



Mark Scheme (Results)

January 2015

Pearson Edexcel International GCSE
Mathematics A (4MA0)
Paper 1FR

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Publications Code UG040583

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General Marking Guidance

- All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.
- Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
- Examiners should mark according to the mark scheme not according to their perception of where the grade boundaries may lie.
- There is no ceiling on achievement. All marks on the mark scheme should be used appropriately.
- All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e. if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.
- Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.
- When examiners are in doubt regarding the application of the mark scheme to a candidate's response, the team leader must be consulted.
- Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.
- **Types of mark**
 - M marks: method marks
 - A marks: accuracy marks
 - B marks: unconditional accuracy marks (independent of M marks)
- **Abbreviations**
 - cao – correct answer only
 - ft – follow through
 - isw – ignore subsequent working
 - SC - special case
 - oe – or equivalent (and appropriate)
 - dep – dependent
 - indep – independent
 - eeoo – each error or omission

- **No working**

If no working is shown then correct answers normally score full marks

If no working is shown then incorrect (even though nearly correct) answers score no marks.

- **With working**

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.

If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks.

Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks.

If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.

If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

If there is no answer on the answer line then check the working for an obvious answer.

- **Ignoring subsequent work**

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: eg. Incorrect cancelling of a fraction that would otherwise be correct.

It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect eg algebra.

Transcription errors occur when candidates present a correct answer in working, and write it incorrectly on the answer line; mark the correct answer.

- **Parts of questions**

Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

| Question | Working | Answer | Mark | Notes |
|--------------|-------------|--------|------|------------------------|
| 1 (a) | | 14 026 | 1 | B1 |
| (b) | | 6500 | 1 | B1 |
| (c) | | 2000 | 1 | B1 accept two thousand |
| (d) | $650 - 282$ | 368 | 1 | B1 |
| (e) | $484 + 346$ | 830 | 1 | B1 |
| | | | | Total 5 marks |

| Question | Working | Answer | Mark | Notes |
|------------------|------------------|----------------|------|--|
| 2 (a) (i) | | 70 | 1 | B1 |
| (a) (ii) | $\frac{70}{100}$ | | | M1 or any fraction equivalent to $\frac{70}{100}$ ft from (i) |
| | | $\frac{7}{10}$ | 2 | A1 ft from (i) providing that fraction arising can be simplified |
| (b) | | Sri Lanka | 1 | B1 accept mis-spellings |
| (c) (i) | | bar to 55% | 1 | B1 for 50 , bar < 60 |
| (c) (ii) | | 45% | 1 | B1 |
| | | | | Total 6 marks |

| Question | Working | Answer | Mark | Notes |
|------------------|---------|----------|------|-------------------------|
| 3 (a) (i) | | pentagon | 1 | B1 accept mis-spellings |
| (a) (ii) | | 5 | 1 | B1 |
| (b) (i) | | E | 1 | B1 |
| (b) (ii) | | A, C | 2 | B2 B1 for A; B1 for C |
| | | | | Total 5 marks |

| Question | Working | Answer | Mark | Notes |
|--------------|---------|---------------------------|------|--|
| 4 (a) | | 12, 26 | 2 | B2 B1 for 12; B1 for 26 |
| (b) | | 16 or 24 | 1 | B1 for 16 or 24 or both |
| (c) | | 1, 2, 4, 5, 8, 10, 20, 40 | 2 | B2 cao B1 for any two or more correct –1 mark for incorrect addition(s) ignore repetitions |
| (d) | | 29, 37 | 2 | B2 B1 for 29; B1 for 37 |
| | | | | Total 7 marks |
| | | | | |

| Question | Working | Answer | Mark | Notes |
|--------------|---------|---|------|---|
| 5 (a) | | 37, 41 | 2 | B2 B1 for 37; B1 for 41 |
| (b) | | eg added 4; +4 | 1 | B1 or sight of $4n + 13$ |
| (c) | | 61 | 1 | B1 |
| (d) | | eg. even number all numbers in sequence are odd | 1 | B1 or 69, 73 are in the sequence or solution of $4n + 13 = 70$ does not give an integer |
| | | | | Total 5 marks |

| Question | Working | Answer | Mark | Notes |
|--------------|---------------------|--------|------|--------------------------------------|
| 6 (a) | | (1, 6) | 1 | B1 |
| (b) | | 5.8 | 1 | B1 ± 0.2 accept 58 mm ± 2 mm |
| (c) | $4 + 5 + 7 + '5.8'$ | 21.8 | 2 | M1 A1 ft from (b) |
| | | | | Total 4 marks |

