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ASSESSMENT and QUALIFICATIONS ALLIANCE

General Certificate of Secondary Education

Mathematics 4307

Specification B

Module 3 Tier F 43053F

Mark Scheme

2009 examination - March series

Mark schemes are prepared by the Principal Examiner and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation meeting attended by all examiners and is the scheme which was used by them in this examination. The standardisation meeting ensures that the mark scheme covers the candidates' responses to questions and that every examiner understands and applies it in the same correct way. As preparation for the standardisation meeting each examiner analyses a number of candidates' scripts: alternative answers not already covered by the mark scheme are discussed at the meeting and legislated for. If, after this meeting, examiners encounter unusual answers which have not been discussed at the meeting they are required to refer these to the Principal Examiner.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of candidates' reactions to a particular paper. Assumptions about future mark schemes on the basis of one year's document should be avoided; whilst the guiding principles of assessment remain constant, details will change, depending on the content of a particular examination paper.

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The following abbreviations are used on the mark scheme:

M	Method marks awarded for a correct method.
A	Accuracy marks awarded when following on from a correct method. It is not necessary always to see the method. This can be implied.
B	Marks awarded independent of method.
M dep	A method mark which is dependent on a previous method mark being awarded.
ft	Follow through marks. Marks awarded for correct working following a mistake in an earlier step.
SC	Special Case. Marks awarded for a common misinterpretation which has some mathematical worth.
oe	Or equivalent.
eeoo	Each error or omission.

MODULE 3 FOUNDATION TIER 43053F

1(a)	10 000 000	B1	Any indication
1(b)	$\frac{1}{4}$	B1	Any indication
1(c)	Hundreds	B1	Any indication
1(d)	18	B1	Any indication
1(e)	16	B1	Any indication

2(a)	14.49 + 1.97	M1	oe eg 1449 + 197
	16.46	A1	1646 is M1A0
2(b)	10.94 – 9.99	M1	oe
	0.95	A1	95 is M1A0 95p is M1A1
2(c)	12.5(0) + 2.08 (= 14.58)	M1	
	their 16.46 + 10.94 + their 14.58	M1	
	41.98	A1	SC1 36.98
2(d)	$\frac{30}{100}$ × 12.5(0) (= 3.75)	M1	oe eg build-up
	their 3.75 + 12.5(0) (= 16.25)	M1 dep	Sight of 16.25 is M2 12.5(0) × 1.3 is M2
	10 + their 16.25 + 14.49 + 9.99 – their (c)	M1	
	8.75	A1	
	Alternate method		
	10 – (1.97 + their 0.95 + 2.08)	M1	Sight of 5
	$\frac{30}{100}$ × 12.5(0) (= 3.75)	M1	
	their 3.75 + their 5	M1 dep	
	8.75	A1	

3(a)	–2	B1	
3(b)	–20 – 15	M1	
	–35	A1	

4(a)	13.5(0) + 2 × 10.5(0)	M1	
	34.50	A1	34.5 is M1A0 3450 is M1A0
4(b)	75 – 13.5(0) (= 61.5(0))	M1	
	their 61.5(0) ÷ 10.5(0) (= 5.8… or 5.9)	M1 dep	or their 61.5(0) ÷ 6 (= 10.25)
	No (£1.50 short)	A1	No with no arithmetical errors seen
	Alternate method		
	13.5(0) + 6 × 10.5(0) or 13.5(0) + 5 × 10.5(0)	M1	(= 76.5(0) or 66)
	76.5(0)	A1	
	No	A1 ft	ft only from 6 × 10.5(0)
	Alternate method 2		
	their 34.5(0) + 4 × 10.5(0) or their 34.5(0) + 3 × 10.5(0)	M1	
	76.5(0)	A1 ft	ft only from 4 × 10.5(0)
	No	A1 ft	ft only from 4 × 10.5(0)

5	Correct order with at least one correct conversion and no incorrect conversions	B3	B0 No correct conversions 5 min 25 sec = 325 sec = $5\frac{25}{60}$ min 525 sec = 8 min (45 s) = 8.(75) min 5.25 min = 5 min 15 sec = 315 sec
	Incorrect order and correctly converts two of the times to the form of the third	B2	
	Correct order with at least one correct conversion and at least one incorrect conversion or Incorrect order with at least one correct conversion	B1	

6(a)	35 ÷ 7	M1		
	5	A1	5:35 is M1A0	
6(b)	2000 – 800 (= 1200)	M1	$\frac{2000}{800}$ (= 2.5)	Accept 250 for M1
	$\frac{\text{their } 1200}{800} \times 100$	M1 dep	their 2.5 × 100 – 100 or their 250 – 100	(their 2.5 – 1) × 100
	150	A1		

7(a)	667	B1	
7(b)(i)	1	B1	
7(b)(ii)	2	B1	

8(a)	4 digit number ending in 6	B1	Must use 9, 3 and 7
8(b)	7639	B1	
8(c)(i)	67	B1	
8(c)(ii)	96	B1	
8(c)(iii)	96(7) – 3	B1	
8(d)	8542	B2	B1 for largest number from any four digits of 0, 1, 2, 4, 5, 8 (not 8542)

9(a)	13	B1	
9(b)	Attempt at 364 × 9 and 364 × 70	M1	Answer to 364 × 70 must end in zero. 3276 and 25480 if correct
	their 3276 + their 25480	M1 dep	
	28756	A1	
	Alternate method		
	Grid method with at least 3 correct	M1	Napier with at least 3 correct
	Adds their 6 values	M1 dep	Adds diagonally
	28756	A1	

10(a)	9	B1	
10(b)	13.5	B1	oe
10(c)	1.9	B1	oe
10(d)	–2	B1	

11(a)	5.1 to 5.3 inclusive	B1	
11(b)	2.26 to 2.28 inclusive	B1	

12(a)	Any 2 of 300, 60 and 20	B1	
	A correct calculation seen eg $\frac{18000}{20}$	B1 dep	
12(b)	$\frac{5}{100} \times 945$	M1	oe
	47.25 or 47.2 or 47.3 or 47	A1	
	45 is less than 47.25	A1	oe eg 900 + 47.25 = 947.25 or 945 – 47.25 = 897.75
	Alternate method		
	$\frac{45}{945} \times 100$	M1	
	$\frac{100}{21}$	A1	
	$\frac{100}{21}$ is less than 5	A1	

13(a)	32	B1	
13(b)	0820	B1	oe Accept 0818
13(c)	Shortest stop in Doncaster or Does not stop at Meadowhall	B1	oe eg Has fewer stops Does not go to Meadowhall Meadowhall train doesn't run at that time It was a faster train

14	36 000 – 3600	M1	oe $\frac{90}{100} \times 36\,000$
	32 400	A1	
	44 000	B1	
	their 44 000 + their 32 400	M1 dep	dep on either M1 or B1 awarded
	76 400 and yes	A1 ft	75 000 implied but if seen must be correct

15(a)	$\frac{3}{7} \times \frac{1}{8}$	M1	
	$\frac{3}{56}$	A1	
15(b)	Either $\frac{7}{2}$ or $\frac{13}{7}$ seen	M1	(2) $\frac{7}{14}$ (–) $\frac{12}{14}$
	their $\frac{49}{14}$ (–) $\frac{26}{14}$	M1	Common denominator with at least one numerator correct $2 - \frac{5}{14}$ or $1\frac{21}{14}$ (–) $\frac{12}{14}$
	$\frac{23}{14}$	A1	$1\frac{9}{14}$ oe No decimals