

Foundation

GCSE

Mathematics - Paper 1

J560/01: Paper 1 (Foundation tier)

General Certificate of Secondary Education

Mark Scheme for November 2024

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 2024

MARKING INSTRUCTIONS

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 then mark and annotate 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% 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 via the RM Assessor messaging system.
5. 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 should give candidates the benefit of the doubt and mark the crossed out response where legible.
6. When a candidate provides contradictory responses, then no mark should be awarded, even if one of the answers is correct.
7. On each blank page the annotation **BP** must be inserted to confirm that the page has been checked. For additional objects (if present), a tick must be inserted on each page to confirm that it has been checked.
8. 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.

The hash key (#) on your keyboard will enter NR.

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

9. The RM Assessor **comments box** is used by the Principal Examiner or 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.**

If you have any questions or comments for your Team Leader, use the RM Assessor messaging system.

10. Assistant Examiners should send a brief report on the performance of candidates to their Team Leader (Supervisor) by the end of the marking period. Please follow the direction of your Team Leader about which questions you should report on and how to submit your report. Your report should contain notes on particular strengths displayed as well as common errors or weaknesses.

11. Annotations available in RM Assessor. These **must** be used whenever appropriate during your marking.

Annotation	Meaning
✓	Correct
✗	Incorrect
BOD	Benefit of doubt
FT	Follow through
ISW	Ignore subsequent working (after correct answer obtained), provided method has been completed
M0	Method mark awarded 0
M1	Method mark awarded 1
M2	Method mark awarded 2
A1	Accuracy mark awarded 1

Annotation	Meaning
B1	Independent mark awarded 1
B2	Independent mark awarded 2
MR	Misread
SC	Special case
^	Omission sign
BP	Blank page
SEEN	Seen

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.

Subject-Specific Marking Instructions

12. **M** marks are for using a correct method and are not lost for purely numerical errors.
A marks are for an accurate answer and depend on preceding **M** (method) marks. Therefore **M0 A1** cannot be awarded.
B marks are independent of **M** (method) marks and are for a correct final answer, a partially correct answer, or a correct intermediate stage.
SC marks are for special cases that are worthy of some credit.

13. The following abbreviations are commonly found in GCSE Mathematics mark schemes.

- **figs 237**, for example, means any answer with only these digits. You should ignore leading or trailing zeros and any decimal point
e.g. 237000, 2.37, 2.370, 0.00237 would be acceptable but 23070 or 2374 would not.
- **isw** means **ignore subsequent working** after correct answer obtained and applies as a default.
- **nfw** means **not from wrong working**.
- **oe** means **or equivalent**.
- **rot** means **rounded or truncated**.
- **soi** means **seen or implied**.
- **dep** means that the marks are **dependent** on the marks indicated. You must check that the candidate has met all the criteria specified for the mark to be awarded.
- **with correct working** means that full marks **must not** be awarded without some working. The required minimum amount of working will be defined in the guidance column and **SC** marks given for unsupported answers.

14. Anything in the mark scheme which is in square brackets [...] is not required for the mark to be earned, but if present it must be correct.

15. Unless the command word requires that working is shown and the working required is stated in the mark scheme, then if the correct answer is clearly given and is not from wrong working **full marks** should be awarded.

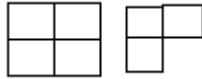
Do not award the marks if the answer was obtained from an incorrect method, i.e. incorrect working is seen and the correct answer clearly follows from it.

16. Where follow through (**FT**) is indicated in the mark scheme, marks can be awarded where the candidate's work follows correctly from a previous answer whether or not it was correct. For questions with FT available you must ensure that you refer back to the relevant previous answer. You may find it easier to mark these questions candidate by candidate rather than question by question.

Figures or expressions that are being followed through are sometimes encompassed by single quotation marks after the word *their* for clarity, e.g. FT $180 \times (\text{their} '37' + 16)$, or FT $300 - \sqrt{(\text{their} '52 + 72')}$. Answers to part questions which are being followed through are indicated by e.g. FT $3 \times \text{their} (\text{a})$.

