

Mark Scheme (Results)

June 2016

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

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If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.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

Apart from Question 21, where the mark scheme states otherwise, the correct answer, unless clearly obtained by an incorrect method, should be taken to imply a correct method.

Q	Working	Answer	Mark	Notes
1a		24	1	B1
b		4 icons shown	1	B1
c		92	2	M1 '24' + 28 + 8 + 32 or 11.5×8 oe A1
				Total 4 marks
2 (a)		Two thousand four hundred and sixty	1	B1 Must be all words
(b)		seventy	1	B1 Accept tens, 7 tens, 70
(c)		240	1	B1
(d)		3110	1	B1
(e)		280	1	B1
(f)		09 10	1	B1 accept 9 10
				Total 6 marks

Q	Working	Answer	Mark	Notes
3 (i)		diameter	1	B1
(ii)		chord	1	B1
(iii)		acute	1	B1
				Total 3 marks

Q	Working	Answer	Mark	Notes
4 (a)(i)		metres	1	B1 Accept m
(a)(ii)		millilitres	1	B1 Accept ml, cm ³ Do not accept cc
(b)		8000	1	B1
				Total 3 marks

Q	Working	Answer	Mark	Notes
5 (a)		0.043, 0.06, 0.5, 0.62	1	B1
(b)		0.4	1	B1 oe eg 4/10
(c)		2.245	1	B1
(d)(i)		3478	1	B1
(d)(ii)		8734	1	B1
				Total 5 marks

Q	Working	Answer	Mark	Notes
6 (a)		2/5	2	M1 For 6/15 oe (must be a fraction) A1 cao
(b)		28	1	B1
(c)		0.15	1	B1
(d)		58	1	B1
(e)		7.05	1	B1
				Total 6 marks

Q	Working	Answer	Mark	Notes
7 (a)		38, 42	2	B2 B1 for 1 correct Allow ft, eg 37, 41 NB: B0 for 36,38, etc
(b)		Add 4	1	B1
(c)	18 + 19 × 4 or 14 + 20 × 4 or 4n + 14 or 18, 22, 26, 30,, 90, 94	94	2	M1 Allow 18 + 20 × 4 or 90 or 98 List should show a clear intention of adding 4 with at least 5 terms (can count 42 as one of the 5 terms but not 18, 22, 26, 30, 34, 38). Condone 1 arithmetic error. A1
				Total 5 marks

Q	Working	Answer	Mark	Notes
8 (a)		9	1	B1
(b)		5	1	B1
(c)	$0.5 \times 10 \times 12 \times 40$	2400	2	M1 $0.5 \times 10 \times 12 \times 40$ A1 cao
				Total 4 marks

Q	Working	Answer	Mark	Notes
9 (a)		95	1	B1
(b)(i)		140	1	B1
(b)(ii)	The sum of the angles on a straight line = 180°		1	B1
(c)	$180 - (95 + 40)$	45	2	M1 For $180 - (95 + 40)$ A1 cao
				Total 5 marks

Q	Working	Answer	Mark	Notes
10 (a)		4	2	M1 For 1 and 5 identified A1
(b)		2	2	M1 For 12.5 or 13 A1 NB: Award M0A0 if 2 comes from calculating the mean ($=2.04$)
				Total 4 marks

Q	Working	Answer	Mark	Notes
11 (a)	$8e - 11e + 2f + 3f$	$-3e + 5f$	2	B2 B1 for $-3e$ or $5f$
(b)		$6y^2 - 14y$	2	M1 For $6y^2$ or $-14y$ A1
				Total 4 marks

Q	Working	Answer	Mark	Notes
12 (a)		2	1	B1
(b)	$(30 + 5) \times 3$	105	2	M1 For $(30 + 5) \times 3$ or 35×3 A1 cao
(c)	$\frac{x}{3} - 5$	$\frac{x}{3} - 5$	2	M1 For $\frac{x}{3}$ or $x \div 3$ oe A1 oe
				Total 5 marks

Q	Working	Answer	Mark	Notes
13 (i)		9	1	B1
(ii)		56	1	B1
				Total 2 marks

Q	Working	Answer	Mark	Notes
14 (a)		32	1	B1
(b)		4	1	B1
				Total 2 marks

Q	Working	Answer	Mark	Notes
15 (a)	$2 \times -5 + 3 \times 7$	11	2	M1 For -10 or 21 A1
(b)	$5x - 20 (= 14)$ or $x - 4 = 14/5$ $5x = 34$ or $x = 4 + 14/5$ $x = 6.8$	6.8	2	M1 A1oe Allow $34/5$ oe
				Total 4 marks

