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Mark Scheme (Results)

January 2014

Pearson Edexcel International GCSE Mathematics A 4MA0/2FR

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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
  - awrt – anything 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.

Apart from Question 18, 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)		3, 7, 25 or 37	1	B1
(b)		18, 60 or 70	1	B1
(c)		25	1	B1
(d)		7	1	B1
(e)		60	1	B1
(f)		7, 18	1	B1 Any order.
				Total 6 marks

2. (a)		Kite	1	B1
(b)		single correct line	1	B1 Line drawn at $y = 3$ and no other line.
(c)		(6, 3)	1	B1 cao
(d)		Right-angle	1	B1 Accept "right".
				Total 4 marks

3. (a)		16 40	1	B1 Accept 16:40, 16.40 or 16,40 Ignore pm, if shown.
(b)		32	1	B1
(c)	17 + 1 = 18 <u>and</u> 12 + 56 = 68 or 17 + 2 = 19 <u>and</u> 12 – 4 = 8	19 08	2	M1 A1 Accept 19:08, 19.08 or 19,08 Ignore pm, if shown.
				Total 4 marks

4.	(a) (i)		25	1	B1
	(a) (ii)		100	1	B1
	(b)		12	1	B1
	(c)		6 triangles shaded	1	B1
	(d)	4/16	1/4	2	M1 Any fraction equivalent to 4/16 but not 1/4 A1
					Total 6 marks

5.	(a)		Orange	1	B1
	(b)		47	1	B1 Allow 45 to 49 inclusive.
	(c)	$\frac{90}{360}\times 60$ or $\frac{1}{4}\times 60$ or $60\div 4$ or $90\div 6$	15	2	M1 for $\frac{90}{360}$ or $\frac{1}{4}$ A1
	(d)	$\frac{10}{60}$	$\frac{1}{6}$ oe	1	B1 Allow decimal values which round or truncate to 0.16 or 0.17
					Total 5 marks

6.	(a)		41/100	1	B1 cao
	(b)		16	1	B1
	(c)		0.007	1	B1cao Ignore leading or trailing zeros.
					Total 3 marks

7.	(a)		11	1	B1
	(b)		6	1	B1
	(c)		9	1	B1
					Total 3 marks

8. (a)	16 kg = 16000 g or 250 g = 0.25 kg $\frac{16 \times 1000}{250}$ or $\frac{16}{250 \div 1000}$ or $\frac{16}{1/4}$ or 16 x 4	64	3	M1 M1 dep A1
(b)	$\frac{250}{100} \times 24$	60	3	M2 Award M1 for 2.5 oe or 0.24 oe A1
(c)	12 : 40	3 : 10	2	M1 A1 S.C. B1 for 10 : 3 or 1 : 3.3 recurring
				Total 8 marks

9. (a) (i)		18	1	B1 cao
(ii)		3	1	B1 cao
(b)	$(M) = (2 \times 10) - (4 \times 2)$ or $20 - 8$	12	2	M1 Correct substitution A1
(c)	$18 = 5c - 4 \times 3$ or $(c =) \frac{N + 4d}{5}$ oe $5c = 30$ or $(c =) \frac{18 + 4 \times 3}{5}$	6	3	M1 Correct substitution or rearrangement M1 A1 cao
				Total 7 marks

10. (a)	$10 - 4$	6	2	M1 accept "4 to 10" etc A1
(b)	4 6 6 6 7 8 9 9 10	7	2	M1 Numbers in ascending or descending order.
(c)	$4 + 6 + 4 + 7 + 8 + 6 + 7 + 7$ (= 49) or 9×6 (=54) $\frac{"49 + a"}{9} = 6$ oe or "54" – "49"	5	3	M1 M1 for $4 + 6 + 4 + 7 + 8 + a + 6 + 7 + 7 = 49 + a$ M1 A1
				Total 7 marks

11. (a) (i)		95	1	B1
(ii)		vertically opposite angles are equal	1	B1 Must have "vertically opposite" or "opposite angles" as a minimum
(b)		28	1	B1
(c)	$z =$ "28" + 36	64	2	M1 ft A1
				Total 5 marks

12. (a)		0.2	1	B1
(b)	200×0.8	160	2	M1 A1
				Total 3 marks

13.	$14 \div 4$ oe	3.5	2	M1 A1
				Total 2 marks

14. (a)		10	1	B1 Accept $\frac{1}{6}$ hour if units stated.
(b)	$1 \div 0.25$ oe	4	2	M1 Accept $1 \div 15$ (= 0.06 rec) A1
(c)	Line at 1.5 km from 0930 to 0940 Line from 1.5 km at 0940 to 0 km at 1010	correct line correct line	2	B1 B1 Accept line from 1.5 km at 09 30 to 0 km at 10 00
				Total 5 marks

15. (a) (i)		6	1	B1
(ii)		9	1	B1
(b)	$\frac{1}{2} \times 15 \times 20$ oe	150	2	M1 A1
(c)	$30 \times$ "150"	4500	2	M1ft A1ft
				Total 6 marks

16. (a)	Q: (0, −1), (2, 0), (2, −1)	Triangle in correct position	1	B1 Accept without label.
(b)	R: (0, 3), (0, 4), (-2, 4)	Triangle in correct position	2	B2 Accept without label. Award B1 for a reflection in $y = c$ ($c \neq 2$)
(c)		Enlargement (Scale factor) 3 (Centre) (−3 , 2)	3	B1 B1 B1
				Total 6 marks

17. (a)		64	1	B1 cao
(b)		3^5	1	B1 cao
(c)	$\frac{7^{14}}{7^6}$ or $\frac{7^9}{7^{(1)}}$ or $7^5 \times 7^3$	7^8	2	M1 A1
				Total 4 marks

18. (a)	$\frac{3\times4}{15}+\frac{5\times2}{15}$ or $\frac{12}{15}+\frac{10}{15}$ 22/15		2	M1 Any pair of correct fractions with a denominator a multiple of 15 A1 Dependent on first M1
(b)	$\frac{9}{4}\div\frac{7}{2}$ $\frac{9}{4}$ x $\frac{2}{7}$ oe 18/28		3	M1 May be implied by second M1 M1 A1 Award A1 for 9/14 if cancelling seen to have taken place.
(b)	Alt. method: $\frac{9}{4}\div\frac{7}{2}$ $\frac{9}{4}\div\frac{14}{4}$ 9/14		3	M1 May be implied by second M1 M1 Denominators must be the same. A1
				Total 5 marks

19.	(2 x 5) + (8 x 15) + (16 x 25) + (10 x 35) + (4 x 45) 1060		3	M2 freq x all correct midpoint values stated or evaluated {do not have to see intention to add} if not M2 then M1 for freq x consistent point in each interval (f x x = 860 or 1260 start & end points) or M1 for 1 error in list of 10, 120, 400, 350, 180 or M1 for 4 correct products stated A1 isw if 1060 calculated correctly
				Total 3 marks

20.	Circular arc, centre *B*, to intersect both lines *AB* and *BC* Equal length arcs, from intersections on each line, meeting to give a point on the bisector.	correct bisector	2	B1 B1	
					Total 2 marks

21. (a)		6, 0, −4	2	B2	Award B1 for any one correct.
(b)	(−1, 6), (2, 0), (4, −4)	correct line	2	M1ft A1	Plot any two points, from table with no ft errors, (dependent on at least B1 above). Straight line joining (−1, 6) to (4, −4)
(c)			2	M1 A1	Draw lines $x = -1$ and $y = 2$ Correct region identified (R need not be labelled). Accept shaded or unshaded.
					Total 6 marks

				Total : 100 marks

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