

Mark Scheme (Results)

January 2015

Pearson Edexcel International GCSE
Mathematics A (4MA0)
Paper 2F

Pearson Edexcel Level 1/Level 2 Certificate
Mathematics A (KMA0)
Paper 2F

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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.

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Apart from Questions 13b and 20 where the mark scheme states otherwise, the correct answer, unless clearly obtained by an incorrect method, should be taken to imply a correct method.

Question	Working	Answer	Mark	Notes
1 (a)		Nile	1	B1 accept 6695
(b)		Four thousand four hundred and twenty five	1	B1 accept mis-spellings if meaning is clear
(c)		500	1	B1 accept five hundred; hundreds; 100s
(d)		6380	1	B1 accept Yangtze
(e)	985 + 4425	5410	1	B1
				Total 5 marks

Question	Working	Answer	Mark	Notes
2 (a) (i)		certain	1	B1
(ii)		unlikely	1	B1
(b) (i)		cross at 0	1	B1
(ii)		cross at 0.5	1	B1
				Total 4 marks

Question	Working	Answer	Mark	Notes
3 (a)		sphere	1	B1 any recognisable spelling
(b) (i)		cube	1	B1 accept cuboid, prism (any recognisable spelling)
(ii)		6	1	B1
(iii)		8	1	B1
				Total 4 marks

Question	Working	Answer	Mark	Notes
4 (a)		4	1	B1
(b)		10.8	1	B1 accept 10.5 - 11 exclusive
(c)		Iran	1	B1
(d)		bar drawn	1	B1 bar drawn (accept any width) with $9.5 < \text{height} < 10$
(e)	72 000 : 18 000	4 : 1	2	M1 or any equivalent ratio eg 72 : 18 A1 SC : B1 for an answer of 1 : 4
				Total 6 marks

Question	Working	Answer	Mark	Notes
5 (a)		4.56, 4.6, 5.04, 5.46, 5.6	1	B1
(b)		7.5	1	B1
(c)		6 squares shaded	1	B1
(d)		0.4	1	B1 accept 0.40
(e)		$\frac{87}{100}$	1	B1
(f)	$9 \div 16$	0.5625	1	B1
				Total 6 marks

Question	Working	Answer	Mark	Notes
6 (a) (i)		(4, 2)	1	B1
(ii)		(-3, -1)	1	B1
(b)		trapezium	1	B1 any recognisable spelling
(c) (i)		acute	1	B1 any recognisable spelling
(ii)		74	1	B1 accept 72 – 76
				Total 5 marks

Question	Working	Answer	Mark	Notes
7 (a)		4	1	B1
(b)		$5k$	1	B1
(c)		$3p + 5m$	2	B2 B1 for $3p$ or $5m$
(d)	$4 \times -5 + 9 \times 3$ or -20 or 27	7	2	M1 for correct evaluation of one term or complete correct substitution into rhs A1
(e)		$c(c - 5)$	2	B2 Award B2 also for $(c \pm 0)(c - 5)$ B1 for factors which, when expanded and simplified, give two terms, one of which is correct
(f)		d^{12}	1	B1
				Total 9 marks

Question	Working	Answer	Mark	Notes
8 (a)	$-12 + 15$ or $15 + -12$ or $15 - 12$	3	2	M1 A1
(b) (i)		16	1	B1
(ii)		-30	1	B1
(c) (i)		+	2	B1
(ii)		$\times$, $\div$		B1
(d)		125	1	B1
(e)		16	1	B1
				Total 8 marks

Question	Working	Answer	Mark	Notes
9 (a)		2 correct lines of symmetry	1	B1 with no incorrect lines of symmetry
(bi)		C	1	B1
(bii)		A	1	B1
				Total 3 marks

Question	Working	Answer	Mark	Notes
10 (a)		17 45	1	B1 allow 17 45pm
(b)	A method to work out time difference eg. 5:45 → 6:45 → 7:45 → 8:10 or 25 on minutes answer line		2	M1 do not accept 8.10 - 5.45 alone or 2.65
		2h 25 min		A1
				Total 3 marks

