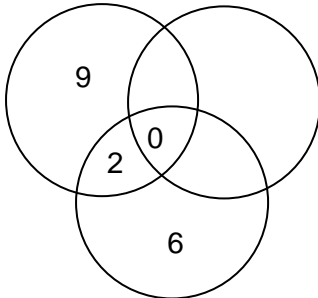


MATHEMATICS 2nd SAMs 2017 Unit 2 (Calculator allowed) Intermediate Tier		Mark	MARK SCHEME Comments (Page 1)
1.(a)	32	B1	Still only B1 if both given (with no incorrect value(s)).
(b)	27	B1	
(c)	34	B1	
(d)	29 or 31	B1	
		4	
2.(a)	$7g - 2f$	B2	Must be in an expression for B2. B1 for sight of $7g$ or $-2f$.
(b)	10	B2	B1 for $-6 + 16$.
(c)	0 and -1	B2	B1 for 0.
		6	
3.(a) (i)	$\frac{1}{80}$	B1	
(ii)	$\frac{1}{2}$	B1	
(b)	7 red 4 green 1 black	B1	
		3	
4.(a)	0.38×15.6 or equivalent $= 5.928$ (ISW)	M1 A1	Unsupported 5.9 or 5.92 or 5.93 is M1A0.
(b)	$\frac{52}{80} \times 100$ $= 65(\%)$	M1 A1	
		4	
5. Unambiguous sketch (i.e. rectangles identified) OR Unambiguous description of possible layout.	Correct use of 'Area = length \times width' (Uncovered area $=$) $9 \times 9 - 8 \times 4 - 7 \times 2$ $= 35(\text{cm}^2)$ Organisation and communication Accuracy of writing	E1 B1 M1 A1 OC1 W1 6	Allow E1 if intent clear. May be penalised on OCW if poorly expressed. On any one of the three given shapes.
6. $(6 \times 0) + 5 \times 1 + 11 \times 3$ $\div 22$ $= 1.73$		M1 m1 A2 4	For attempt at $\sum fx$. or sight of 38. A1 for 1.72(.....)
7.	A (11, -1) B (21, 9) C (21, 1)	B2 B2 B2 6	B1 for each ordinate. B1 for each ordinate. B1 for each ordinate. FT 'their 21'. Accept answers on the diagram.
8.	Use of 'Speed = Distance \div Time' (Average speed $=$) $\frac{80}{2.5}$ $= 32(\text{mph})$	M1 m1 A1 3	Allow M1 for $80 / 2(\text{hr})$ 30(min) or $80 / 2.3$ CAO

MATHEMATICS 2 nd SAMs 2017 Unit 2 (Calculator allowed) Intermediate Tier		Mark	MARK SCHEME Comments (Page 2)																														
9.(a)	Correct rotation	B2	B1 for clockwise rotation.																														
(b)	Correct enlargement with scale factor 2	B2	B1 for correctly sized rectangle in incorrect position OR consistent use of wrong scale factor OR 2 correct vertices																														
(c)	(i) Correct translation	B1																															
	(ii) $\begin{pmatrix} -5 \\ 2 \end{pmatrix}$	B1																															
		6																															
10.	Correct construction of 60°.	B2	With sight of accurate 'method arcs'. B1 for sight of 'method arcs' but not drawn accurately.																														
	Correct construction of 90°.	B2	With sight of accurate 'method arcs'. B1 for sight of 'method arcs' but not drawn accurately.																														
	Correct bisector of 90°.	B1	With sight of accurate 'method arcs'. FT 'their 90°' Penalise –1 if angles drawn at incorrect positions or if triangle not completed.																														
