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OCR · GCSE MATHEMATICS J560

# Foundation Tier — Paper 2

Calculator

June 2025 exam series

**MARK SCHEME**

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# Foundation

## GCSE

## Mathematics - Paper 2

### J560/02: Paper 2 (Foundation tier)

General Certificate of Secondary Education

## 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.

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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.

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# 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 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. **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 should give candidates the benefit of the doubt and mark the crossed-out response where legible.

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



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6. 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.

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 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.

9. 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. *Constructive criticism of the question paper/mark scheme is also appreciated.*

10. 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 |



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| | |
|---|---|
| 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 |
| 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.**



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**Subject-Specific Marking Instructions**

i. **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.

ii. 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.
- **nfww** 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.

3. 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.

4. 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.

5. 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 × (*their* '37' + 16), or FT 300 – √(*their* '52 + 72'). Answers to part questions which are being followed through are indicated by e.g. FT 3 × *their* (a).



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6. 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'.

7. 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.

8. 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.

9. 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.

   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.



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10. 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.

11. Ranges of answers given in the mark scheme are always inclusive.

12. For methods not described in the mark scheme, such as visual representations like bar models, ratio tables, give equivalent marks for equivalent work. If in doubt, consult your Team Leader.

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



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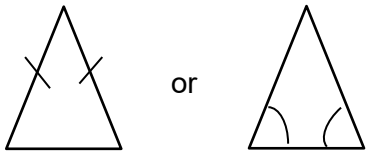
| Question | | | Answer | Marks | Part marks and guidance | |
|---|---|---|---|---|---|---|
| 1 | (a) | | 17 | 1 | | |
| 1 | (b) | | 49 | 1 | | |
| 1 | (c) | | 21 and 39 | 1 | | Accept in either order |
| 2 | | | 18 | 2 | **M1** for $\frac{4\times9}{2}$ oe | |
| 3 | (a) | | $\frac{1}{4}$ | 1 | | Accept equivalent fractions |
| 3 | (b) | | $\frac{3}{5}$ | 1 | | Accept equivalent fractions |
| 4 | (a) | (i) | [Shape A] parallelogram<br>[Shape B] [regular] hexagon | 2 | **B1** for each correct name correctly placed. | Condone poor spelling<br>Do not allow e.g. hectagon or hectogon |
| 4 | (a) | (ii) | 2 | 1 | | |
| 4 | (b) | |  | 1 | | No contradictions<br>If sides and angles indicated mark the worst<br>Use of arrows on sides is 0 marks<br>The number of “lines” on equal sides must be the same.<br>Allow 70, 70, 40 labelled as angles **with** correct notation.<br>70, 70, 40 alone is 0 marks<br>Ignore all other additions e.g. numbers for length/angles and lines of reflection and apply the scheme |
| 5 | (a) | | 38 | 1 | | |
| 5 | (b) | | 15 | 2 | **B1** for [January] 45 or [March] 30 | **B1** mark may be awarded on bar chart |



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| Question | | | Answer | Marks | Part marks and guidance | |
|---|---|---|---|---|---|---|
| 5 | (c) | | Correct bar drawn for April | 1 | | Accept good freehand<br>Clear intention<br>Accuracy - use overlay as a guide must touch both circles<br>Bar width must be consistent with other months |
| 5 | (d) | | Incorrect oe and<br>shows [50% of 30 oe = ] 15 is not equal to 18.<br>or shows [50% of 30 oe = ] 15 is not equal to 12.<br>or shows [18 x 2 = ] 36 is not equal to 30<br><br>or<br><br>Incorrect oe and<br>shows [ $\frac{18}{30}$ [× 100] = ] 60%<br>or [ $\frac{12}{30}$ [× 100] = ] 40% | 2 | **M1** for [50% of 30 oe = ] 15<br>or for [18 x 2 oe = ] 36<br><br>or<br><br>**M1** for [$\frac{18}{30}$ [× 100] oe = ] 0.6, 60 or 60%<br>or for [$\frac{12}{30}$ [× 100] oe = ] 0.4, 40 or 40% | For 2 marks candidates must:<br>state incorrect oe and use comparable numbers: 15 and 18, 15 and 12, 36 and 30 or state 40% or 60%<br><br>After candidates have made the above comparison isw any comments |
| 6 | (a) | (i) | 4 | 1 | | |
| 6 | (a) | (ii) | 8 | 1 | | |
| 6 | (b) | | 6 × (10 ÷ 2 – 4) = 6 | 1 | | Do not allow more than one bracket |
| 7 | (a) | | [0].8[0] | 1 | | |
| 7 | (b) | | 6 | 1 | | |



