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General Certificate of Secondary Education
June 2012

Mathematics 43603F

Foundation

Unit 3

Final

Mark Scheme

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UMS conversion calculator www.aqa.org.uk/umsconversion

The following abbreviations are used on the mark scheme:

M	Method marks awarded for a correct method.
M dep	A method mark which is dependent on a previous method mark being awarded.
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.
Q	Marks awarded for Quality of Written Communication
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.
[*a*, *b*]	Accept values between a and b inclusive.

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1a	(2, 6)	B1	
1b	Point plotted at 5 across and 3 up	B1	
2a	Reflection	B1	
2b	Rotation	B1	
2c	Translation	B1	
2d	Reflection	B1	
3a	$\frac{10}{50}$ or $\frac{2}{10}$ or $\frac{4}{20}$ or $\frac{5}{25}$ or $\frac{6}{30}$ or $\frac{8}{40}$	B1	
	$\frac{1}{5}$	B1 ft	ft their fraction correctly simplified
3b	$\frac{60}{100}$ (× 50) or 5 × 6 or 60% = $\frac{3}{5}$ seen or implied or 10% = 5 (squares)	M1	oe
	30	A1	20 more squares shaded on grid
	20	A1	SC2 for 4 × 5 or 4 columns
4a	[6.6, 6.8]	B1	If cm deleted accept [66 mm, 68 mm]
4b	Cross halfway between C and D	B1	
5a	Scalene	B1	
5b	Obtuse	B1	

6a	2.4 × 3.8	M1	
	9.12 or 9.1	A1	

6b	10 × 14 (= 140) or 14 ÷ 12.5 (= 1.12)	M1	1.5 left over per load or 10 × 12.5 (=125) oe
	their 140 ÷ 12.5 or their 1.12 × 10 or 11.2	M1 dep	11.2 implies M2 15 tonnes left over (140 implied) or 10 + 1 or 11 × 12.5 = 137.5 and 140 seen (2.5 tonnes left over)
	11	A1 ft	ft only if 2nd method mark not awarded SC1 for rounding down if no method marks have been awarded

7a	12	B1	
	cm^2	B1	

7b	(×) 2	B1	Do not accept ‘double’ or ‘twice as big’

8a	[66, 70]	B1	

8b	[46, 50]	B1	

8c	56 × 19 or 1100 ÷ 19 or 1100 ÷ 56	M1	
	1064 or 57.89… or 19.6(…)	A1	Accept 1060, 58, 57.9, 57.8, 57, 20
	No	Q1 ft	Strand (iii) Correct conclusion from their clear working Dependent on M1

9	Correct net – all 6 faces	B3	Accept outline of net Ignore tabs B2 for 5 correct faces B1 for four 4 × 2 rectangles in a correct position or two 2 × 2 squares in a correct position

10	Any indication that all sides equal 5.2	M1	eg 5 × 5.2 5.2 labelled on one sloped side of shape
	26	A1	

11a	120 ÷ 8	M1	
	15	A1	

11b	8 + 12 or 20 seen	M1	Any one pair from 16, 24, (40) 24, 36 (60) 32, 48, (80) 40, 60 (100)
	120 ÷ their 20	M1	48, 72 (120)
	6	A1	

11c	6000 (g) seen	B1	1000 grams = 1 kg seen or implied 0.12(0) seen
	their 6000 ÷ 120	M1	6 ÷ their 0.12(0) 6 ÷ 120 × 1000 scores B1 M1
	50	A1 ft	SC1 for answer digit 5, eg 5 or 500 if no working shown

11d	120 ÷ 1.99 **and** 100 ÷ 1.59 oe	M1	1.99 ÷ 120 **and** 1.59 ÷ 100 oe Must be a consistent pair
	60.(3…) **and** 62.(8…)	A1	0.016… **and** 0.015…
	Choose 100 (grams) Use of a consistent pair and correct choice for their answer	Q1 ft	Unsupported 100 chosen scores M0A0Q0 Strand (iii) dep on M1 scored only
	Alternative method		
	5 × 1.99 **and** 6 × 1.59	M1	Comparing cost of 600 g
	9.95 **and** 9.54	A1	
	Choose 100 (grams) Use of a consistent common multiple or factor of 100 and 120 and correct choice for their answer	Q1 ft	Unsupported 100 chosen scores M0A0Q0 Strand (iii) dep on M1 scored only

