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ASSESSMENT and QUALIFICATIONS ALLIANCE

General Certificate of Secondary Education

Mathematics 3302
Specification B

Module 5 Paper 2 Tier F 33005F2

Mark Scheme

2006 examination – June 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.

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 5 Paper 2 FOUNDATION TIER 33005/F2

General: Penalise incorrect notation in 4(a) and 8 once only

1	Rectangle	B1	
	Pentagon	B1	
	Equilateral triangle	B1	
	Rhombus	B1	

2(a)	Mid-point indicated at (4, 2)	B1	±2 mm Letter M not necessary for mark
2(b)	(4, 2)	B1 ft	
2(c)	Correct line through P	B1	Check whether the line, if produced, would go within 2 mm of (5, 4) and (9, 2) Line must be ≥ 3 cm long

3(a)	24	B1	SC1: List of multiples of 8 including 24 and 32
	32	B1	
3(b)	3	B1	SC1: List of factors of 45 including 3 and 15
	15	B1	
3(c)	36	B1	
			Deduct one mark for each error or addition throughout Q3

4(a)	2 × 75 + 140	M1	Ignore mix of units for M mark
	2.90	A1	Not 2.9
4(b)	515 – 140 (= 375)	M1	or 5.15 – 1.40 (= 3.75)
	their 375 ÷ 75	M1 dep	or their 3.75 ÷ 0.75 Ignore mix of units for M mark
	5	A1	
			M2 for complete build-up method even if numerical errors

5(a)	Correct reflection (±2 mm)	B2	B1 for correct shape and orientation (accept freehand)
5(b)	Two correct lines/1 vertical line only	B2	B1 for one correct line, provided no extra, incorrect line seen (accept freehand) Deduct one mark for each incorrect line Min length of vertical line must be height of H

6(a)	11	B1	
6(b)	15	B1	
6(c)	At least 3 correct plots	B1	
	All 4 correct plots + line	B1	Accept freehand
6(d)	$2\frac{1}{2} + 2 \neq 5\frac{1}{2}$	B1	or $5\frac{1}{2} - 2 \neq 2\frac{1}{2}$ Second number not 2 bigger First number not 2 smaller $2\frac{1}{2}$ goes with $4\frac{1}{2}$ $5\frac{1}{2}$ goes with $3\frac{1}{2}$

7(a)	180 – 126	M1	
	54	A1	
7(b)	360 – 122 – 138	M1	oe
	100	A1	
7(c)	107	B1	

8	$\frac{36}{100} \times 420$	M1	0.36 × 420 or **full** 10%, 10%, 10%, 5%, 1% method
	151.20	A1	**not** 151.2 (check notation has not been penalised in 4(a)) Ignore subsequent working such as 420 – 151.20 Answer £268.8(0) with no working SC1

9(a)	7	B1	Allow embedded answers unless contradicted on answer line In (c)(d) final A1 is lost
9(b)	11	B1	
9(c)	$4z = 9 + 1$ or $4z = 10$	M1	
	2.5 or $2\frac{1}{2}$ or $\frac{5}{2}$	A1	
9(d)	$3t + 2t\ (5t) = 19 - 4\ (15)$	M1	or $-2t - 3t\ (-5t) = 4 - 19\ (-15)$ Allow one sign error
	$5t = 15$	A1	or $-15 = -5t$
	3	A1	See above

10(a)	70° at P or 50° at Q	B1	±2°
	Both angles within tolerance and triangle drawn with ruler	B1	SC1 for 50 at P and 70 at Q if otherwise correct Letter R on triangle not required
10(b)	7	B1 dep	±5 mm dep on both B1s above

11(a)	13.69	B1	
11(b)	0.625	B1	
11(c)	15.4	B1	
11(d) (i)	0.2192273(13...)	B1	
11(d) (ii)	0.22	B1 ft	ft must come from min 3 dp in (d)(i)

12	A	B1	or p + q
	C	B1	or 3p

13	$\frac{5}{8}$ or $\frac{8}{5}$ seen	B1	or 5 miles = 8 km oe
	$17 \times \frac{5}{8}$ (= 10.625) or $11 \times \frac{8}{5}$ (= 17.6)	M1	oe but do not allow 0.63, 0.6, 0.62 for $\frac{5}{8}$
	10.625 or 17.6 **and** Jon	A1	No working = no marks
	Alternative method		
	5 miles = 8 km B1		
	10 miles = 16 km and 1 mile > 1 km M1		
	11 miles > 17 km and Jan A1		

14	26.7 ÷ π	M1	Later ÷2 does **not** lose this M1
	8.5	A1	Allow 8.49 to 8.51

15	21.5 × 17.2 (= 369.8)	M1	
	21.5 – 4 – 4 (= 13.5)	M1	or 17.2 – 4 – 4 (= 9.2)
	their 13.5 × their 9.2 (= 124.2)	M1 dep	dep on M1 in line 2
	their 369.8 – their 124.2	M1 dep	dep on all 3 previous M1s
	245.6	A1	or 246 SC2: Answer 138.8 or 139
	Alternative build up method		
	21.5 × 4 (= 86)	M1	or 17.2 × 4 (= 68.8)
	17.2 – 4 – 4 (= 9.2)	M1	or 21.5 – 4 – 4 (= 13.5)
	their 9.2 × 4 (= 36.8)	M1 dep	or their 13.5 × 4 (= 54) dep on M1 in line 2
	2 × their 86 + 2 × their 36.8	M1	or 2 × their 68.8 + 2 × their 54 dep on all 3 previous M1s
	245.6	A1	or 246
	Another build-up method		
	4 × 4 (= 16)	M1	
	17.2 – 4 – 4 (= 9.2)	M1	or 21.5 – 4 – 4 (= 13.5)
	their 9.2 × 4 (= 36.8)	M1 dep	or their 13.5 × 4 (= 54) dep on M1 in line 2
	2 × their 36.8 + 2 × their 54 + 4 × their 16	M1	dep on all 3 previous M1s
	245.6	A1	or 246