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| Question | | | Answer | Marks | Part marks and guidance | |
|---|---|---|---|---|---|---|
| 7 | (c) | | $5\frac{1}{3}$ | 1 | | |
| 8 | | | 700 cao | 3 | Working in ml:<br><br>**B2** for 800 identifiable as the final amount of water in one or both bottles, may be without working<br><br>OR<br><br>**M2** $\frac{1500+100}{2} - 100$ or $\frac{1500-100}{2}$<br><br>OR<br><br>**B1** for [1.5 l =] 1500 [ml]<br>**M1** for $\frac{1500+100}{2}$ or $\frac{figs\ 15+100}{2}$<br>or for $\frac{figs 15-100}{2}$<br>or for at least two new correct pairs of values where A + B = *their* 1500 + 100 | Working in litres:<br><br>**B2** for answer of 0.7 or 0.8 identifiable as the final amount of water in one or both bottles, may be without working<br><br>OR<br><br>**M2** $\frac{1.5+0.1}{2} - 0.1$ or $\frac{1.5-0.1}{2}$<br><br>OR<br><br>**B1** for [100 ml =] 0.1 [l]<br>**M1** for $\frac{1.5+0.1}{2}$ or $\frac{1.5+figs\ 1}{2}$<br>or for $\frac{1.5-figs\ 1}{2}$<br>or for at least two new correct pairs of values where A + B = 1.5 + *their* 0.1 |
| 9 | (a) | | 5*x* + 4*y* final answer | 2 | **B1** for final answer 5*x* + *ky* or *kx* + 4*y*<br>or for correct answer seen then spoiled | Accept e.g. 5*x* alone or 4*y* alone for **B1** |
| 9 | (b) | (i) | 10 – 5*x* final answer | 1 | | |
| 9 | (b) | (ii) | $2x^2 + 6x$ final answer | 2 | **B1** for $2x^2$ or 6*x* in final answer<br>or for correct answer seen then spoiled | |



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| Question | | | Answer | Marks | Part marks and guidance | |
|---|---|---|---|---|---|---|
| 10 | | | $\frac{4 \times 20}{2}$ and answer 40 | 3 | **B2** for $\frac{4 \times 20}{2}$<br>or **B1** for two of 4, 20 or 2 seen<br><br>If 0 scored and no workings seen instead award **SC1** for answer of 40. | Condone trailing zeros |
| 11 | | | $\frac{3}{5}$ cao | 3 | **B2** for $\frac{75}{125}$ oe<br><br>OR<br><br>**B1** for 75 or 125 or $1\frac{1}{4}$ oe or $2\frac{5}{60}$ oe<br>or for *their* fraction fully simplified to a proper fraction | Ignore units<br>For **B** marks accept crossed out common terms, treat as cancelling not deletion<br><br>oe for B2 include 60% and 0.6<br><br>**B1** must not come from wrong working.<br>For **B1** allow decimal equivalents 1.25 or 2.08[33..] |
| 12 | (a) | (i) | 5 | 1 | | Do not allow 5*x* or $\frac{5}{1}$ |
| 12 | (a) | (ii) | 37 | 1 | | |



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| Question | | | Answer | Marks | Part marks and guidance | |
|---|---|---|---|---|---|---|
| 12 | (b) | | $x = \frac{y-2}{5}$ oe final answer | 2 | **M1** for $y - 2 = 5x$ or for $\frac{y}{5} = x + \frac{2}{5}$<br>or for answer $\frac{y-2}{5}$<br><br>If 0 scored **SC1** for correct step to final answer FT incorrect first step | Allow for 2 marks: $x = \frac{2-y}{-5}$ and $x = \frac{y}{5} - \frac{2}{5}$<br><br>If final answer $x = y - 2/5$ but $x = \frac{y-2}{5}$ is clearly seen in their working award 2 marks<br><br>**SC1** only awarded for 2 step attempts and where *their* answer $x$ = includes 2, 5 and $y$<br><br>Incorrect first step must be seen and then correct step to their final answer for **SC1** |
| 13 | | | (13, 6) | 3 | **B2** for answer (13, *k*) or (*k*, 6)<br><br>or **M1** for identifying any correct distance<br><br>or identify on diagram point (13, 9) or (5, 6) | The correct distance must be 3, 8, 5 or 11, but they must be correctly shown, this may be shown on the diagram<br><br>Seeing 3, 8, 11 or 5 from calculations or in co-ordinates alone is M0<br><br>Condone missing bracket for coordinates. |
| 14 | (a) | | 20, 20 and 5 nfww | 3 | **B2** for [£]45<br><br>or **M1** for 30 × 1.5[0] | Accept answers in any order |



