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# GCSE

# MATHEMATICS

**2023 PRACTICE PAPER SET 1** Foundation Tier Paper 3
Mark Scheme

8300/3F

Version 1.0

Principal Examiners have prepared these mark schemes for specimen papers. These mark schemes have not, therefore, been through the normal process of standardising that would take place for live papers.

Further copies of this Mark Scheme are available from aqa.org.uk

# Glossary for Mark Schemes

GCSE examinations are marked in such a way as to award positive achievement wherever possible. Thus, for GCSE Mathematics papers, marks are awarded under various categories.

If a student uses a method which is not explicitly covered by the mark scheme the same principles of marking should be applied. Credit should be given to any valid methods. Examiners should seek advice from their senior examiner if in any doubt.

| | |
|---|---|
| **M** | Method marks are awarded for a correct method which could lead to a correct answer. |
| **A** | Accuracy marks are awarded when following on from a correct method. It is not necessary to always see the method. This can be implied. |
| **B** | Marks awarded independent of method. |
| **ft** | Follow through marks. Marks awarded for correct working following a mistake in an earlier step. |
| **SC** | Special case. Marks awarded within the scheme for a common misinterpretation which has some mathematical worth. |
| **M dep** | A method mark dependent on a previous method mark being awarded. |
| **B dep** | A mark that can only be awarded if a previous independent mark has been awarded. |
| **oe** | Or equivalent. Accept answers that are equivalent.<br>eg  accept 0.5 as well as $\frac{1}{2}$ |
| **[a, b]** | Accept values between $a$ and $b$ inclusive. |
| **3.14 …** | Allow answers which begin 3.14 eg  3.14,  3.142,  3.1416 |
| **Use of brackets** | It is not necessary to see the bracketed work to award the marks. |

Examiners should consistently apply the following principles

### Diagrams

Diagrams that have working on them should be treated like normal responses. If a diagram has been written on but the correct response is within the answer space, the work within the answer space should be marked. Working on diagrams that contradicts work within the answer space is not to be considered as choice but as working, and is not, therefore, penalised.

### Responses which appear to come from incorrect methods

Whenever there is doubt as to whether a student has used an incorrect method to obtain an answer, as a general principle, the benefit of doubt must be given to the student. In cases where there is no doubt that the answer has come from incorrect working then the student should be penalised.

### Questions which ask students to show working

Instructions on marking will be given but usually marks are not awarded to students who show no working.

### Questions which do not ask students to show working

As a general principle, a correct response is awarded full marks.

### Misread or miscopy

Students often copy values from a question incorrectly. If the examiner thinks that the student has made a genuine misread, then only the accuracy marks (A or B marks), up to a maximum of 2 marks are penalised. The method marks can still be awarded.

### Further work

Once the correct answer has been seen, further working may be ignored unless it goes on to contradict the correct answer.

### Choice

When a choice of answers and/or methods is given, mark each attempt. If both methods are valid then M marks can be awarded but any incorrect answer or method would result in marks being lost.

### Work not replaced

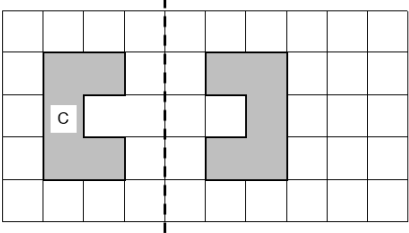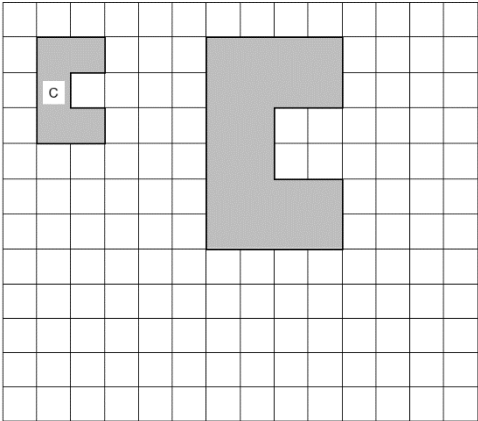Erased or crossed out work that is still legible should be marked.

### Work replaced

Erased or crossed out work that has been replaced is not awarded marks.

