

OCR

Oxford Cambridge and RSA

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Date – Morning/Afternoon

GCSE MATHEMATICS

J560/02 Paper 2 (Foundation Tier)

PRACTICE PAPER MARK SCHEME

Duration: 1 hours 30 minutes

MAXIMUM MARK 100

DRAFT

This document consists of 13 pages

Subject-Specific Marking Instructions

1. **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.
2. Unless the answer and marks columns of the mark scheme specify **M** and **A** marks etc, or the mark scheme is 'banded', 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, ie incorrect working is seen and the correct answer clearly follows from it.

3. 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.

Figures or expressions that are being followed through are sometimes encompassed by single quotation marks after the word *their* for clarity, eg FT $180 \times (\textit{their} \text{'37'} + 16)$, or FT $300 - \sqrt{(\textit{their} \text{'5}^2 + 7^2)}$. Answers to part questions which are being followed through are indicated by eg FT $3 \times \textit{their} (a)$.

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.

4. Where dependent (**dep**) marks are indicated in the mark scheme, you must check that the candidate has met all the criteria specified for the mark to be awarded.
5. 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 eg 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**.
 - **seen** means that you should award the mark if that number/expression is seen anywhere in the answer space, including the answer line, even if it is not in the method leading to the final answer.
 - **soi** means **seen or implied**.

6. In questions with no final answer line, make no deductions for wrong work after an acceptable answer (ie **isw**) unless the mark scheme says otherwise, indicated by the instruction 'mark final answer'.
7. In questions with a final answer line following working space,
 - (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. 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.
 - (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 zero marks for the question 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 zero marks for the question unless the candidate has clearly indicated which response is to be marked.
10. 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.

11. 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.
12. Ranges of answers given in the mark scheme are always inclusive.
13. For methods not provided for in the mark scheme give as far as possible equivalent marks for equivalent work. If in doubt, consult your Team Leader.
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.

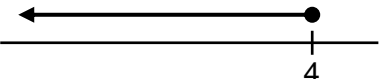
MARK SCHEME

| Question | | | Answer | Marks | Part marks and guidance |
|----------|-----|-------|------------------------------|-------------------------|---|
| 1 | (a) | | -11, -7, -2, 12 | 1 1AO1.3a | |
| | (b) | (i) | $\frac{3}{5} > 0.47$ | 1 1AO1.3a | |
| | | (ii) | $0.38 = \frac{19}{50}$ | 1 1AO1.3a | |
| | | (iii) | $\frac{3}{16} < \frac{1}{4}$ | 1 1AO1.3a | |
| 2 | | | 10 | 3 1AO1.3a 2AO3.1a | M2 for $4 + 1.5 \times 4$ or for $4 \times 4 - 4 \times 1.5$ or $\sqrt{(3^2 + 1^2)}$ Or M1 for area of a triangle = 1.5 soi or $(3^2 + 1^2)$ |
| 3 | (a) | (i) | 17 | 1 1AO1.3a | |
| | | (ii) | 6 | 1 1AO1.3a | |
| | | (iii) | 9 | 1 1AO1.3a | |
| | (b) | (i) | 162.6 | 1 1AO1.3a | |

| Question | | Answer | Marks | Part marks and guidance |
|----------|------|--|--|--|
| | (ii) | 160 | 1 1AO1.3a | |
| | (c) | 7 - 8 | 2 2AO1.3a | M1 for 4×20 or 4×19 seen |
| 4 | | <p>4×2.3 or 9.2 seen</p> <p>$12 - \text{their } 9.2$</p> <p>2.8</p> <p><i>Their '2.8' $\div 5$ or 0.48×5 or 6</i></p> <p>$2.8 \div 5 = 0.56 > 0.48$ and $2.8 \div 6 = 0.47 < 0.48$ so no more than 5 cushions or $0.48 \times 5 = 2.4$ and $0.48 \times 6 = 2.88$ so no more than 5 cushions</p> | <p>M1</p> <p>M1</p> <p>A1</p> <p>M1</p> <p>A1 1AO1.3b 1AO2.4a 2AO3.1d 1AO3.3</p> | |
| 5 | (a) | 544 | 1 1AO1.3a | |
| | (b) | 8272 | 2 2AO1.3a | M1 for full correct method with one arithmetic mistake |
| 6 | (a) | 11.65 | 2 2AO1.3a | M1 for $93.20 \div 8$ |
| | (b) | 8.[00] | 3 1AO1.3a 2AO3.1c | M1 for $4 \times 1\frac{1}{2}$ M1 for $320 \div (34 + \text{their '4' } \times 1\frac{1}{2})$ |
| 7 | (a) | 40 | 3 1AO1.3a 2AO3.1c | M2 for $\frac{120}{300}$ Or M1 for $[120 + 180] = 300$ |