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| | | | | | | |
|---|---|---|---|---|---|---|
| **14** | **(b)** | | 350 with correct working | **5** | | Correct working requires evidence of **M4** or **M2A1**<br>Need to see supporting **M** marks to award **A** marks, otherwise **SC** applies<br>All M marks may be seen performed in steps |
| | | | | | **M4** for $16 \times 50 \times \frac{7}{10} \times \frac{5}{8}$ oe<br>or 35 x 10 after **M1** awarded | Allow **M4** for $\frac{7}{10}$ x 50 x 10 |
| | | | | | or<br>**M2** for $16 \times 50 \times \frac{7}{10}$ oe<br>or $16 \times 50 \times \frac{5}{8}$ oe<br>or $16 \times 50 \times \frac{3}{10} \times \frac{5}{8}$ oe<br>**A1** for 560 or 500 or 150 | Allow **M2** for 16 x 35<br>Allow **M2** for 10 x 50<br>Allow **M2** for 10 x 15 |
| | | | | | or<br>**M1** for $16 \times 50$ or $16 \times \frac{5}{8}$ oe or $50 \times \frac{7}{10}$ oe<br>**A1** for 800 or 10 or 35 | 1 litre = 10 miles implies **M1 A1**<br>$\frac{7}{10}$ oe of 50 = 35 or $\frac{5}{8}$ of 16 = 10 implies **M1 A1**<br>$\frac{7}{10} = \frac{35}{50}$ implies **M1** but 35 must be stated or used for **A1**<br>$\frac{7}{10}$ of 50 or $\frac{5}{8}$ of 16 alone is **M0** |
| | | | | | If 0, 1 or 2 scored instead award **SC3** for answer 350 with no or insufficient working<br><br>If 0 or 1 scored instead award **SC2** for 560 or 500 or answer of 150 with no or insufficient working<br><br>If 0 scored instead award **SC1** for 800 or 10 or 35 with no or insufficient working | |



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| Question | | | Answer | Marks | Part marks and guidance | |
|---|---|---|---|---|---|---|
| 15 | (a) | | 14 | 1 | | Accept 14.0 |
| 15 | (b) | | [0].25 or $\frac{1}{4}$ oe | 1 | | |
| 16 | | | Shows 56%<br>or<br>0.56 and 0.54<br>or<br>$\frac{56}{100}$ and $\frac{54}{100}$ or equivalent fractions with a common denominator<br>or<br>shows 13.5 [out of 25] and 14 | 3 | **M2** for $\frac{14}{25}$ × 100 oe or 0.56<br><br>or for $\frac{54}{100}$ × 25 oe<br><br>**OR**<br>**M1** for $\frac{14}{25}$ seen<br>or for $\frac{54}{100}$ or 0.54 seen | Allow 3 marks or **M2** for correct values/method isw other working<br>For **M2** accept $\frac{10+4}{10+15}$×100 instead of $\frac{14}{25}$×100<br>For $\frac{14}{25}$ × 100 oe e.g. $\frac{14\times4}{25\times4}$<br>**M2** implied by 13.5<br><br>Accept 14 out of 25 seen for M1 |
| 17 | | | $x \leq 6$ final answer | 2 | **M1** for $2x \leq 11 + 1$ or better<br>or for $x - \frac{1}{2} \leq \frac{11}{2}$ or better<br>or for answer 6 with or without equals sign or wrong inequality symbol | For **M1** allow any inequality or equals signs: e.g. **M1** for 2x > 11 + 1. |



