MATHEMATICS 2nd SAMs 2017 Unit 1 (Non-calculator) Intermediate Tier	Mark	MARK SCHEME Comments (Page 1)
1(a) x + 58 + 90 = 180 OR x = 90 - 58 or equivalent. (x =) 32(°) (b) ($A\hat{C}B$ =) $\frac{180 - 34}{2}$ = 73(°) ($A\hat{C}D$ =) 107(°)	M1 A1 M1 A1 B1 5	FT 180 – 'their 73' or 34 + 'their 73'.
2(a) 20% (b) 3·24 (c) $\frac{1}{2}$	B1 B1 B1 3	
3. Attempt at a sample space or equivalent. H, even OR H2, H4 and H6 identified. (Probability =) 3/12 or equivalent. Statement that Sian is not correct and / or 3/12 ≠ 1/2	S1 B1 B1 B1 4	*Alternative method.* *P(H) =1/2 OR P(Ev) =1/2 B1* *Use of P(H) × P(Ev) FT S1* *Sight of ¼ B1* *Statement that Sian is not correct and / or 1/4 ≠ 1/2 B1*
4(a) Sketch of a rectangle with perimeter = 16m e.g. 6m by 2m, 7m by 1m, ……	B2	Allow giving two adjacent sides only. B1 if units of length not shown. B0 for sides of 5m and 3m. Accept a square of 4m by 4m.
(b) Sight of 5 × 3 OR 10 × 6 15(m^2) AND 60(m^2) AND 'No'.	B1 B1 4	Allow all marks if they use their rectangle from (a). Accept an argument that 2 × length and 2 × width will lead to 4 × area (2l × 2w = 4lw = 4A)
5. ¼ × 120 OR 0·2 × 120 OR 0·2 × 0·25 = 30 = 24 = 0·05 0·2 × 30 ¼ × 24 120 × 0·05 = 6 = 6 = 6	M1 A1 M1 A1 4	 FT 'their previous answer'. An answer of 6% is awarded M1A1M1A0. *Alternative solution: 0·2 × 0·25 × 120 M2* *= 6 A2*
6(a) (x =) 32 (b) (x =) $\frac{1}{2}$ or equivalent (e.g. 7/14) (c) $9x - 2x = 39 - 4$ $7x = 35$ $x = 5$	B1 B1 B1 B1 B1 5	 Mark final answer (e.g. x = 7/14 = 2 is B0) FT until 2nd error.
7(a) x = 3 AND y = 9 (b)(i) Sight of 11 – 4 AND 35/5 AND numbers written in order with 7 in the middle AND 7 for each value. (ii) FALSE TRUE TRUE TRUE	B2 B3 B2 7	B1 if reversed. If no marks gained allow B1 for $x + y$ =12 or for $y - x$ = 6. B2 for 11 – 4 OR 35/5 OR numbers in order seen AND 7 for each value B1 for unsupported answer of 7 for each value. All four correct. B1 for 3 correct.

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8. (Area of *ABCD* =) $\frac{(4+6)}{2} \times 3$ $= 15(cm^2)$ (Area of *ADE* =) $\frac{4 \times AE}{2}$ $\frac{4 \times AE}{2} = 15$ $AE = 7{\cdot}5(cm)$ Organisation and communication Accuracy of writing	M1 A1 B1 M1 A1 OC1 W1 7	 FT 'their derived 15'.
9. (a) $1 - (0{\cdot}5 + 0{\cdot}18 + 0{\cdot}27)$ $= 0{\cdot}05$ (b) $0{\cdot}18 + 0{\cdot}27$ $= 0{\cdot}45$ (c) $0{\cdot}5 \times 0{\cdot}18$ $= 0{\cdot}09$	M1 A1 M1 A1 M1 A1 6	Accept equivalent answers (percentages or fractions) throughout.
10. (a) - 6 (b) Six correct plots. Curve drawn (c) Correct values <u>from their graph</u>. (d) Correct coordinates <u>from their graph</u>. (e) 'The scale on the *y*-axis'.	B1 B1 B1 B1 B2 B1 7	 FT 'their (2,-6)'. FT 'their plots'. Minimum must be at (a, b) with 0<a<1 and b<-11. Answers should be $-1{\cdot}3$ and $2{\cdot}6$, but readings must from their graph. B1 for each. Should be (0·67, -11·3), but readings must from their <u>curved</u> graph. Accept unambiguous wording.
11(a) False AND a counter example given. (b) True AND a statement that refers to both '$(odd)^2$ being odd' AND 'odd × odd being odd'.	E1 E2 3	 Accept any equivalent intention to refer to both facts OR a single statement to cover both. E1 for reference to one of the two facts.
12. Use of $\frac{(2n-4)}{n} \times 90°$ OR $180° - \frac{360°}{n}$ Pentagon: 108(°) Hexagon: 120(°) Isosceles triangle: $180 - 2 \times 69$ $= 42(°)$ (Angle sum =) 90(°) + 108(°) + 120(°) + 42(°) $= 360(°)$	M1 A1 A1 M1 A1 B1 6	Used with n = 5 OR n = 6. Sight of either 108 or 120 implies M1.
13(a) 2 (b) $y = -2$ (c) (3, 7)	B1 B1 B1 3	

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14(a). $4{\cdot}5 \times 10^{6}$	B2	B1 for $0{\cdot}45 \times 10^{7}$ or 4 500 000.
(b) $1{\cdot}35 \times 10^{-4}$	B2	B1 for $13{\cdot}5 \times 10^{-5}$ or (0)·000135
	4	
15(a) $0{\cdot}4 \times x = 0{\cdot}12$	M1	
$x = 0{\cdot}3$	A1	
0·6 on correct branch ('Snowdon – No')	B1	
0·3, 0·7, 0·3 and 0·7 on correct branches.	B1	FT consistent pairing for 'their 0·3' but not for use of 0·6 and 0·4. B0 if 0·5 used on all four branches.
(b) $0{\cdot}6 \times 0{\cdot}7$	M1	FT 'their values'.
$= 0{\cdot}42$	A1	
	6	
16(a) $8 - x = 3(5 - x)$ or $8 - x = 15 - 3x$	B1	FT until 2nd error.
$2x = 7$	B1	
$x = 3½$ or 7/2	B1	Mark final answer.
(b) $2a(3a - 4b)$	B2	B1 for $2a(3a - \ldots..)$ or $2a(\ldots. - 4b)$ B1 for $2(3a^2 - 4ab)$ or $a(6a - 8b)$
(c) $(3x - 4)^3$	B1	Do not accept with missing brackets.
	6	