edexcel

Mark Scheme (Results)

Summer 2015

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

Edexcel and BTEC Qualifications

Edexcel and BTEC qualifications are awarded by Pearson, the UK's largest awarding body. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications websites at www.edexcel.com or www.btec.co.uk. Alternatively, you can get in touch with us using the details on our contact us page at www.edexcel.com/contactus.

Pearson: helping people progress, everywhere

Pearson aspires to be the world's leading learning company. Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your students at: www.pearson.com/uk

Summer 2015
Publications Code UG042069

General Marking Guidance

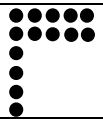
- All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.
- Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
- Examiners should 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
  - awrt –answer which rounds to

- **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)		Six thousand one hundred and thirty seven	1	B1
(b)		7485	1	B1
(c)		90	1	B1 Accept 10s, tens, 9 tens, ninety
(d)		6680	1	B1
(e)		Grease	1	B1 accept 3388
				Total 5 marks

2 (a)		Tues(day)	1	B1
(b)		4	1	B1
(c) (i)		Bars at heights 8cm and 6 cm	1	B1 "Correct" shading
(c) (ii)		4 : 3	1	B1
(d)	25/100 x 8 oe	2	2	M1 A1
				Total 6 marks

3 (a)		Kite	1	B1
(b)		52~56 mm inc.	1	B1
(c) (i)		(2,3)	1	B1
(ii)		(4,-2)	1	B1
(d)		Line of symmetry drawn	1	B1 for line drawn from (4, −2) to (4, 5) (may extend beyond these points)
(e)	2 x 0.5 x 7 x 2 oe or 0.5 x 4 x 2 + 0.5 x 4 x 5 oe	14	2	M1 or evidence of counting squares **or** correct area for any triangle A1 Alternative: Award B2 for 14 with no working if not B2 then B1 for 12 ≤ area ≤16
				Total 7 marks

4 (a)			1	B1
(b)	7 x 3 + 2	23	2	M1 A1
(c)	(41 – 2) ÷ 3	13	2	M1 A1
(d)		$T = 3n + 2$	3	B3 If not B3 then B2 for $3n + 2$ **or** $T = 3n + k$ (k may be zero) **or** $T = an + 2$ ($a \neq 0$) If not B2 then B1 for T = linear function in n or $3n$
				Total 8 marks

5 (a)		6	1	B1
(b)		12	1	B1
(c)	14 mm = 1.4 cm or 5cm = 50 mm and 8 cm = 80 mm 5 x 8 x "1.4" or ("50" × " 80" × 14) ÷ 1000 56		3	M1 M1 for 1.4 or 50 and 80 M1 accept 5 × 8 × 14 A1
				Total 5 marks

6	(78.24 × 6) (= 469.44) "469.44" + 100 – 520	49.44	3	M1 M1 dep A1
				Total 3 marks

7 (a)		Ottawa	1	B1
(b)	34 – –12	46	2	M1 A1 accept −46
(c)	– 16 – 7	– 23	2	M1 A1
				Total 5 marks

8 (a)	120/360 x 1800 oe	600	2	M1 A1
(b)	100/800 x 360	45	2	M1 A1
				Total 4 marks

9 (a) (i)		35	1	B1
(a) (ii)	Vertically opposite angles are equal		1	B1 accept "Vertically opposite" or "opposite angles"
(b)	*CDF* = 180 – 2 x 35 (=110) **or** *FDE* = 35 + 35 (=70) **or** *FDE*= 180 – 110 (=70) **or** *DEF* = 70		3	M1 could be marked on diagram
	(*y* =) 180 – 2 x 70			M1 a complete correct method
		40		A1
				Total 5 marks

10 (a)		$\frac{3}{4}$ $\frac{13}{16}$ $\frac{7}{8}$ $\frac{11}{12}$	2	B2 If not B2 then B1 for: • 3 fractions in correct order or • 2 fractions correctly converted to decimals (rounded or truncated) or • 2 fractions expressed as equivalent fractions with denominator of 48 or • $\frac{11}{12}$ $\frac{7}{8}$ $\frac{13}{16}$ $\frac{3}{4}$ (ie in reverse order)
(b)	$\frac{2}{5}\times\frac{7}{6}$ or $\frac{1}{5}\times\frac{7}{3}$	show	2	M1 or $\frac{14a}{35a}\div\frac{30a}{35a}$ ($a \geq 1$; denominators the same and a multiple of 35) A1 (dep on M1) for a fraction equivalent to $\frac{7}{15}$ coming directly from M1 or $\frac{7}{15}$ from a correctly cancelled fraction division
(c)	eg $\frac{2\times6}{5\times6}-\frac{1\times5}{6\times5}$	show	2	M1 for both fractions correct with a common denominator (a multiple of 30) A1 for $\frac{7}{30}$ from $\frac{12}{30}-\frac{5}{30}$ or any fraction equivalent to $\frac{7}{30}$ from a correct method
				Total 6 marks

