Mark Scheme (Results)

Summer 2015

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

Pearson Edexcel Level1/Level 2 Certificate Mathematics A (KMA0) Paper 1F

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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 –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.

For all questions, the correct answer, unless clearly obtained by an incorrect method, should be taken to imply a correct method.

		Working	Answer	Mark	Notes
1	(a)		98 384 483 498 530	1	B1
	(b)		483	1	B1
	(c)		530	1	B1
	(d)		432	1	B1 or ft from (a) accept −432
					Total 4 marks

2	(i)		evens	3	B1
	(ii)		unlikely		B1
	(iii)		impossible		B1
					Total 3 marks

3	(a)		4800	1	B1
	(b)		6000	1	B1 accept 6 thousand(s), 1000, thousand
					Total 2 marks

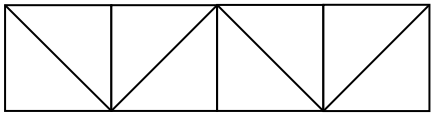
4	(a)		Radius	1	B1
	(b)		Sector	1	B1
	(c)	$\frac{60}{360}$		2	M1 oe
			$\frac{1}{6}$		A1
					Total 4 marks

5	(a)		(5, 1)	1	B1
	(b)		57	1	B1 55 - 59
	(c)	$\frac{1}{2}\times 4\times 4$		2	M1 or evidence of counting squares
			8		A1 SC If M0 then B1 for 6 ≤ area ≤10)
	(d)		*D* marked at (1,4)	1	B1
					Total 5 marks

6	(a)		35	1	B1
	(b)		−15	1	B1
	(c)		24	1	B1
	(d)			2	M1 for $5x + 20$ oe
			$y = 5x + 20$		A1 oe
					Total 5 marks

7	(a)	25 × 17.5(0) (= 437.5(0)) **or** 437 **or** 438		3	M1
		"437.5" ÷ 50 (= 8.75) **or** 50 × 9 **or** 50 × 8			M1 dep
			9		A1
	(b)	"9" × 50 – "437.50" oe **or** 50 – ("437.5" – 400) oe		2	M1 for a complete method ; only ft from an integer answer to (a)
			12.50		A1 ft providing answer is positive. Accept 12.5
					Total 5 marks

8	(a)		14	1	B1
	(b)		2	1	B1
	(c)	26 + 19 + 11 + 9 (at least 3 correct) **or** 14 + 12 + 12 + 7 + 4 + 7 + 4 + 5 (at least 6 correct)		2	M1
			65		A1
	(d)	$\frac{26}{"65"} \times 100$ oe		2	M1 ft from (a)
			40		A1 ft from (c) provided working seen (at least 2 sig figs)
					Total 6 marks

9	(a)		Correct drawing	1	B1
	(b)		17 21	1	B1
	(c)		29	1	B1
	(d)		37	1	B1
	(e)		10	1	B1
					Total 5 marks

10	Angle *ECB* = 70 **or** Angle *ECB* = 180 – 110 **or** Angle *CBE* = 72 **or** Angle *CBE* = 110 − 38 **or** Angle *CBE* = 180 − (70 + 38) **or** Angle *AFB* = 60 **or** Angle *FAB* = 60 **or** Angle *FBA* = 60		3	M1 for correct method to find any angle in diagram NB: Accept *A* in place of *FAB* ; accept *F* in place of *AFB*
	eg (Angle *FBE* =) 180 − 60 − 72			M1 for a complete correct method
		48		A1
				Total 3 marks

11 (a)	$8 \times 4 + 15$ oe		2	M1
		47		A1
(b)	(71−15) ÷ 8 **or** 7 × 8 + 15 (=71) oe		2	M1 condone missing brackets
		7		A1
				Total 4 marks

12	(a)	$4\times7-5\times4$ oe **or** 28 **or** −20		2	M1
			8		A1
	(b)	$100 = 4x - 110$ **or** 100 + 110 (=210)		2	M1
			52.5		A1 or $52\frac{1}{2}$
	(c)	$4 \times 6t - 5 \times 2t$ oe **or** $4 \times 6t$ oe **and** $(-)5 \times 2t$ oe		2	M1
			$14t$		A1 accept $14 \times t$
					Total 6 marks

13	(a)	100 – 48 (=52)		3	M1
		$\frac{"52"}{100}\times34$ (0.....) oe **or** digits 1768			M1 dep
			17.68		A1 accept 17 680 000 accept 18, 18 000 000, 17.7, 17 7000 000 if M2 awarded
		Alternative $\frac{48}{100}\times34$ (0.....) oe **or** digits 1632			M1 $\frac{48}{100}\times34$ (0.....)
		$34\,000\,000-"16\,320\,000"$ **or** 34 – 16.32			M1 dep
			17.68		A1 accept 17 680 000 accept 18, 18 000 000, 17.7, 17 7000 000 if M2 awarded
	(b)		$\frac{48}{100}$	1	B1 oe
	(c)		0.48	1	B1
					Total 5 marks

14 (a)		$10\frac{1}{2}$ hrs	2	B2 for $10\frac{1}{2}$ hrs **or** 10.5 hrs **or** 630 minutes **or** 10h 30 min oe (B1 for 'correct time' but units incorrect, partially correct or missing Eg. $10\frac{1}{2}$, 630, 10:30, 10:30 mins, 10.3, 10.3 hours)	
(b)	12 × 16 (= 192) **or** 16 × 1.852 (= 29.632) **or** 12 × 1.852 (= 22.224)		3	M1	M2 for 12 × 16 × 1.852
	192 × "1.852" **or** 12 × "29.632" **or** 16 × "22.224"			M1 dep	
		356		A1 answer in range 355 − 356	
					Total 5 marks