| Question | Working | Answer | Mark | Notes |
|--------------|---|---|------|---------------------------------------|
| 7 (a) | | 2 | 1 | B1 |
| (b) | $8 - 1$ | 7 | 2 | M1 A1 |
| (c) | $(5+8+5+2+2+1+3+2+8) \div 9$ or $36 \div 9$ | 4 | 2 | M1 condone omission of brackets A1 |
| (d) (i) | | more | 1 | B1 ft from (c) |
| (d) (ii) | | eg 7 is greater than the mean of the original 9 numbers | 1 | B1 ft from (c) or new mean is 4.3 |
| | | | | Total 7 marks |

| Question | Working | Answer | Mark | Notes |
|--------------|----------------------|------------------|------|--|
| 8 (a) | | 13 | 1 | B1 |
| (b) | | $7e + 4f$ | 2 | B2 B1 for $7e$ or $4f$ |
| (c) | | $3(2w + 5)$ | 1 | B1 |
| (d) | $x^2 + 4x + 7x + 28$ | | 2 | M1 for 3 correct terms out of 4 or for 4 correct terms ignoring signs or for $x^2 + 11x + c$ for any non-zero value of c or for ... + $11x + 28$ |
| | | $x^2 + 11x + 28$ | | A1 |
| | | | | Total 6 marks |

| Question | Working | Answer | Mark | Notes |
|----------|-----------------------|--------|------|--------------------------|
| 9 | $180 - 118$ or 62 | | 3 | M1 |
| | $180 - 2 \times '62'$ | | | M1 (dep) or $118 - '62'$ |
| | | 56 | | A1 |
| | | | | Total 3 marks |

| Question | Working | Answer | Mark | Notes |
|---------------|--|--------|------|---|
| 10 (a) | $320 : 500$ | | 2 | M1 or any correct unsimplified ratio A1 SC If M0, award B1 for $25 : 16$ |
| (b) | $640 \div (7 + 9) \times 9$ or 40×9 | | 2 | M1 A1 SCB1 for 280 |
| | | 360 | | |
| | | | | Total 4 marks |

| Question | Working | Answer | Mark | Notes |
|------------|-----------------|---------------|------|---|
| 11 (a) (i) | | $\frac{1}{6}$ | 1 | B1 for $\frac{1}{6}$ oe accept decimal truncated or rounded to 2 decimal places |
| (a) (ii) | | 0 | 1 | B1 Also accept $\frac{0}{6}$, $\frac{0}{1}$ do not accept any other denominator |
| (a) (iii) | | $\frac{4}{6}$ | 1 | B1 for $\frac{4}{6}$ oe accept decimal truncated or rounded to 2 decimal places |
| (b) | $1 - 0.7$ | 0.3 | 1 | B1 |
| (c) | 80×0.7 | 56 | 2 | M1 A1 NB. an answer of $\frac{56}{80}$ scores M1 A0 |
| | | | | Total 6 marks |

| Question | Working | Answer | Mark | Notes |
|----------|--|--------|------|--------------------------|
| 12 | $\frac{1}{2} \times 8 \times 15$ or 60 '60' \div 12 | 5 | 3 | M1 M1 (dep) A1 |
| | | | | Total 3 marks |

| Question | Working | Answer | Mark | Notes |
|----------|---|--------|------|---|
| 13 (a) | $4 \times -5 - 24$ or $-20 - 3 \times 8$ or $-20 - 24$ | -44 | 2 | M1 for correct evaluation of one term ie. -20 or 24 or A1 |
| (b) | $30 = 4g - 3 \times 6$ or $M + 3h = 4g$ or $(30 + 3 \times 6) \div 4$ $30 + "18" = 4g$ or $48 = 4g$ or $30 + 3 \times 6 = 4g$ | 12 | 3 | M1 for correct substitution or correct rearrangement M1 for correct substitution and correct rearrangement A1 |
| | | | | Total 5 marks |

| Question | Working | Answer | Mark | Notes |
|-----------|---|--------|------|---|
| 14 | $0 \times 5 + 1 \times 8 + 2 \times 2 + 3 \times 3 + 4 \times 2$ or $0 + 8 + 4 + 9 + 8$ | 29 | 2 | M1 condone one error in products (products need not be evaluated) A1 SC : B1 for an answer of 34 or 1.45 with no working |
| | | | | Total 2 marks |