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| Question | | | Answer | Marks | Part marks and guidance | |
|---|---|---|---|---|---|---|
| 18 | | | 40 | 3 | **M2** for $\frac{11}{20}$ or $\frac{22}{40}$ | Accept other equivalent fractions with a common denominator for M2 or M1 |
| | | | | | or $[1]\frac{15}{20} - [1]\frac{4}{20}$ or $[1]\frac{4}{20} + \frac{22}{d} = [1]\frac{15}{20}$ | **M2** implied by $\frac{22}{0.55}$ |
| | | | | | or $\left[\frac{22}{d} =\right]\frac{35}{20} - \frac{24}{20}$ oe or $\frac{24}{20} + \frac{22}{d} = \frac{35}{20}$ oe | For **M2** accept e.g. $\frac{7\times5}{4\times5} - \frac{6\times4}{4\times5}$<br>Accept e.g. $\left[-\frac{22}{d} =\right]\frac{24}{20} - \frac{35}{20}$ for **M2** |
| | | | | | or **M1** for $[1]\frac{3}{4} - [1]\frac{1}{5}$ oe | **M1** implied by 0.55 or [1].75 – [1].2 |
| | | | | | or $\frac{35}{20}$ and $\frac{k}{20}$ or $\frac{k}{20}$ and $\frac{24}{20}$ | |
| | | | | | or $[1]\frac{15}{20}$ and $[1]\frac{p}{20}$ or $[1]\frac{p}{20}$ and $[1]\frac{4}{20}$ | $p < 20$ |
| | | | | | OR | |
| | | | | | **M2** for $7 \times 5 \times d - 6 \times 4 \times d = 22 \times 5 \times 4$ or better | $35d - 24d = 440$ |
| | | | | | or **M1** for $\frac{6\times d+22\times5}{5d} = \frac{7}{4}$ oe | $\frac{6d+110}{5d} = \frac{7}{4}$ |
| | | | | | or $\frac{4\times6\times d+22\times5\times4}{20d} = \frac{7\times5\times d}{20d}$ oe | $\frac{24d+440}{20d} = \frac{35d}{20d}$ |



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| Question | | | Answer | Marks | Part marks and guidance | |
|---|---|---|---|---|---|---|
| 19 | (a) | | 8 with correct working | 4 | **B3** for answer 7 with correct working<br><br>OR<br><br>Listing:<br>**M3** for [10], 80, 150, 220, 290, 360, 430, 500 or for 70, 140, 210, 280, 350, 420, 490<br>or<br>**M2** for two correct lists up to at least the first common term 80 or 70<br>or<br>**M1** for a list with at least [10,] 24, 38, 52, 66, 80 or [10,] 45, 80<br>or a list with at least 14, 28, 42, 56, 70<br>or 35, 70<br><br>OR<br><br>Calculation:<br>**M3** for (500 – 10) ÷ 70 [ + 1] oe<br>or<br>**M2** for 2 × 5 × 7 implied by LCM = 70<br><br>or<br>**M1** for showing prime factors of 14 and 35 [14 = ] 2, 7 and [35 = ] 5, 7<br><br>If **0** or **1** scored, instead award **SC2** for answer 8 with no or insufficient working<br><br>If **0** scored, instead award **SC1** for answer 7 with no or insufficient working | Correct working requires evidence of at least **M2**<br>If answer 8 and **M2** earned award 4 marks<br>If answer 7 and **M2** earned award **B3**<br><br>If candidate uses both listing and calculation methods, mark the better of these methods<br>e.g. [10,] 24, 38, 52, 66, 80 and [10,] 45, 80<br>or 14, 28, 42, 56, 70 … and 35, 70.<br>isw errors beyond 80 or 70 for **M2** but not **M3**<br><br>isw any errors beyond these values<br><br>For **M3** accept e.g. 10 + 70(*n* [ –1]) = 500<br><br>Condone e.g. HCF = 70 but 70 must come from use of prime factors<br><br>Allow e.g. 2, 7 and 5, 7 on factor trees or in Venn diagram<br><br>Do not award **SC2** if clearly from wrong working<br><br>Do not award **SC1** if clearly from wrong working |

| Question | | | Answer | Marks | Part marks and guidance | |
|---|---|---|---|---|---|---|
| **19** | **(b)** | | 14*n* – 4 oe final answer | **2** | **B1** for answer 14*n* + *k* oe<br>or –4 + *pn* oe ($p \neq 0$)<br>or for correct answer seen then spoilt | Accept unsimplified for 2 marks or B1<br><br>Condone *n* = 14*n* – 4,<br>Condone use of other variable e.g. 14*x* – 4 for 2 marks or **B1** |
| **20** | | | Draws ruled line *y* = *x* – 1<br><br>**and**<br><br>[*x* = ] 2<br><br>[*y* = ] 1 | **4** | **M2** for drawing ruled line *y* = *x* – 1<br><br>or **M1** for correct but freehand<br>or for ruled line with gradient 1<br>or for ruled line with gradient $\geq 0$ passing through (0, -1)<br><br>**B2FT** for *x* = 2 and *y* = 1<br>or **B1FT** for one correct value | Accuracy - use overlay as a guide must touch circles<br>For M2 must pass through (0, –1) and intersection with $y = 2 - \frac{1}{2}x$<br><br>For gradient $\geq 0$ accept horizontal line but not vertical.<br><br>Allow correct or FT for **B2** and **B1**<br><br>**FT** *their* straight line, which may be freehand.<br><br>If more than one line apply choice rule.<br><br>Correct readings for *x* and *y* +/- 0.2 and their reading should be within the same grid square of the intersection of the two lines. |