17. In questions **with no final answer line**, make no deductions for wrong work after an acceptable answer (i.e. **isw**) unless the mark scheme says otherwise, indicated by the instruction 'mark final answer'.
18. In questions **with a final answer line and incorrect answer given**:
 - (i) If the correct answer is seen in the body of working and the answer given on the answer line is a clear transcription error allow full marks unless the mark scheme says 'mark final answer'. Place the annotation **✓** next to the correct answer.
 - (ii) If the correct answer is seen in the body of working but the answer line is blank, allow full marks. Place the annotation **✓** next to the correct answer.
 - (iii) If the correct answer is seen in the body of working but a completely different answer is seen on the answer line, then accuracy marks for the answer are lost. Method marks could still be awarded if there is no other method leading to the incorrect answer. Use the **M0**, **M1**, **M2** annotations as appropriate and place the annotation **✗** next to the wrong answer.
19. In questions **with a final answer line**:
 - (i) If one answer is provided on the answer line, mark the method that leads to that answer. A correct step, value or statement that is not part of the method that leads to the given answer should be awarded **M0** and/or **B0**.
 - (ii) If more than one answer is provided on the answer line and there is a single method provided, award method marks only.
 - (iii) If more than one answer is provided on the answer line and there is more than one method provided, award marks for the poorer response unless the candidate has clearly indicated which method is to be marked.
20. In questions **with no final answer line**:
 - (i) If a single response is provided, mark as usual.
 - (ii) If more than one response is provided, award marks for the poorer response unless the candidate has clearly indicated which response is to be marked.

21. When the data of a question is consistently misread in such a way as not to alter the nature or difficulty of the question, please follow the candidate's work and allow follow through for **A** and **B** marks. Deduct 1 mark from any **A** or **B** marks earned and record this by using the **MR** annotation. **M** marks are not deducted for misreads. If a candidate corrects the misread in a later part, do not continue to follow through, but award **A** and **B** marks for the correct answer only.
22. Unless the question asks for an answer to a specific degree of accuracy, always mark at the greatest number of significant figures even if this is rounded or truncated on the answer line. For example, an answer in the mark scheme is 15.75, which is seen in the working. The candidate then rounds or truncates this to 15.8, 15 or 16 on the answer line. Allow full marks for the 15.75.
23. Ranges of answers given in the mark scheme are always inclusive.
24. For methods not provided for in the mark scheme (including visual representations such as bar models, ratio tables, etc) give as far as possible equivalent marks for equivalent work. If in doubt, consult your Team Leader.
25. If in any case the mark scheme operates with considerable unfairness consult your Team Leader.

Question			Answer	Mark	Part Marks and Guidance	
1	(a)		40	1		
	(b)		10	2	M1 for 30 – 20	Must see subtraction sign if answer incorrect
	(c)			3	B2 for 35 OR M2 for $200 - (40 + 75 + 20 + 30)$ or M1 for 40, 75, 20, 30	3 blocks in any orientation FT <i>their</i> values
	(d)		$\frac{1}{4}$	2	M1 for $\frac{200}{800}$ oe	isw incorrect cancelling
2	(a)	(i)	Any odd number	1		
		(ii)	51	1		Accept any common multiple
	(b)		2 : 5	2	B1 for any correct ratio not in simplest form	Accept 1 : 2.5, 0.4 : 1 12 : 30 etc may be in working
3			20 $\frac{3}{100}$ oe 145	1 1 1		Condone missing % symbols oe must be integer numerator and denominator
4			0.3041 0.329 0.34 0.346	2	B1 for 3 in the correct order	Use cover up method

Question			Answer	Mark	Part Marks and Guidance
5	(a)	(i)	A right angle	1	May be indicated in list
		(ii)	60 [Angles in a] triangle sum to 180 oe	1 1	Must refer to triangle Do not accept just a calculation
	(b)		160 and 240 do not make 360 oe or sum correctly connecting 160, 240 and 400 and reference to 360 oe or sum correctly connecting 160, 200 and 360 or angles around a point add to 360 not 400	1	Condone incorrect geometric reasons Must include a reference to 360 eg $160 + 240 = 400$ is insufficient Angles may be marked on diagram See appendix
6			5.4	3	B2 for 5.41... or M1 for $17 \div \pi$
7			Horizontal line with 4 marked on y- axis	2	B1 for horizontal line or line through the point (0,4)
8	(a)		x +	1	