15	345 ÷ 200 (=1.725) **or** 345 × 100(=34500)		3	M1 for a correct units conversion (×100) **or** ÷200
	"1.725" × 100 **or** "34500" ÷ 200			M1 for a correct units conversion (×100) **and** ÷200
		172.5		A1 accept 173 if at least M1 awarded
				Total 3 marks

16	(a)	4 × 13 (=52) **or** $\frac{w+x+y+z}{4}=13$ **or** 4×13 – 33		2	M1
			19		A1
	(b)	$z-w=10$ **or** $w=9$ **or** w = "19" – 10 **or** $x+y$ = 33 − 9 = 24		2	M1 ft from (a) (can be implied by 9, x, y, 19 **OR** w, x, y, z with $x+y=24$)
			12		A1 cao
					Total 4 marks

17	(a)	15960 ÷ 5.7 × 4.6 **or** 15960 ÷ 5.7 (=2800)		2	M1		
			12880		A1		
	(b)	15960 × $\frac{7.5}{100}$ oe (= 1197)		3	M1	M2 for 0.925 × 5.7 (=5.27(25)) **AND** $\frac{5.27}{5.7}\times 15960$	M2 $15960\times\frac{92.5}{100}$ oe
		15960 − "1197"			M1 (dep)		
					NB. Accept 12880 or ans to (a) in place of 15960 for both method marks		
			14763		A1		
							Total 5 marks

18	(a)	1.5 × π **or** 2 × π × (1.5 ÷ 2)		2	M1
			4.71		A1 4.71 - 4.72
	(b)	1000 ÷ "4.71 "		2	M1 ft from (a) (accept use of rounded answer from (a) for method mark only)
			212		A1 ft from (a) provided working is shown (must round down to integer value)
					Total 4 marks

19	(a)	450 × 1.16 oe		2	M1	
			522		A1	
	(b)	850 ÷ 1.16 oe (= 732.76) **or** 732 – 733		3	M1	M1 for 3.50 × 1.16 (=4.06)
		"732.76" + 3.50			M1 (dep)	M1 (dep) for (850 + "4.06") ÷1.16 oe
			736.26		A1 Accept 736 – 736.3	
						Total 5 marks

20	(360−76 − 82−30) ÷2 = 86 **or** 225.5 ÷ 82 (=2.75) **or** 225.5 ÷ 82 × *a* where $a \neq 86$ **or** 225.5÷82 × (360 – 76 – 82 − 30) oe (=473)		3	M1 Accept digits 2255(000…) in place of 225.5 in both method marks
	225.5 ÷ 82 × "86" **or** 225.5 ÷ 22.7.. × 23.8… **or** digits 236… **or** "473" ÷ 2			M1(dep) for complete method (NB: 82 and 86 may be converted to percentage of 360 – and then these percentages used $\frac{82}{360} = 22.7..\%$ or 23% ; $\frac{86}{360} = 23.8..\%$ or 24%)
		236.5		A1 oe accept 236.5 million or 236 500 000
				Total 3 marks

21 (a)		k^9	1	B1
(b)		$20y^3$	2	B2 (B1 for $ny^3, n \neq 20$ **or** $20y^m$ $m \neq 3$)
				Total 3 marks

22	$(AB^2 =)\ 6.5^2 - 6.3^2$ (=2.56)		3	M1	**Alternative method :** M1 for finding a correct angle (A = 75.7…; C = 14.2…) **AND** a correct trig statement with a correct angle eg. $\sin 14.2 = \frac{AB}{6.5}$ M1 for making AB the subject eg. AB = 6.5sin14.2
	$(AB =)\sqrt{6.5^2 - 6.3^2}$ **or** $\sqrt{"2.56"}$			M1 dep	
		1.6		A1	NB. 1.6 as a rounded answer eg. from1.594… gains A0
					Total 3 marks

23	**NB: If it is clear that the surface area is being calculated then no marks can be awarded**			
	$\frac{1}{2}\times(12+22)\times(20-12)$ oe (=136)		5	M1
	12 × 12 (= 144)			M1
	"136" + "144" = 280			M1 dep on at least one previous M1 scored
	80 × "280"			M1 dep on previous M1
		22400		A1
	Alternative $\frac{1}{2}\times(12+22)\times(20-12)$ oe (=136)			M1 (may be seen within a volume calculation)
	12 × 12 (= 144)			M1(may be seen within a volume calculation)
	"136" × 80 = 10880 **or** "144" × 80 = 11520			M1 dep on at least one previous M1 scored
	"10880" + "11520"			M1 dep on previous M1
		22400		A1
	Special Case : Use of 10cm for height of trapezium AND 10cm for *AF*			B3 for answer of 23200
				If not B3 then B2 for 290 × 80 **or** $80\times(10\times12+\frac{1}{2}\times(22+12)\times10)$
				If not B2 then B1 for $10\times12+\frac{1}{2}\times(22+12)\times10$ (= 290) **or** $10\times12\times80$ **and** $\frac{1}{2}\times(22+12)\times10\times80$
				Total 5 marks

24	20 × 151 (= 3020) **or** 12 × 148 = (1776) **or** 4796		3	M1
	(“3020” + “1776”) ÷ (12 + 20) **or** (“3020” + “1776”) ÷ 32			M1 dep
		149.875		A1 for 149.875 rounded or truncated to 1 or more decimal places Accept 150 if M2 awarded
				Total 3 marks

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