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General Certificate of Secondary Education

Mathematics 4307

Specification B

Module 5 Paper 1 Tier F 43055/1F

Final

Mark Scheme

2010 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.

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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.
E	Marks awarded for an explanation.
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.

MODULE 5 FOUNDATION TIER 43055/1F

1(a)	All five points plotted correctly	B2	B1 for three or four points plotted correctly $\pm \frac{1}{2}$ square Do not accept reverse coordinates
1(b)	Their points joined to form a pentagon	B1 ft	Must be five points joined Condone freehand
1(c)	(Irregular) Pentagon	B1	Do not accept polygon

2(a)	(Arrow) indicating (+)5	B1	Need not be labelled Ignore labels reversed
2(b)	(Arrow) indicating –6	B1	Need not be labelled Ignore labels reversed

3	49 125 4 10 36 30	B4	B4 for 6 boxes correct B3 for 4 boxes or 5 boxes correct B2 for 2 boxes or 3 boxes correct B1 for 1 box correct

4(a)	Radius drawn	B1	Do not accept a sector drawn
	Arc drawn	B1	
4(b)	Sector	B1	Do not accept section
	Chord	B1	

5(a)	Straight line drawn ruled [8.3 cm, 8.5 cm]	B1	
5(b)(i)	Correct angle 142.5	B1	$\pm 2\frac{1}{2}$ [140, 145]
5(b)(ii)	Valid explanation with 360 used	B1	eg 360 – other angle Subtract from 360 Follow through their angle but not from 180 Accept calculation if shown eg 360 – 140 = 220 Do not accept 220 on its own

6(a)	72	B1	
6(b)	17	B1	
6(c)	One correct number machine	B1	eg × 1 – –2 × 2 – 7 Must use operations given
	Another correct number machine	B1	eg + 13 ÷ 2 + 24 ÷ 3 Must use operations given

7(a)(i)	[1.9, 2.2] (×6) or incorrect length ×6	M1	oe adding 6 equal lengths
	[11.4, 13.2]	A1	
7(a)(ii)	All 6 lines of symmetry drawn	B2	Need not be ruled B1 for 3, 4 or 5 correct lines drawn and none incorrect B1 for 6 correct with no more than 2 incorrect
7(b)	360 ÷ 3	M1	180 – (360 ÷ 6) 720 ÷ 6 4 × 180 ÷ 6
	120	A1	

8(a)	20 160	B1 B1	
8(b)(i)	15	B1	
8(b)(ii)	No **and** valid explanation	B1	eg half a positive number is always positive Gets smaller but never less than zero

9(a)	Fully correct net	B2	B2 for outline of net only B1 for correct net of cuboid (all 6 faces) B1 for correct net but incorrect size B1 for exactly 5 correct sized faces that would form an open box
9(b)	their 6 × their (2 × 2)	M1	
	24	A1 ft	ft their cube net 5 or 6 faces

10(a)	$V = \frac{1}{3}\ Ah$ or $V = \frac{1}{3} \times Ah$ or $V = \frac{1}{3}\ lwh$	B2	oe B1 for partial use of words eg $V =$ One third Ah (Volume =) $\frac{1}{3}\ Ah$
10(b)	$(w =)\ \frac{A}{l}$	B1	Accept $A \div l$

11	$3x = 12$ or $4x = 16$	M1	oe
	$x = 4$	A1	
	$2x + 2y = 10$ or $2x + 3y = 11$ or $2x + 3y + z = 16$ or $x + 2y + z = 11$	M1	oe
	$y = 1$	A1	
	$z = 5$	A1	3 correct answers implies 5 marks 2 correct answers implies M1 A1 M1 A1 1 correct answer implies M1 A1

12(a)	$\frac{1}{2} \times 10 - 3 \times 2$ or $\frac{1}{2}(10) - 3(2)$ or $5 - 6$	M1	oe
	-1	A1	
12(b)	0	B1	

13(a)	10^3	B1	
13(b)	$10^{(1)}\ \ 10^3\ \ 10^5\ \ 10^7$	B2	B1 for 2 or 3 correct $10^0\ \ 10^2\ \ 10^4\ \ 10^6$ SC1 $10^{(1)}\ \ 10^2\ \ 10^4\ \ 10^6$ SC1
13(c)	1 000 000 000 or 10^9	B1 ft	oe Accept 1 billion 1 thousand million ft only if last three terms are $10^2\ \ 10^4\ \ 10^6$

14(a)	2	B1	
14(b)	$\left(\frac{x}{3} =\right) 9 - 5$ or 4	M1	$x + 15 = 27$
	12	A1	

15(a)	10×5 or 10×10 or 5×5	M1	oe 10×20 or $(2 \times) 50$ or 20×20 or $(4 \times) 5 \times 5$
	$50 \times 4 + 100$ or $6 \times 5 \times 10$	M1 dep	$10 \times 20 + 2 \times 50$ or $20 \times 20 - 4 \times 5 \times 5$
	300	A1	If misread of 5, 2.5, SC2 for 75 SC1 for equivalent of the first M1
	cm^2	B1	Units mark
15(b)	$4 \times 10 + 8 \times 5$	M1	oe 4×20
	80	A1	If misread in (a) 40 $\Rightarrow$ M1 A1
15(c)	Valid explanation	B1	eg not all sides on outside of shape Perimeter = $40 \times 4 + 20$ (= 180) and 4×80 is not equal to 180

16(a)	Enlargement drawn Scale Factor 2 or 5×4	M1	
	20	A1	
16(b)	90º rotation	M1	Allow correct rotation with 1 extra square or 1 missing square on long side only
	90º rotation clockwise full shape	A1	
	Correct centre of rotation for their diagram	B1 ft	ft any rotation Correct with top square missing implies M1 A0 B1

17	6×5 or 6×20 or 5×20	M1	oe 30, 120, 100 Allow $\frac{1}{2} \times 6 \times 5 \times 20$ or 300
	$6 \times 5 \times 20$	M1 dep	
	600	A1	

18	Semi-circle (centre *P*)	B1	Accept sketch
	Radius 8 metres	B1	Diameter = 16 m Condone cm