12a	(0)55 ± 2°	B1	

12b	their 55 + 180	M1	
	235	A1 ft	SC1 If reflex angle is given in (a) eg 235, allow subtraction of 180 eg 235 – 180 = 55

12c	Valid reason	B1	eg 180 + 180 = 360 (so cannot be greater than 180) 190 + 180 = 370 (impossible) max possible 360 180 × 2 = 360

13a	360 – (145 + 136) or 360 – 281	M1	oe Brackets needed
	79	A1	

13b	360 – (2y + 3y) or 5y seen	M1	oe Brackets needed or 360 – 2y – 3y
	360 – 5y	A1	Ignore further working

14	$3x + 4x + 5x$ (= 48)	M1	3 + 4 + 5 or one trial evaluated correctly eg $3 \times 2 + 4 \times 2 + 5 \times 2 = 24$
	$3x + 4x + 5x = 48$ or $12x = 48$	M1	48 ÷ (3 + 4 + 5) or 48 ÷ 12 or a different trial evaluated correctly $3 \times 3 + 4 \times 3 + 5 \times 3 = 36$
	(x =) 4	A1	
	20	A1 ft	ft 5 × their 4 ft is dependent on both method marks

15	Any combination of 5 or 4 seen or implied or 34 – 2 or 32 seen or 34 – 10 or 24 seen	M1	eg 4 + 4 … 5 + 5 5 + 4 … 14, 18, … 9, 13, …
	(34 – 2) ÷ 4 or (34 – 2 × 5) ÷ 4 (= 6)	M1 dep	oe 5 + 4 + 4 + 4 + 4 + 4 + 4 + 5 or 14, 18, 22, 26, 30, 34 or 9, 13, 17, 21, 25, 29, 34
	8	A1	

16	$\pi \times 6^2$	M1	
	113.(…) or 36π	A1	

17	(AB^2 =) $9^2 + 7^2$ (= 130)	M1	
	$\sqrt{9^2 + 7^2}$ or $\sqrt{\text{their } 130}$	M1 dep	
	11.4(…)	A1	

18a	–4, –3 and 5 All three in correct position in table	B2	B1 one correct in correct position

18b	Their seven points plotted correctly	B2 ft	$\pm\frac{1}{2}$ square B1 for 5 or 6 points correct
	Six or seven points joined by smooth curve	B1 ft	Must be a U shape

18c	Line drawn at $y = 2$	B1	

18d	(x =) –2.45	B1 ft	ft their graphs $\pm\frac{1}{2}$ square Accept [–2.6, –2.3] Accept $-\sqrt{6}$
	(x =) 2.45	B1 ft	ft their graphs $\pm\frac{1}{2}$ square Accept [2.3, 2.6] Accept $\sqrt{6}$ Note: if coordinates are given, mark the x coordinates only Award B1 B0 if both are correct.

19	$w + 40 = 72$	M1	May be on diagram
	(w =) 32 seen	A1	
	$2w = 64$ or $2w = 2 \times$ their 32 or third angle = 72	M1	or $2w + t + 72 = 180$ oe
	180 – 72 – 64 or 180 – 72 – their 32 × 2	M1	oe 108 – 64
	44	A1	

20	Three numbers that add up to 52 or 4 × any length or states there are 4 lengths, 4 widths and 4 heights	M1	eg 32, 12, 8
	The three numbers each divided by 4 or 52 ÷ 4 (= 13) or Three dimensions with total [12.7, 13.3]	M1 dep	eg 32 ÷ 4, 12 ÷ 4, 8 ÷ 4
	Three dimensions with a total of 13 cm (all different)	A1	eg 8, 3, 2