Question		Answer	Mark	Part Marks and Guidance	
	(b)	3.16	3	B2 for 3.158...or 3.159 or B1 for 249.41 or 9.9764 If 0 scored, instead award SC1 for <i>their</i> answer to more than 3 figures correctly rounded to 3 sf	
9	(a)	41	2	B1 for only 2 and 43 identified	
	(b)	47 nfww	3	M2 for $23.5 \times 6 - (14 + 2 + 26 + 43 + 9)$ oe or M1 for 23.5×6 may be implied by 141 or $14 + 2 + 26 + 43 + 9$ may be implied by 94	23.5 \times 2 and 4.7 \times 10 are examples of wrong working
10		$-2j + 11k$ final answer	2	B1 for $-2j$ or $11k$ in final answer or correct answer seen and spoilt	$11k + -2j$ scores B1

Question		Answer	Mark	Part Marks and Guidance	
11		800	3	<p>M2 for $160 \times 2 \times 2.5$ oe</p> <p>or</p> <p>M1 for [flour=] 160×2 may be implied by 320</p> <p>or [flour=] $160 \div 10 \times 2$ may be implied by 32</p> <p>or [butter=] $160 \div 10 \times 25$ may be implied by 400</p> <p>or $25 \div 10$ soi 2.5</p>	$\text{eg } \frac{160}{10} \times 2 \times 25$ 320g flour [in 10 cookies] 32g flour [in 1 cookie] 400g butter [in 25 cookies]
12		2163	3	<p>M2 for $618 \div \frac{2}{7}$ oe</p> <p>or</p> <p>M1 for $618 \div 2$ may be implied by 309</p>	eg $618 \div 2 \times 7$ in stages
13	(a)	Zayn travels at a constant speed	1		
	(b)	50	1		
	(c)	25	2	M1 for <i>their</i> (b) $\div 2$	
	(d)	Line or curve from (1100, 50) to (1245, 0) with no horizontal or vertical sections	2	<p>B1 for line or curve reaching time axis after 1100</p> <p>or for 1245 soi</p>	eg a line ending at time 1245

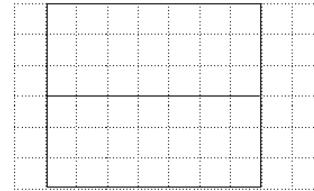
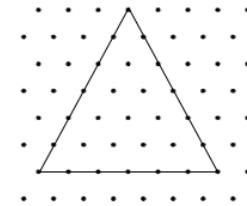
14		22 with correct working	5	<p><u>Finding adult cost (a) directly:</u> M3 for $5a + 2a - 12 = 142$</p> <p>or M2 for $5a + 2(a - 6)$</p> <p>or M1 for $a - 6$</p> <p>M1 for $7a = 154$</p> <p>OR</p> <p>M2 for $142 + 12$ or M1 for 6×2 used, may be implied by use of 12</p> <p>M1 for <i>their</i> $(142 + 12) \div 7$</p> <p><u>Simultaneous Equations</u> M1 for $5a + 2c = 142$ M1 for $a - c = 6$</p> <p>M1 for correct method to equate coefficients of one variable, allow one arithmetic error</p> <p>M1 for correct method to eliminate one variable, allow one arithmetic error</p>	<p>Correct answer from trials scores 5 "Correct working" requires evidence of at least 3 method marks</p> <p><u>Finding child cost (c) first:</u> M3 for $5c + 2c + 30 = 142$</p> <p>or M2 for $5(c + 6) + 2c$</p> <p>or M1 for $c + 6$</p> <p>M1 for $7c = 112$ or $c = 16$</p> <p>OR</p> <p>M2 for $142 - 30$ or M1 for 6×5 used, may be implied by use 30</p> <p>M1 for <i>their</i> $(142 - 30) \div 7$</p> <p>M1 for <i>their</i> $(142 - 30) \div 7 + 6$</p> <p><u>Trials:</u> M3 for correctly evaluated trial using $[a =] 22$ and $[c =] 16$ or M2 for two correctly evaluated trials where $c = a - 6$ or M1 for one correctly evaluated trial where $c = a - 6$</p>
----	--	-------------------------	---	--	---

Question		Answer	Mark	Part Marks and Guidance
				<p>If 0 or 1 scored, instead award SC2 for 22 with no working or insufficient working</p> <p>If 0 scored instead award SC1 for 16 with no working or insufficient working</p>