11 (a)	**(2,1)** (2,2) (2,3) (2,4) (2,5) (**2,6**) (3,1) (3,2) **(3,3)** **(3,4)** (3,5) (3,6) (5,1) (5,2) (5,3) (5,4) (5,5) (5,6)		2	B2 All 12 correct If not B2 then B1 for 1 correct row
(b)		7/18	2	B2 If not B2 then B1 for: • x/18 where x is an integer greater than 0 and less than 18 or • 7/y where y is an integer and greater than 7
				Total 4 marks

12 (a)	85 × 98	8330	2	M1 A1
(b)	784 ÷ 98 x 60 oe	480	2	M1 A1
				Total 4 marks

13 (a) (i)		$4t^3$	1	B1
(ii)		$8x - 5y$	2	B2 B1 for $8x$ or $-5y$
(iii)		$7e^2$	1	B1 accept $e^2 7$ (no x signs)
(b)		$g(g + 4)$	2	Award B2 also for $(g \pm 0)(g + 4)$ oe B1 for factors which, when expanded and simplified, give two terms, one of which is correct except B0 for $(g + 2)(g - 2)$
				Total 6 marks

14	[2 × 0] + 12 × 1 + 15× 2 + 8 ×3 + 2 ×5 + 1× 8 (= 84) **or** [0] + 12 + 30 + 24 + 10 + 8		3	M1 (2 × 0) may be omitted; allow one error
	"84" ÷ 40			M1 dep NB. Products do not have to be evaluated
		2.1		A1
				Total 3 marks

15 (a)	360 ÷ 15 **or** $\frac{(n-2)180}{n} = 180 - 15$ oe		2	M1
		24		A1
(b)	3 × 180/5 or (180 – 360 ÷ 5) (=108)		3	M1 must be no contradiction on diagram or in working
	360 – 3 × "108"			M1 dep
		36		A1
	Alternative for (b): 360/5 (=72)			M1 must be no contradiction on diagram or in working
	(180 – "72"×2)			M1 dep
		36		A1
				Total 5 marks

16	56.25 ÷ 15		2	M1 M1 for 56.25 or 15
		3.75		A1 accept $\frac{15}{4}$, $3\frac{3}{4}$
				Total 2 marks

17 (a)		Reflection (in the line) $x = 2$	2	B1 for reflection, reflect, reflected B1 for $x = 2$ NB If more than one transformation then no marks can be awarded
(b)		Vertices at (1, –1) (4, –1) (4, –3) (3, –3)	2	B2 Shape in correct position If not B2 then B1 for correct orientation of R but wrong position **or** 3 out of 4 vertices correct
(c)		Vertices at (3, 2) (3, 4) (4, 4) (4, 3)	2	B2 If not B2 then B1 for shape of correct size and orientation **OR** a correct enlargement scale factor $-\frac{1}{2}$, centre (1, 3)
				Total 6 marks

18	6×165 (=990)			M1
	("990" – 155) ÷ 5		3	M1 dep condone missing brackets
		167		A1
				Total 3 marks

19	$5.4^2 + 12.8^2$ (=193)		3	M1
	$\sqrt{5.4^2 + 12.8^2}$ **or** $\sqrt{"193"}$ (=13.89244399)			M1 dep
		13.9		A1 awrt 13.9
				Total 3 marks

20 (a) (i)		$2^2 \times 5$	3	B1 for $2^2 \times 5$ oe or 20
(ii)		$2^3 \times 3 \times 5^2$		B2 for $2^3 \times 3 \times 5^2$ oe or 600 (B1 for any product using powers of 2 and 3 and 5 **or** at least 300, 600… **and** 40, 80, 120 …)
(b)	8 (= 2^n) **or** 2^3		2	M1 for one correct use of index laws eg. $8^5 \div 8^4$
		3		A1
				Total 5 marks

21 (i)			2	M1 for $0.5 \times 9 \times (8x + 4)$ oe or $7 \times (10 - x)$ oe (may be seen as part of an equation)
		eg. $9\ (8x + 4) = 28\ (10 - x)$		A1 for any correct equation
(ii)	$36x + 18 = 140 - 14x$		5	M1 Correct removal of either bracket in an equation (ft providing equation is of form $a(x + b) = c(x + d)$) **NB: This mark can be implied**
	$50x = 122$			M1 dep ft for getting to $mx = k$ oe
	$x = 2.44$ or $\frac{61}{25}$ oe			A1 ft (at least 3 sig figs or a fraction)
	$7 \times (10 - \text{“}2.44\text{”})$			M1 ft their value substituted (must be positive)
		52.92		A1 cao NB: Working for part (ii) may be seen in part (i)
				Total 7 marks

Pearson Education Limited. Registered company number 872828
with its registered office at 80 Strand, London, WC2R 0RL, United Kingdom