| Question | Working | Answer | Mark | Notes |
|---------------|---------------------------|---------|------|---|
| 15 (a) | $15625 + \frac{173}{2.5}$ | 15694.2 | 2 | B2 B1 for 15625 or 69.2 or $\frac{346}{5}$ or $\frac{78471}{5}$ |
| (b) | | 15700 | 1 | B1 ft from (a) if non-trivial |
| | | | | Total 3 marks |

| Question | Working | Answer | Mark | Notes |
|---------------|---------|---------------------------------|------|--|
| 16 (a) | | correct reflection | 1 | B1 |
| (b) | | Translation 4 right and 6 up | 2 | B2 B1 for translation B1 for 4 right and 6 up or $\begin{pmatrix} 4 \\ 6 \end{pmatrix}$ |
| | | | | Total 3 marks |

| Question | Working | Answer | Mark | Notes |
|-----------|--|---|------|---|
| 17 | $(-2, -4)(-1, -1)(0, 2)(1, 5)(2, 8)$ $(3, 11)(4, 14)$ | Correct line between $x = -2$ and $x = 4$ | 4 | B4 For a correct line between $x = -2$ and $x = 3$ B3 For a correct line through at least 3 of $(-2, -4)(-1, -1)(0, 2)$ $(1, 5)(2, 8)(3, 11)(4, 14)$ OR for all of $(-2, -4)(-1, -1)(0, 2)$ $(1, 5)(2, 8)(3, 11)(4, 14)$ plotted but not joined B2 For at least 2 correct points plotted OR for a line drawn with a positive gradient through $(0, 2)$ and a clear attempt to use a gradient of 3 B1 For at least 2 correct points stated (may be in a table) OR For a line drawn with a positive gradient through $(0, 2)$ or for a line with the correct gradient. NB a line joining $(0, 2)$ to $(3, 0)$ scores B0 |
| | | | | Total 4 marks |

| Question | Working | Answer | Mark | Notes |
|----------|--|---------|------|---|
| 18 (a) | $\frac{12}{100} \times 45 (=5.4)$ $45 - "5.4"$ | 39.6(0) | 3 | M1 or M2 for 45×0.88 oe eg $45 \times (1 - 0.12)$ (NB $45 \times (1 - 12\%)$ scores zero unless accompanied by a correct answer) M1 Dep on correct method for 12% A1 |
| (b) | $546 - 525 (=21)$ $\frac{21}{525}$ | 4 | 3 | M1 $546/525 (=1.04)$ M1 Dep ($(("1.04" - 1) \times 100)$ or $546/525 \times 100 - 100$ A1 |
| | | | | Total 6 marks |

| Question | Working | Answer | Mark | Notes |
|----------|---|--------|------|---|
| 19 | $\frac{15}{2} - \frac{14}{3} = \frac{45a}{6a} - \frac{28a}{6a}$ | shown | 3 | M1 Correct improper fractions M1 Correct fractions with a common denominator a multiple of 6 A1 dep on M2. Improper fraction required eg $\frac{17}{6}, \frac{34}{12}$ |
| | | | | Alt method M1 $(7)\frac{3}{6} - (4)\frac{4}{6}$ (ie can ignore integer parts) M1 $-\frac{1}{6}$ A1 Improper fraction required eg $\frac{17}{6}, \frac{34}{12}$ or $3 - \frac{1}{6}$ Answer dep on M2 |
| | | | | |
| | | | | Alt method M1 $7\frac{3}{6} - 4\frac{4}{6}$ M1 $6\frac{9}{6} - 4\frac{4}{6}$ A1 $2\frac{5}{6}$ required before final answer Answer dep on M2 |
| | | | | NB: Follow one strand that gives most marks |
| | | | | Total 3 marks |

| Question | Working | Answer | Mark | Notes |
|----------|--|--------|------|---|
| 22 | $\tan A = \frac{80}{35}$ or $\tan B = \frac{35}{80}$ | | 4 | M1 |
| | $(A =) \tan^{-1}\left(\frac{80}{35}\right)$ or $(B =) \tan^{-1}\left(\frac{35}{80}\right)$ | | | M1 |
| | $(A =) 66.37\dots$ or $(B =) 23.62\dots$ | | | A1 Accept answers that round to 66 or 24(allow answers without labels) |
| | | 204 | | B1 Allow answers in range 203.6 – 204 ft for correct conversion to bearing unless 180 + 66 |
| | | | | Total 4 marks |