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| Question | | | Answer | Marks | Part marks and guidance | |
|---|---|---|---|---|---|---|
| **21** | | | incorrect oe<br>and<br>shows<br>[30 ÷ (7 – 2) × 14 =] 84 oe | **5** | **M4** for 30 ÷ (7 – 2) × 14 oe<br>or total 84<br>or<br>**M3** for 30 ÷ (7 – 2) × *k* oe where *k* = 1, 2, 5, 7 or 14<br>or<br>**B3** for [totals] 140 **and** 210<br>or<br>**B2** for [total] 140 **or** 210<br>or<br>**M1** for 30 ÷ (5 – 2) × *k* oe where *k* = 1, 2, 5, 7 or 14<br>or for 30 ÷ (7 – 5) × *k* oe where *k* = 1, 2, 5, 7 or 14 | Accept for **M4** e.g. 12 + 30 + 42<br>For all marks isw other totals/working, could use trials to reach acceptable totals<br>**M3** may be implied by 12 , 30 and 42 seen<br><br>If method not shown<br>**M1** may be implied by 20, 50 and 70 seen<br>If method not shown<br>**M1** may be implied by 30, 75 and 105 seen |
| **22** | | | ABC or CBA<br><br>CB or BC<br><br>AB or BA<br>and opposite sides of a rectangle are equal oe<br><br>SAS oe | **B1**<br><br>**B1**<br><br>**B1**<br><br>**B1dep** | <br><br><br><br><br><br>Dependent on previous **B1B1B1** | Must use 3-letter notation<br><br><br><br>See Appendix 1 for comment<br><br><br><br>isw any comment made if SAS stated<br>See Appendix 2 for SAS oe |
| **23** | | | $\frac{1}{16}$ or 0.0625 | **2** | **B1** for $\frac{1}{2^4}$ or $16^{-1}$ isw | isw for 2 marks once correct answer seen<br>16 alone is **M0** |



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<table>
<tr><th colspan="3">Question</th><th>Answer</th><th>Marks</th><th colspan="2">Part marks and guidance</th></tr>
<tr><td>24</td><td></td><td></td><td>Correct two-way table constructed and completed<br><br><table><tr><th></th><th>Autumn</th><th>Spring</th><th>Summer</th></tr><tr><td>Class A</td><td>90</td><td>120</td><td>40</td></tr><tr><td>Class B</td><td>63</td><td>126</td><td>47</td></tr></table></td><td>6</td><td>**B3** for 63 and 126<br>or **B2** for 63 or 126<br>or **M1** for 120 × 1.05 oe or for [5% =] 6<br>or for $\frac{7}{10}$ × 90 oe or for $\left[\frac{3}{10} =\right]$ 27<br><br>**M2** for correctly designed table with headings<br>or **M1** for 3 by 2 or 2 by 3 table with no headings or error[s] in headings<br><br>**A1** (dep on M2 or M1 for table) for six correct or FT entries placed consistently in table</td><td>For all marks ignore additional columns or rows on table for attempts to find totals<br><br>Ignore extra rows if not used<br><br>For M and A marks ignore calculations in cells alongside values in 3 by 2 table<br><br>Accept e.g. 3 by 2 table<br>Condone internal/external lines omitted in table<br>Accept abbreviated heading e.g. A S S<br>Allow table headings in any order<br><br>FT *their* 63 and *their* 126</td></tr>
</table>