Q	Working	Answer	Mark	Notes
16 (a) (i)		5/50	1	B1oe
(a) (ii)	$1 - \frac{35+5}{50}$	10/50	2	M1ft A1ft $1 - \frac{35+5}{50}$ or $50 - 35 - 5$ or 10
(b)	$\frac{35}{50} \times 300$ oe, eg 35×6 , 0.7×300 , etc	210	2	M1 A fully correct method A1 Cao (award $\frac{210}{300}$ M1 only)
				Total 5 marks

Q	Working	Answer	Mark	Notes
1. (a)	$\frac{7}{10} \times 30$ oe (eg $30 \div (7 + 3) = 3$, $7 \times '3'$) or $\frac{3}{10} \times 30$	21	2	M1 A Complete method to find either share A1
(b)	$\frac{75}{3} \times 4$ oe	100	2	M1 Complete method A1
				Total 4 marks

Q	Working	Answer	Mark	Notes
18 (a)		0	1	B1
(b)	$1 - (0.1 + 0.15 + 0.05 + 0.2 + 0.15)$	0.35	2	M1 A1 oe
				Total 3 marks

Q	Working	Answer	Mark	Notes
19 (a)	$\frac{8}{100} \times 28$ or 2.24 28 - "2.24"	25.76	3	M1 M1 dep A1 M2 for $\frac{92}{100} \times 28$ oe
(b)	$\frac{3}{0.08}$ or $\frac{3}{8} \times 100$ oe	37.50	3	M2 M1 for $\frac{3}{8}$ or 0.375 or 3 = 8% A1 Accept 37.5
				Total 6 marks

Q	Working	Answer	Mark	Notes
20 (a)	$-9 < 3x \leq 6$ or $3x > -9$ and $3x \leq 6$ or $-\frac{4}{3} < x + \frac{5}{3} \leq \frac{11}{3}$ or $x + \frac{5}{3} > -\frac{4}{3}$ and $x + \frac{5}{3} \leq \frac{11}{3}$ or $x > -3$ or $x \leq 2$	$-3 < x \leq 2$	3	M2 For both ends correct for $3x$ or $x + \frac{5}{3}$ or one end correct for $x + \frac{5}{3}$ M1 for one end correct for $3x$ or $x + \frac{5}{3}$, eg $3x > -9$ or $3x \leq 6$ or answers of $x = -3$ & $x = 2$ A1
(b)		$-2, -1, 0, 1, 2$	2	B2ft B1 for five correct values and one incorrect value or four correct values with no incorrect value Only ft from an inequality in the form $a < x \leq b$
				Total 5 marks

Q	Working	Answer	Mark	Notes
21.	$792 = 2 \times 396 = 2 \times 2 \times 198$ $= 2 \times 2 \times 2 \times 99 = 2 \times 2 \times 2 \times 3 \times 33$	$2 \times 2 \times 2 \times 3 \times 3 \times 11$	3	M1 For at least 2 correct steps in repeated factorisation (may be seen in a tree diagram or 'ladder')
	2, 2, 2, 3, 3, 11			A1 Condone inclusion of 1 (maybe a fully correct tree or factor ladder)
				A1 Or $2^3 \times 3^2 \times 11$ NB: Candidates showing no working score 0 marks
				Total 3 marks

Q	Working	Answer	Mark	Notes
22 (a)		Translation 5 to the right and 4 down	2	B2 B1 for translation B1 for 5 to the right and 4 down or $\begin{pmatrix} 5 \\ -4 \end{pmatrix}$ These marks are independent but award no marks if the answer is not a single transformation.
(b)		R correct	2	B2 $(-2, -1), (0, -1), (0, -2), (-1, -2),$ Condone omission of label B1 for 90° anticlockwise rotation about (1,0) or for Correct orientation but incorrect position.
				Total 4 marks

Q	Working	Answer	Mark	Notes
23	$14.6^2 - 3.2^2$ or $213.16 - 10.24 (=202.92)$ $\sqrt{14.6^2 - 3.2^2}$	14.2	3	M1 M1 Dep A1 Awrt 14.2
				Total 3 marks

Q	Working	Answer	Mark	Notes
24.	$\frac{360}{8}$ or $180 - \frac{(8-2) \times 180}{8}$	45	2	M1 For complete correct method for exterior angle A1 Do not isw interior angle found
				Total 2 marks

Q	Working	Answer	Mark	Notes
25	$3 \times 13 + 10 \times 10 + 17 \times 16 + 24 \times 7 + 31 \times 4$ Or $39 + 100 + 272 + 168 + 124$	703	3	M1 For at least 2 products $f \times x$ consistently within intervals (including end points) M1 For completely correct method (condone 1 error) NB: Products do not need to be evaluated A1 cao Do not ISW to find mean SC award 2 marks for 14.06 if no other marks gained
				Total 3 marks

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