Question	Working	Answer	Mark	Notes
11 (a)		48	1	B1
(b)	$50 - 45$		2	M1 for 35 and 50
		5		A1
(c)	$45 \times 3 + 46 \times 7 + 47 \times 12 + 48 \times 23 + 49 \times 4 + 50 \times 1$ or $135 + 322 + 564 + 1104 + 196 + 50$ or 2371		3	M1 for at least 3 correct products and summing them
	"2371" $\div 50$ or $\frac{45 \times 3 + 46 \times 7 + 47 \times 12 + 48 \times 23 + 49 \times 4 + 50(\times 1)}{50}$			M1 (dep) for division by 50 NB. If division by something other than 50 this must clearly come from adding the frequency column
		47.42		A1 Accept 47, 47.4 if $2371 \div 50$ seen accept $47\frac{21}{50}$ but not $\frac{2371}{50}$
				Total 6 marks

Question	Working	Answer	Mark	Notes
12	$40 \div 8$ or $18 \div 3$ or $28 \div 7$ or 5 or 6 or 4 or $8 \times 3 \times 7$ or 168 or $40 \times 18 \times 28$ or 20160		3	M1 for multiplier for at least one pair of edges (may be part of an expression eg. $\frac{40 \times 28}{8 \times 7}$, $8 \times 5 = 40$) or for volume of at least one of the two cuboids NB: May see 5 or 6 or 4 indicated on diagram
	"5" $\times$ "6" $\times$ "4" or "20160" $\div$ "168"			M1 dep
		120		A1
				Total 3 marks

Question	Working	Answer	Mark	Notes
13 (a)	$72 \div 9$ or 8 or $\frac{5}{9} \times 72$ or 5×72 or 360 or $0.555(5...) \times 72$ oe		2	M1
	8×5 or $360 \div 9$	40		A1
(b)	$\frac{5}{15} + \frac{4}{15}$ or $\frac{5+4}{15}$		2	M1 for 2 fractions equivalent to $\frac{1}{3}$ and $\frac{4}{15}$ with a common denominator eg. $\frac{15}{45} + \frac{12}{45}$ or $\frac{15+12}{45}$
		$\frac{9}{15}$		A1 dep on M1 for fraction equivalent to $\frac{9}{15}$ (but not $\frac{3}{5}$) produced directly from M1
				Total 4 marks

Question	Working	Answer	Mark	Notes
14	$1 - 0.3$ oe or 0.7 oe		3	M1 accept $100(\%) - 30(\%) = 70(\%)$
	"0.7" $\div 2$ oe			M1 dep accept $70(\%) \div 2$
		0.35		A1 for 0.35 or 35% or $\frac{35}{100}$ oe
				Total 3 marks

Question	Working	Answer	Mark	Notes
15	32×17 or 544 or $\pi \times 8^2$ oe or 200.9 – 201.602		3	M1
	$32 \times 17 - \pi \times 8^2$			M1 for the complete, correct method
		343		A1 for awrt 343
				Total 3 marks

Question	Working	Answer	Mark	Notes														
16	<table><tr><td>x</td><td>-2</td><td>-1</td><td>0</td><td>1</td><td>2</td><td>3</td></tr><tr><td>y</td><td>-10</td><td>-7</td><td>-4</td><td>-1</td><td>2</td><td>5</td></tr></table>	x	-2	-1	0	1	2	3	y	-10	-7	-4	-1	2	5	$y = 3x - 4$ drawn from $x = -2$ to $x = 3$	4	B4 For a correct line between $x = -2$ and $x = 3$
x	-2	-1	0	1	2	3												
y	-10	-7	-4	-1	2	5												
				B3 For a correct straight line segment through at least 3 of $(-2, -10)$ $(-1, -7)$ $(0, -4)$ $(1, -1)$ $(2, 2)$ $(3, 5)$ OR for all of $(-2, -10)$ $(-1, -7)$ $(0, -4)$ $(1, -1)$ $(2, 2)$ $(3, 5)$ plotted but not joined														
				B2 For at least 2 correct points plotted OR for a line drawn with a positive gradient through $(0, -4)$ and clear intention to use of a gradient of 3 (eg. a line through $(0, -4)$ and $(0.5, -1)$)														
				B1 For at least 2 correct points stated (may be in a table) OR for a line drawn with a positive gradient through $(0, -4)$ but not a line joining $(0, -4)$ and $(3, 0)$ OR a line with gradient 3														
				Total 4 marks														

