assessment, a department of the University of Cambridge.

For staff training purposes and as part of our quality assurance programme your call may be recorded or monitored. © OCR 2025 Oxford Cambridge and RSA Examinations is a Company Limited by Guarantee. Registered in England. Registered office The Triangle Building, Shaftesbury Road, Cambridge, CB2 8EA.

Registered company number 3484466. OCR is an exempt charity.

OCR operates academic and vocational qualifications regulated by Ofqual, Qualifications Wales and CCEA as listed in their qualifications registers including A Levels, GCSEs, Cambridge Technicals and Cambridge Nationals.

OCR provides resources to help you deliver our qualifications. These resources do not represent any particular teaching method we expect you to use. We update our resources regularly and aim to make sure content is accurate but please check the OCR website so that you have the most up-to-date version. OCR cannot be held responsible for any errors or omissions in these resources.

Though we make every effort to check our resources, there may be contradictions between published support and the specification, so it is important that you always use information in the latest specification. We indicate any specification changes within the document itself, change the version number and provide a summary of the changes. If you do notice a discrepancy between the specification and a resource, please contact us.

Whether you already offer OCR qualifications, are new to OCR or are thinking about switching, you can request more information using our Expression of Interest form.

Please get in touch if you want to discuss the accessibility of resources we offer to support you in delivering our qualifications.