| Question | | Answer | Marks | Part marks and guidance |
|----------|---------|--|--|---|
| | (b) | Sophia because $28\% > 25\%$ or $35 : 90$ and $30 : 90$ and $35 > 30$ oe | 4 1AO1.3a 2AO3.1d 1AO3.3 | M1 for one correct fraction equivalent to $\frac{70}{250}$ or $\frac{90}{360}$ or a correct ratio equivalent to $70 : 180$ or $90 : 270$ M1 for attempt to compare fractions with a common denominator or two corresponding values the same in a ratio M1 for two correct equivalent fractions or ratios that can be compared |
| 8 | (a) (i) | 35 | 1 1AO1.3a | |
| | (ii) | 36 | 1 1AO1.3a | |
| | (iii) | 37 | 1 1AO1.3a | |
| | (b) | B and D circled | 2 2AO2.5a | 1 mark for each |
| 9 | (a) | 20, 8 and 17 in appropriate positions on Venn diagram | 1 1AO2.3b | |
| | (b) | 5 | 2 1AO2.1a 1AO2.3a | M1 for $50 - (20 + 17 + 8)$ oe |
| | (c) | $\frac{37}{50}$ | 2 1AO2.3a 1AO3.3 | M1 for $[20 + 17] = 37$ seen |
| 10 | (a) | 10 correct entries | 2 2AO2.3b | B1 for 8 or 9 correct entries |

| Question | | Answer | Marks | Part marks and guidance |
|----------|---------|--|----------------------------------|---|
| | (b) (i) | $\frac{1}{12}$ | 1 1AO2.3a | |
| | (ii) | $\frac{4}{12}$ or $\frac{1}{3}$ | 1 1AO2.3a | |
| 11 | (a) | $9x$ | 1 1AO1.3a | |
| | (b) | $6x - 5y - 8$ | 2 2AO1.3a | M1 for one correct term |
| | (c) | $4x + 4$ | 3 1AO1.3a 2AO3.1c | M2 for $3x + 6 + [x - 2]$ soi Or M1 for $x - 2$ seen |
| 12 | (a) | Correct reflection | 1 1AO2.3b | |
| | (b) | Correct enlargement in correct position | 2 1AO1.3a 1AO2.3b | M1 for correct enlargement |
| | (c) | Quarter turn clockwise (or 90° clockwise or 270° anticlockwise) Centre (3, 1) | 1 1 1AO2.3a 1AO2.3b | |
| 13 | (a) | $1\frac{8}{35}$ | 3 3AO1.3a | B2 for $\frac{43}{35}$ Or M1 for $\frac{15}{35} + \frac{28}{35}$ |
| | (b) | 9π | 2 1AO1.1 1AO1.3a | M1 for $\pi \times 3 \times 3$ soi or for an answer between 27.9 and 28.3 |

| Question | | Answer | Marks | Part marks and guidance | |
|----------|-----|---|------------------------------------|--|--|
| 14 | (a) | 3, 9, 19 | 2 2AO1.3a | B1 for two terms correct | |
| | (b) | $5n - 3$ | 2 2AO1.3a | B1 for $5n$ seen | |
| 15 | (a) | Cross marked at (81, 10.4) | 1 1AO2.3b | Within $\frac{1}{2}$ a small square | |
| | (b) | Reasonable line of best fit drawn Weight from height of 75 cm on <i>their</i> line of best fit | 1 1FT 1AO2.3a 1AO2.3b | Only FT from a straight line with a positive gradient | |
| | (c) | Outlier at (74, 11.8) circled | 1 1AO2.1b | | |
| | (d) | Because the scatter diagram for 12 month old babies may not be appropriate for 15 month old babies | 1 1AO3.4a | | |
| 16 | (a) | $x \leq 4$ | 2 2AO1.3a | M1 for $3x \leq 10 + 2$ or better or $\frac{their'10+2'}{3}$ Or SC1 for answer 4 or $x \dots 4$ with any incorrect equality or inequality symbol or answer $3 \times 4 - 2 \leq 10$ | |
| | (b) |  | 1FT 1AO2.3b | FT from <i>their</i> inequality in (a) | |
| 17 | (a) | 70 | 1 1AO1.3a | | |

| Question | | Answer | Marks | Part marks and guidance |
|----------|---------|--|---|--|
| | (b) | 25 | 2 2AO1.3b | M1 for angle EDC = $180 - 95$ or angle DAE = 70 and angle AED = 85 |
| 18 | | $180 \div (1 + 2 + 3) \times 3$ 90° and yes | M2 A1 1AO1.3b 1AO3.1a 1AO3.4b | M1 for $180 \div (1 + 2 + 3)$ soi |
| 19 | (a) | $\frac{1}{49}$ | 1 1AO1.2 | |
| | (b) (i) | 1 | 1 1AO1.1 | |
| | (ii) | $\frac{\sqrt{3}}{2}$ | 1 1AO1.1 | |
| 20 | | 40 | 5 1AO1.3b 3AO3.1b 1AO3.3 | M1 for $4(x - 2) = 5x - 20$ M1 for $4x - 8 = 5x - 20$ AND M2 for $x = 12$ Or M1 for one correct step solving equation |
| 21 | (a) | She has calculated $8^2 - 6^2$ when she should have calculated $8^2 + 6^2$ | 1 1AO3.4a | |
| | (b) | 10 | 2 2AO1.3b | M1 for $\sqrt{6^2 + 8^2}$ |
| 22 | (a) | 42 to 44 | 1 1AO2.3a | |