### Premature approximation

Rounding off too early can lead to inaccuracy in the final answer. This should be penalised by 1 mark unless instructed otherwise.

| Q | Answer | Mark | Comments |
|---|--------|------|----------|
| **1** | 0.8 | B1 | |
| **2** | diameter | B1 | ignore spelling if intention clear |
| **3** | 2400 | B1 | |
| **4** | 5 ÷ 4 | M1 | oe  eg 1 hour 15 minutes |
| | 75 | A1 | |
| **5** | 3$c$  or  8$d$ | M1 | |
| | 3$c$ + 8$d$ | A1 | do not ignore further work for final mark |

| Q | Answer | Mark | Comments |
|---|--------|------|----------|
| **6** | **Alternative method 1** | | |
| | At least one 3-digit number listed greater than 500 | M1 | ie  at least one from     519 <br> 591 <br> 915 <br>       951 |
| | 4 | A1 | |
| | **Alternative method 2** | | |
| | 2 × 2 (× 1) | M1 | |
| | 4 | A1 | |

| Q | Answer | Mark | Comments |
|---|--------|------|----------|
| **7** | Any two from: <br><br> (Vertical scale) does not go up by the same amount each time, ie should be 12, 14 not 12, 13. <br><br> Cheese and ham heights have been swapped / are wrong <br><br> No gaps between the bars. | B2 | oe <br> Any order <br> B1  for one correct |

| Q | Answer | Mark | Comments |
|---|--------|------|----------|
| **8(a)** | Correct reflection  | B1 | |
| **8(b)** | Correct enlargement  | B1 | |

| Q | Answer | Mark | Comments |
|---|---|---|---|
| **9(a)** | **Alternative method 1** | | |
| | 60 ÷ 4 = 15 | M1 | |
| | their 15 ÷ 3  or  5 | M1 | |
| | 25 | A1 | |
| | **Alternative method 2** | | |
| | £12 for 5 | M1 | |
| | 60 ÷ 12 = 5 | M1 | |
| | 25 | A1 | |
| **9(b)** | 4 + 3.5 + 3 + 1.5  or  12 | M1 | oe<br>Allow one error |
| | 48 ÷ their 12  or  4 | M1 | |
| | Their 4 × 3.5 | M1dep | oe<br>dependent on 2nd method mark |
| | 14 | A1 | |

| 10 | 6 | B2 | B1  25 and 32  or  19 and 38  seen |
|---|---|---|---|

| 11(a) | 11 | B1 | |
|---|---|---|---|
| 11(b) | × 2 + 1 | B1 | |
| 11(c) | 16 | B1 | |

| Q | Answer | Mark | Comments |
|---|--------|------|----------|
| 12 | $2457 \times 0.54$  or  1326.78 <br> or  $2457 \times 54$  or  136278 <br> or <br> $1966 \times 0.79$  or  1553.14 <br> or  $1966 \times 79$  or  155314 | M1 | |
| | their $1553.14 -$ their 1326.78 <br> or <br> their $136278 -$ their 155314 | M1dep | |
| | 226.36 | A1 | |

| 13 | Perimeter A $= 20$ (cm)  or <br> Perimeter B $= 14$ (cm) | M1 | |
|---|--------|------|----------|
| | 20 : 14 | A1 | |
| | 10: 7 | B1ft | ft  simplifying their ratio |

| | **Alternative method 1** | | |
|---|--------|------|----------|
| | $7800 \times 1.69$ | M1 | oe |
| | 13182 | A1 | |
| 14 | **Alternative method 2** | | |
| | Fully correct build up method | M1 | eg  100% $= 7800$ <br> and  50% $= 7800 \div 2$  or  3900 <br> and  1% $= 7800 \div 100$  or  78 <br> and <br> $7800 +$ their $3900 + 19 \times$ their 78 |
| | 13182 | A1 | |

| Q | Answer | Mark | Comments |
|---|--------|------|----------|
| **15** | False with valid reason | B1 | eg<br>False     $7 \times -2 = -14$<br>False     The answer should be negative |
| | False with valid reason | B1 | eg<br>False     $-2$ squared is $+4$<br>False     The answer is 100 |

| Q | Answer | Mark | Comments |
|---|--------|------|----------|
| **16** | **Alternative method 1** | | |
| | $125 + x + x + 175 = 360$ | M1 | oe |
| | $2x = 360 - 125 - 175$<br>or $x = 30$ | M1 | |
| | Their $\dfrac{205}{360} \times 4680$ | M1 | oe |
| | 2665 | A1 | |
| | **Alternative method 2** | | |
| | $360 - 125$ or $235$ | M1 | |
| | $235 - 175 \div 2$ or $30$ | M1 | oe |
| | Their $205 \div 360 \times 4680$ | M1 | oe |
| | 2665 | A1 | |

| Q | Answer | Mark | Comments |
|---|--------|------|----------|
| **17(a)** | Vertical scale correctly marked up to 5 | B1 | |
| | At least two correct points plotted | M1 | |
| | Straight line from (0, 0) to (10, 5) | A1 | |
| **17(b)** | 4.5 | B1ft | ft their line $\pm \dfrac{1}{2}$ square tolerance |