		5																															
11.	TRUE TRUE FALSE FALSE	B2	B1 for 3 correct.																														
		2																															
12.	One correct evaluation $2 \leq x \leq 3$ 2 correct evaluations $2.65 \leq x \leq 2.85$, one < 0, one > 0. 2 correct evaluations $2.65 \leq x \leq 2.75$, one < 0, one > 0. (x ⇒) 2.7	B1 B1 M1 A1	<i>Correct evaluation regarded as enough to identify if negative or positive. If evaluations not seen accept 'too high' or 'too low'.</i> <table><tr><td>x</td><td>$x^3 - 6x - 4$</td></tr><tr><td>2</td><td>-8</td></tr><tr><td>2.1</td><td>-7.339</td></tr><tr><td>2.2</td><td>-6.552</td></tr><tr><td>2.3</td><td>-5.633</td></tr><tr><td>2.4</td><td>-4.576</td></tr><tr><td>2.5</td><td>-3.375</td></tr><tr><td>2.55</td><td>-2.718...</td></tr><tr><td>2.6</td><td>-2.024</td></tr><tr><td>2.65</td><td>-1.290...</td></tr><tr><td>2.7</td><td>-0.517</td></tr><tr><td>2.75</td><td>0.296...</td></tr><tr><td>2.8</td><td>1.152</td></tr><tr><td>2.9</td><td>2.989</td></tr><tr><td>3</td><td>5</td></tr></table>	x	$x^3 - 6x - 4$	2	-8	2.1	-7.339	2.2	-6.552	2.3	-5.633	2.4	-4.576	2.5	-3.375	2.55	-2.718...	2.6	-2.024	2.65	-1.290...	2.7	-0.517	2.75	0.296...	2.8	1.152	2.9	2.989	3	5
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MATHEMATICS 2nd SAMs 2017 Unit 2 (Calculator allowed) Intermediate Tier	Mark	MARK SCHEME Comments (Page 3)
<p>13.(a)</p>  <p>2 in correct position. 6 in correct position. 9 in correct position.</p> <p>(b) 6</p> <p>(c) (i) $\frac{17}{45}$</p>	<p>B1 B1 B1</p> <p>B1</p> <p>B2</p> <p>6</p>	<p>FT 8 – ‘their 2’. FT 17 – ‘their 2’ – ‘their 6’.</p> <p>FT ‘their total’ for planning. B1 for a correct numerator only in a fraction <1. B1 for a denominator of 45 in a fraction <1.</p>
<p>14. Correct statement of Pythagoras’ Theorem $PR^2 = 18 \cdot 4^2 - 12 \cdot 5^2$ $= 182 \cdot 31$ $(PR =) 13 \cdot 5(\text{cm})$</p>	<p>M1 A1 A1</p> <p>3</p>	<p>Also M1 for $18 \cdot 4^2 = PR^2 + 12 \cdot 5^2$. Or for sight of $\sqrt{182 \cdot 31}$</p>
<p>15. Sight of $2a + 3c = (\pounds)71.5(0)$ AND $3a + 4c = (\pounds)101$ or equivalent Correct method to eliminate one variable. First variable found $a = (\pounds)17$ or $c = (\pounds)12.5(0)$ Substitute to find 2nd variable Second variable found $c = (\pounds)12.5(0)$ or $a = (\pounds)17$ (4 adults and 2 children pay) £93</p>	<p>B1</p> <p>M1</p> <p>A1 M1 A1</p> <p>A1</p> <p>6</p>	<p>Accept their choice of variables for a and c.</p> <p>FT ‘their equations’ if of equivalent difficulty. Allow 1 error in one term, not one with equal coefficients.</p> <p>FT ‘their 1st variable’.</p> <p>FT their values if both M marks gained. ‘£’ required.</p>
<p>16.(a) $(x - 7)(x + 3)$ $x = 7$ AND $x = -3$</p> <p>(b) $\frac{2x - 14 + 2x + 5}{(8)} = \frac{4}{(8)}$ or equivalent. $4x - 9 = 4$ or equivalent. $x = \frac{13}{4}$ or $3 \frac{1}{4}$ or equivalent.</p>	<p>B2 B1</p> <p>B2</p> <p>B1 B1</p> <p>7</p>	<p>B1 for $(x \dots 7)(x \dots 3)$. Strict FT from their brackets.</p> <p>B1 for 1 error. FT until 2nd error.</p> <p>Mark final answer.</p>
<p>17. $\hat{D}AC = 36(^{\circ})$ Angles in the same segment are equal. $DC = 5 \cdot 1 \times \tan 36$ Angle subtended at the circumference by a semicircle is $90(^{\circ})$. $DC = 3 \cdot 7(\dots)(\text{cm})$</p>	<p>B1 E1 M1 E1</p> <p>A1</p> <p>5</p>	<p>May be seen on diagram. Accept unambiguous statement of this fact. Accept $DC / 5 \cdot 1 = \tan 36$. Accept unambiguous statement of this fact.</p>