Question		Answer	Mark	Part Marks and Guidance
15		88.16 with correct working	6	<p>M1 for $(6 + 5) \times 5.8[0]$ oe</p> <p>M2 for $4 \times 5.8[0] \times 1\frac{1}{4}$ oe</p> <p>or M1 for $4 \times 1\frac{1}{4}$ oe or $5.8[0] \times 1\frac{1}{4}$ oe</p> <p>AND</p> <p>M2 for $0.95 \times (\text{their } 63.8 + \text{their } 29)$ oe</p> <p>or M1 for $0.05 \times (\text{their } 63.8 + \text{their } 29)$ oe</p> <p>If 0, 1 or 2 scored, instead award SC3 for 88.16 with no working or insufficient working</p> <p>If 0 or 1 scored, instead award SC2 for 92.8[0] with no working or insufficient working</p> <p>If 0 scored, instead award SC1 for 34.8 or 29 with no working or insufficient working</p>

Question		Answer	Mark	Part Marks and Guidance
16		No, and [£]103.8[0] or No and 59.5 or 59.53 to 59.54 with correct working	4	<p>M1 for $44.98 \div 26$ may be implied by 1.73 or $60 \div 26$ may be implied by 2.3...</p> <p>M1 for $103 \div$ <i>their</i> 1.73 or $60 \times$ <i>their</i> 1.73 or $44.98 \times$ <i>their</i> 2.3...</p> <p>A1 for 59.5 or 59.53 to 59.54 or 103.8[0] or 103.45 to 103.9[0]</p>
17	(a)	$3x(2x + 3)$ final answer	2	<p>B1 for $x(6x + 9)$ or $3(2x^2 + 3x)$ or correct answer seen and spoilt</p>
	(b)	$(x + 5)(x + 3)$ final answer	2	<p>B1 for $(x + a)$ and $(x + b)$ where $ab = 15$ or $a + b = 8$</p>

Question		Answer	Mark	Part Marks and Guidance	
18	(a)	435	3	<p>B2 for $[k =] 29$ or for an answer that satisfies both conditions e.g. $3 \times 5 \times 31 = 465$ or M1 for $400 \div (3 \times 5)$ maybe implied by 26.66... or 26.7 or for $3 \times 5 \times (\text{their prime number})$ correctly evaluated or for $3 \times 5 \times 27 = 405$</p>	<p>e.g. 29 used in final trial or even as <i>their</i> answer using any prime number that is greater than 29</p> <p>e.g. M1 for $3 \times 5 \times 23 = 345$ in working or $3 \times 5 \times 31 = 465$ with 31 as the answer treat factor trees or factor tables as multiplication</p>
	(b)	any correct reason e.g. a and/or b are factors	1		see appendix
19	(a)	(1.46, 715) accurately plotted	1		Tolerance: no daylight between <i>their</i> point and correct point
	(b)	Negative	1		Ignore embellishments
	(c)	(1.47, 620) ringed	1		Allow any indication
	(d)	(i) Accurate line of best fit	1		See overlay, between (1.44, 720) and (1.44, 740) and between (1.60, 650) and (1.60, 670) and must reach vertical lines at each end, ignore beyond overlay

Question		Answer	Mark	Part Marks and Guidance	
	(ii)	FT <i>their line</i>	1FT	FT <i>their line with negative gradient only</i>	tolerance: our reading ± 3
	(e)	Two different products correctly calculated, one product in the range $1.40 \leq \text{price} \leq 1.52$ and one product in the range $1.52 < \text{price} \leq 1.65$	3	B2 for one product correctly calculated or B1 for one product calculated with the incorrect result	see appendix for the products, the points used must be either the given points or on <i>their lobj</i> not the outlier, if there are more than two products then select the best two
20	(a)	7 by 6 rectangle (not dashed) with correct dividing line 	3	B2 for a 7 by 6 rectangular outline or for any rectangular outline correctly splitting the shorter side in half by one line or B1 for any rectangular outline	Outline is not a square, accept horizontally or vertically, accept freehand and for accuracy mark intention, condone dashed centre line If the diagram uses the grid edges and the line is not drawn SC2 for an otherwise correct answer or SC1 for a 7 by 6 rectangular outline
	(b)	Equilateral triangle with side 6 cm and no extra lines 	2	B1 for equilateral triangle but the incorrect size or a correct equilateral triangle with one extra line	Accept good freehand and for accuracy mark intention