| Question | | Answer | Marks | Part marks and guidance | |
|----------|----------------|--|---|---|--|
| | (b) (i) | 320 to 340 | 3 1AO2.1a 1AO2.3a 1AO3.1a | M2 for correct method Or M1 for an appropriate reading from the graph e.g. factor of 400 | e.g. read £ conversion for 100 euros and then multiply by 4 |
| | (ii) | Rate stays the same oe | 1 1AO3.5 | | e.g. graph continues as a straight line or exchange rate is constant |
| | (c) | Straight line oe Passes through origin oe | 1 1 2AO2.4a | | |

Assessment Objectives (AO) Grid

| Question | AO1 | AO2 | AO3 | Total |
|-----------|-----|-----|-----|-------|
| 1(a) | 1 | 0 | 0 | 1 |
| 1(b)(i) | 1 | 0 | 0 | 1 |
| 1(b)(ii) | 1 | 0 | 0 | 1 |
| 1(b)(iii) | 1 | 0 | 0 | 1 |
| 2 | 1 | 0 | 2 | 3 |
| 3(a)(i) | 1 | 0 | 0 | 1 |
| 3(a)(ii) | 1 | 0 | 0 | 1 |
| 3(a)(iii) | 1 | 0 | 0 | 1 |
| 3(b)(i) | 1 | 0 | 0 | 1 |
| 3(b)(ii) | 1 | 0 | 0 | 1 |
| 3(c) | 2 | 0 | 0 | 2 |
| 4 | 1 | 1 | 3 | 5 |
| 5(a) | 1 | 0 | 0 | 1 |
| 5(b) | 2 | 0 | 0 | 2 |
| 6(a) | 2 | 0 | 0 | 2 |
| 6(b) | 1 | 0 | 2 | 3 |
| 7(a) | 1 | 0 | 2 | 3 |
| 7(b) | 1 | 0 | 3 | 4 |
| 8(a)(i) | 1 | 0 | 0 | 1 |
| 8(a)(ii) | 1 | 0 | 0 | 1 |
| 8(a)(iii) | 1 | 0 | 0 | 1 |
| 8(b) | 0 | 2 | 0 | 2 |
| 9(a) | 0 | 1 | 0 | 1 |
| 9(b) | 0 | 2 | 0 | 2 |
| 9(c) | 0 | 1 | 1 | 2 |
| 10(a) | 0 | 2 | 0 | 2 |
| 10(b)(i) | 0 | 1 | 0 | 1 |
| 10(b)(ii) | 0 | 1 | 0 | 1 |
| 11(a) | 1 | 0 | 0 | 1 |
| 11(b) | 2 | 0 | 0 | 2 |
| 11(c) | 1 | 0 | 2 | 3 |
| 12(a) | 0 | 1 | 0 | 1 |
| 12(b) | 1 | 1 | 0 | 2 |
| 12(c) | 0 | 2 | 0 | 2 |
| 13(a) | 3 | 0 | 0 | 3 |
| 13(b) | 2 | 0 | 0 | 2 |
| 14(a) | 2 | 0 | 0 | 2 |
| 14(b) | 2 | 0 | 0 | 2 |
| 15(a) | 0 | 1 | 0 | 1 |
| 15(b) | 0 | 2 | 0 | 2 |
| 15(c) | 0 | 1 | 0 | 1 |
| 15(d) | 0 | 0 | 1 | 1 |
| 16(a) | 2 | 0 | 0 | 2 |
| 16(b) | 0 | 1 | 0 | 1 |
| 17(a) | 1 | 0 | 0 | 1 |
| 17(b) | 2 | 0 | 0 | 2 |
| 18 | 1 | 0 | 2 | 3 |

| | | | | |
|------------------|-----------|-----------|-----------|------------|
| 19(a) | 1 | 0 | 0 | 1 |
| 19(b)(i) | 1 | 0 | 0 | 1 |
| 19(b)(ii) | 1 | 0 | 0 | 1 |
| 20 | 1 | 0 | 4 | 5 |
| 21(a) | 0 | 0 | 1 | 1 |
| 21(b) | 2 | 0 | 0 | 2 |
| 22(a) | 0 | 1 | 0 | 1 |
| 22(b)(i) | 0 | 2 | 1 | 3 |
| 22(b)(ii) | 0 | 0 | 1 | 1 |
| 22(c) | 0 | 2 | 0 | 2 |
| Totals | 50 | 25 | 25 | 100 |