| Question | | | Answer | Marks | Part marks and guidance | |
|---|---|---|---|---|---|---|
| 25 | (a) | | Tree diagram correctly completed with probabilities<br>0.3 oe on all scores branches and 0.7 oe on all does not score branches | 2 | **B1** for a correct pair of branches.<br>or for 0.3 oe on all scores branches<br>or for 0.7 oe on all does not score branches | |
| 25 | (b) | | 0.42 oe | 3 | **M2** for<br>*their* 0.3 × *their* 0.7 + *their* 0.7 × *their* 0.3 oe<br>or<br>1 – (*their* 0.3 × *their* 0.3 + *their* 0.7 × *their* 0.7)<br><br>or **M1** for *their* 0.3 × *their* 0.7<br>or *their* 0.7 × *their* 0.3 oe | isw attempted cancelling or conversion after correct answer seen<br><br>Products may be given at the end of the branches in the tree diagram, however they must be used in final answer<br><br>$\frac{0.42}{1}$ scores **M2** only<br><br>For all FT marks *their* probabilities must be $0 < p < 1$ |



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| Question | | | Answer | Marks | Part marks and guidance | |
|---|---|---|---|---|---|---|
| 26 | | | 8 with correct working | 6 | **M2** for $\frac{120}{360} \times \pi \times 12^2$ oe<br>or **M1** for $\frac{120}{360}$ oe $\times k\pi$<br>or $\pi \times 12^2$<br>or $k \times \pi \times 12^2$<br><br>**A1** for $48\pi$<br><br>**AND**<br><br>**M1dep** for *their* $48\pi \div 3 \times 4$<br>or for *their* $48 \div 3 \times 4$<br><br>**M1dep** for $[\pi \times]r^2 = [\pi \times]$(*their* $48 \div 3 \times 4$)<br><br>If 0 or 1 scored instead award **SC2** for *r* = 8 with no/insufficient working<br><br>or if 0 scored award **SC1** for area of sector = $48\pi$ | Correct working requires evidence of at least **M1 and M1dep**<br><br>If candidates use numerical values for $\pi$, allow 3.1 or 3.14… or $\frac{22}{7}$. If candidates use other values e.g. 3 they must state $\pi = 3$<br><br>For **M1** *k* must be numerical and > 0<br><br>**M1** may be implied by $144\pi$<br><br>Award **M2 A1** if **M1 A1** seen<br>Award M and A marks for the area of sector even if not used to find final answer and not contradicted.<br><br>Dependent on **M1.** Implied by $64\pi$ implied by 64<br><br>e.g. $\pi r^2 = 64\pi$ or $r^2 = 64$ or $r = \sqrt{64}$.<br>Dependent on previous **M1dep**<br>If candidates only use trials to find square root, they must obtain the correct answer.<br><br>Do not award **SC2** if clearly from wrong working<br><br>Do not award **SC1** if clearly from wrong working |



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## APPENDIX 1

**Q22 – All exemplars below assume AB (or BA) has been given in addition to the following:**

| | Response | Mark |
|---|---|---|
| **A** | Opposite sides of the rectangle are equal (and parallel) | **B1** |
| **B** | Parallel sides of a rectangle are equal | **B1** |
| **C** | Opposite sides are equal | **B1** |
| **D** | Opposite lengths are equal | **B1** |
| **E** | Parallel sides are equal | **B1** |
| **F** | They are parallel making them equal **for a rectangle** (They refers to sides CD and AB) | **B1** |
| **G** | The long sides are equal | **BOD B1** |
| **H** | The top and the bottom sides are equal | **BOD B1** |
| **I** | Both lengths are equal in a rectangle | **B0** |
| **J** | They are parallel | **B0** |
| **K** | They are equal lengths (The candidate is stating no more than CD=AB) | **B0** |
| **L** | Lengths of a rectangle are equal | **B0** |
| **M** | It's equal | **B0** |
| **N** | They're the same length | **B0** |
| **O** | Opposite angles are equal | **B0** |
| **P** | They are opposite each other | **B0** |

**APPENDIX 2**

**Q22 – All exemplars below assume that the candidate has been awarded B1, B1, B1 in the previous three parts of the question.**

| | Response | Mark |
|---|---|---|
| **A** | Side Angle Side | **1** |
| **B** | Two sides and the included angle are the same in both triangles | **1** |
| **C** | Two sides and the angle between these sides are equal in both triangles. | **1** |
| **D** | SAS – All sides and angles are equal | **1 - isw** |
| **E** | Right angle, Hypotenuse, Side (RHS) *(not related to the three given statements)* | **0** |
| **F** | Two equal sides and one equal angle *(not stating the relationship between the sides and angles)* | **0** |
| **G** | All sides, angles and lengths are equal | **0** |
| **H** | They are equal and corresponding | **0** |



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