Question		Answer	Mark	Part Marks and Guidance
21		7963.2[0]	4	<p>B3 for 17036.8[0] or 3000, 2640 and 2323.2[0]</p> <p>or</p> <p>M2 for $25\ 000 \times 0.88^3$ or 25000×0.12 and <i>their</i> 22000×0.12 and <i>their</i> 19360×0.12 or</p> <p>M1 for $1 - 0.12$ implied by 0.88 or 25000×0.12 and <i>their</i> 22000×0.12 may be implied 3000 and 2640 or by 22000 and 19360</p>
22		2.75 and 2.85	2	<p>B1 for each</p> <p>If 0 scored SC1 for both correct but reversed</p>
23		17.5	2	M1 for $140 \div 8$
24		Accurate ruled angle bisector of D reaching AB with two pairs of correct arcs Correct area shaded	2 1	<p>B1 for accurate ruled angle bisector</p> <p>Dep on at least B1</p> <p>Tolerance on angle $\pm 2^\circ$ Allow correct alternative method using 2 arcs and cross drawn</p>

Question		Answer	Mark	Part Marks and Guidance
25		24	4	<p>M2 for $\frac{45}{12} \times 8$ or $\frac{8}{12} \times 45$ oe or 30 or M1 for $\frac{45}{12}$ or $\frac{12}{45}$ or $\frac{12}{8}$ or $\frac{8}{12}$ oe and M1 for $99 - 45 - \text{their RQ}$ or 24 correctly placed on diagram</p> <p>Equivalent factors include 3.75, $3\frac{3}{4}$, $\frac{4}{15}$, 0.266..., 0.267, 1.5, $1\frac{1}{2}$, $\frac{2}{3}$, 0.666..., 0.667 Alt.: M2 for $99 \div \frac{45}{12}$ (3.75) oe or 26.4 or M1 for $\frac{45}{12}$ or $\frac{12}{45}$ oe and M1 for $(26.4 - 8 - 12) \times \frac{45}{12}$ (3.75) oe</p>

APPENDIX

Exemplar responses for 5b

Response	Mark	
A circle is 360 – take away 160 and you get 200	1	
Angle in a circle / round a point add to 360 not 400	1	
Angle in a circle / round a point add to 360	240 + 160 = 400	1
Angle in a circle / round a point add to 360	360 – 160 = 200	1
All angles add to 360	240 + 160 = 400	1
360 – 160 = 200		1
Reflex angles add up to 360 with $360 - 160 = 200$		1
It would be more than 360 (no working)	0	
Angle in a circle / round a point add to 360 (no working)	0	
Reflex angles add up to 360 (no working)	0	
Angle has to add up to 360 (no working)	0	
It adds up to 360 not 400 (no working)	0	

Exemplar responses for 18b

Response	Mark
it has four factors [1, a, b, ab]	1
a and/or b are factors	1
[two different prime numbers multiplied together do not make a prime number] because they are both factors of the new number	1
Any non-identical prime numbers create a non-prime number when multiplied together because the resulting number can be divided by both prime numbers	1 (BOD)
The product of two prime numbers is always divisible by both prime numbers	1 (BOD)
a × b has other factors aside from 1 and itself (a and b)	1(BOD)
a × b = 15 15 is divisible by 5 (may use other numbers)	1 (BOD)
it has factors besides itself and 1	0 (not enough)
two prime numbers multiplied together do not always become a prime number	0
Two prime numbers can multiply to make a number that isn't prime	0
2 primes make a non prime	0
A prime number x a prime number doesn't equal prime	0
A prime number can't have factors that are also prime	0
It can then be a multiple of another number	0
Divisible by more numbers other than 1 and itself	0

Question 19(e)

1.42	740	1050[.80]
1.45	725	1051[.25]
1.46	715	1043[.90]
1.5	705	1057[.50]
1.52	695	1056[.40]
1.54	685	1054[.90]
1.57	675	1059[.75]
1.6	660	1056[.00]
1.61	655	1054[.55]

allow rounded up as well

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](http://ocrexams)
-  [/company/ocr](http://company/ocr)
-  [/ocrexams](http://ocrexams)



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 2024 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.