| Q | Answer | Mark | Comments |
|---|--------|------|----------|
| **18** | 13, 11, 3<br>or<br>11,11,5<br>or<br>13,7,7 | B4 | B3 three primes that sum to 27 but cannot make a triangle (eg 17,7,3 or 19,3,5)<br>B2 three numbers that sum to 27 but only two are prime (eg 11,9,7)<br>B1 three numbers that sum to 27 with 1 or 0 primes (eg 9,9,9) |

| Q | Answer | Mark | Comments |
|---|--------|------|----------|
| **19** | $4 \div 0.1$  or  40<br>or  $7 \div 0.6$  or  11.6666 …. (11)<br>or  $4 \div 0.6$  or  6.666666 … (6)<br>or  $7 \div 0.1$  or  70. | M1 | |
| | $4 \div 0.1$  and  $7 \div 0.6$<br>or  $4 \div 0.6$  and  $7 \div 0.1$ | M1 | |
| | Plot A  40 carrots or 6 cauliflowers<br>or Plot B 70 carrots or 11 cauliflowers<br>or  $40 + 11 (= 51)$<br>or  $70 + 6 (= 76)$ | A1 | |
| | 51  and  76 | A1ft | ft  dependent on both method marks |

| Q | Answer | Mark | Comments |
|---|--------|------|----------|
| **20** | $+ 1, + 3, + 5$ seen or implied<br>or  $14 + 7$ | M1 | |
| | 21 | A1 | |

| Q | Answer | Mark | Comments |
|---|--------|------|----------|
| **21** | $-4 < x \leqslant 3$ | B1 | |

| Q | Answer | Mark | Comments |
|---|--------|------|----------|
| 22(a) | $5a(2a + 5)$ | B2 | B1 $a(10a + 25)$ or $5(2a^2 + 5a)$ |
| **22(b)** | $(x + a)(x + b)$ | M1 | where $ab = -15$<br>or $a + b = 2$ |
| | $(x + 5)(x - 3)$ | A1 | |
| | $-5$ and $3$ | B1ft | ft their pair of brackets |

| Q | Answer | Mark | Comments |
|---|--------|------|----------|
| | **Alternative method 1** | | |
| | $60 \times 0.45$ or $27$ | M1 | oe |
| | $(100 - 60) \times 0.75$<br>or $30$ | M1 | oe |
| | $57$ | A1 | SC2 0.57 |
| **23** | **Alternative method 2** | | |
| | Implies juniors are 40%<br>and works out 45% of their senior total | M1 | eg 60 and 40 seen and 45% of 60 = 27 |
| | Works out 75% of their junior total | M1dep | eg 75% of "their 40".<br>or 30 |
| | $57$ | A1 | oe |

| Q | Answer | Mark | Comments |
|---|--------|------|----------|
| **24** | $8x - 5 = 4x + 24$ | B1 | |
| | $8x - 4x = 24 + 5$<br>or $4x = 29$ | M1 | oe isolating $x$ and number terms |
| | $x = 7.25$ | A1 | |
| | $53$ | B1ft | ft $8 \times$ their $7.25 - 5$<br>or $4$(their $7.25 + 6$) |

| Q | Answer | Mark | Comments |
|---|--------|------|----------|
| 25(a) | Valid reason<br><br>Any indication that actual outcomes do not always match theoretical probability | B1 | eg<br>It's just chance<br>Might get more than two of one letter |
| 25(b) | $13 + 10 + 7$<br><br>or $50 - 20$<br><br>or $30$ | M1 | oe |
|  | $\dfrac{30}{50}$  or  $\dfrac{3}{5}$  or  0.6 | A1 |  |

| 26 | $4 \times 180$ | M1 | oe |
|----|-----------------|------|------|
|  | 720 with correct method shown | A1 | SC1  720 without correct method shown |

| 27(a) | (3, 16) | B1 |  |
|-------|---------|------|--|
| 27(b) | 7 | B1 |  |
| 27(c) | $-1$ and 7 | B1 |  |

| 28 | $16.04 \times 5$  or  80.2 | M1 |  |
|----|----------------------------|------|------|
|  | their $80.2 - 15.2 - 15.9 - 16.1 - 16.8$<br>or  16.2 | M1dep | oe |
|  | 16.2 and No | A1 |  |

| 29 | $\angle CDB = 180 - 30 - 110$  or  40<br><br>or  $\angle ABD = 40$ (alternate angles are equal) | M1 | oe |
|----|------------------------------------------------------------------------------------------------|------|------|
|  | $\angle ADB = 180 - 120 -$ their $40 = 20$ | M1dep | oe |
|  | $\angle ABD = 40$  and  $\angle ADB = 20$<br>and scalene as no angles are equal. | A1 |  |