Question	Working	Answer	Mark	Notes	
17 (a)		Enlargement	3	B1	These marks are independent but award no marks if the answer is not a single transformation
		(scale factor) 2		B1	
		(centre) (1, 3)		B1 condone missing brackets around (1, 3); do not accept $\begin{pmatrix} 1 \\ 3 \end{pmatrix}$	
(b)		Triangle at (9,2) (9,4) (8,2)	1	B1	
				Total 4 marks	

Question	Working	Answer	Mark	Notes	
18 (a) (i)		5, 15	2	B1	
(ii)		4, 5, 8, 10, 12, 15, 16		B1	
(b)		No ticked and 5 is a prime number (and a multiple of 5)	1	B1	oe explanation eg. 5 is in both sets
				Total 3 marks	

Question	Working	Answer	Mark	Notes	
19	$240 \times \frac{3}{3+4+8}$ or 48 or $240 \times \frac{8}{3+4+8}$ or 128		3	M1	M2 for
	"128" – "48"			M1 dep	$240 \times \frac{5}{3+4+8}$
		80		A1	
				Total 3 marks	

Question	Working	Answer	Mark	Notes
20	$3x - 5 + 3x + 4x + 2$ ($=10x - 3$)		4	M1 correct expression for perimeter (may be seen in an equation)
	$3x - 5 + 3x + 4x + 2 = 62$ or “ $10x - 3$ ” = 62			M1 dep
	eg. $10x - 3 = 62$			M1 (dep) correct method to collect x terms in a correct equation
		6.5 or $6\frac{1}{2}$		A1 dep on all method marks
				SC : B2 for $x = 6.5$ and $3 \times 6.5 - 5 + 3 \times 6.5 + 4 \times 6.5 + 2 = 62$ (B1 for a value for x substituted into correct expression for perimeter eg. $3 \times 6 - 5 + 3 \times 6 + 4 \times 6 + 2$)
				Total 4 marks

Question	Working	Answer	Mark	Notes
21		1, 8, 9	2	B2 B1 for 2, 8, 8 or 0, 8, 10 or for three numbers with a mean of 6 or a median of 8 or $6 \times 3 (=18)$
				Total 2 marks

Question	Working	Answer	Mark	Notes
22 (a)	$3x < 35 - 8$ or $3x < 27$		2	M1 allow $3x = 35 - 8$ or $3x = 27$ condone incorrect inequality sign
		$x < 9$		A1 for $x < 9$ or $9 > x$ NB: Final answer must be an inequality SC : B1 for $x \leq 9$ or $x = 9$ or 9 as an answer
(b)		$-2 < x \leq 4$ oe	2	B2 B1 for one end of inequality correct ie. $-2 < x$ or $x \leq 4$ OR $-2 \leq x < 4$ condone the use of a variable other than x but not O
				Total 4 marks

Question	Working	Answer	Mark	Notes
23 (a)		Angle between <u>tangent</u> and <u>radius</u> is 90^0	1	B1 Accept perpendicular or right angle for 90^0
(b)	angle $POT = 180 - 90 - 46 (=44)$ or $2y + 90 + 46 = 180$		3	M1 May be on diagram
	$(y =) "44" \div 2$ or $(180 - (180 - 44)) \div 2$ or $(y =) (180 - 90 - 46) \div 2$			M1
		22		A1
				Total 4 marks

