

No	Working	Answer	Mk	Notes
1a	6.2 ± 0.1 or a length x 5	194 ± 2 ⁰	2	B2 (+ 5 ⁰ : B1)
b		31 ± 0.5 km	2	M1 A1
c		Correct pos'n ± 1mm	2	B2 (either 135 or 90 ± 2 ⁰ : B1)
2a	100 or √ seen	17, 26	2	B1B1
b		10	2	M1 A1
3a	2/3 x 5 or 10/3	3 ¹ / ₃	2	M1 Allow 0.666... x 5
bi	9/12 and 10/12 or 19/12 or 45/12 and 34/12 or 79/12	12	1	A1 B1
bii		6 ⁷ / ₁₂	2	M1 or 18/24 and 20/24, or 38/24 etc or 6 ¹⁴ / ₂₄
4		2775 – 2500 <u>275</u> x 100 2500	OR 2775/2500 111-100	3
5a	60/260	3/13	2	M1 A1
b	60 x 195/260 oe or her 3/13 x 195	45 44.8 to 45.1	2	M1 A1f Follow her grad or %
6a		Correct line x = 3 OR y = 4 drawn	1	B1 thro' ≥ 3 pts ± 2mm
b		Correct region clear	4	B1 B3 B1 x+y ≥ 4 B1 x ≤ 3 OR y < 4 B1 if correct region <u>clear</u> . fit his (a) and/or his x = 3 & y = 4 so long as vert & horiz pair
7a	sin40 ⁰ = OT / 6 OT = 6sin40 ⁰ cos36 ⁰ = his 3.86 / OQ OQ = (his 3.86) / cos36	Tangent, radius	1	B1
b		3.86 cm	3	M1 M1 A1 or better
c		4.77 or 4.8 cm	3	M1 M1 A1f or betters

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8ai		16	1	B1
aii	Attempt find 12 th or 13 th student's age	17.5	2	M1 A1
aiii	\square fx attempted (= 415) / 24	17.3 or better	3	M1 M1dep A1 17, no wking, M0M0A0 17, correct wking, M1M1A1
bi,ii		18 > old mean Increase	2	B1 B1
9a	v/h attempted			M1
b		2	2	A1
c		$y = 2x - 1$	2	B2 2x: B1 -1: B1; omit "y =": -B1
		$y = 2x + c, c \neq 1$	1	B1 incl $y = 2x$
10a		Mars	1	B1
b	$4.5 \times 10^9 / 1.5 \times 10^8$ or inverted or 30 or $1/30$ seen	1:30	2	M1 A1
11ai		$A \cap B'$ shaded	1	B1
aii		Eg 5, 10, 20	1	B1 No fit from diag
bi		Shape, wholly within A & overlapping B	1	B1
bii		Eg 15, 45, 75	1	B1 SC1: aii 30,15,45 & bii 30,60,90
12ai		55^0		B1
aii	<s in same seg		2	B1 or equiv, eg both stand on DC
bi		85^0		B1
bii	Opp <s of cyc quad		3	B1 or $BDC = 40$, <s in same seg
c	$180 - (40 + 55)$	No. DCB (or DAC) $\neq 90^0$	1	B1

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13a		4/9 or 5/9 seen Correct structure 4/9 or 5/9 correctly placed once All correct		B1 B1 With labels correct or omitted B1 B1
b	$4/9 \times 5/9 + 5/9 \times 4/9$	40/81 or 0.49.... oe	4 3	M2 (M1 for one product) A1f ft his tree if p's <1
14a	0.006×3^3	0.162	2	M1 A1 M1
b	$\frac{3240}{\text{her } 0.162}$ or 20 000 seen 0.2×3^2 or 1.8 seen her 20 000 x her 1.8 x 1.2	\$43 200	4	M1 M1 Dep both M1s scored A1
15	$\frac{-2 \pm \sqrt{4 - (-72)}}{6}$ oe	1.12, -1.79 or better	3	M1 A1,A1
16a		$(2x-1)(x+3)$	2	B2 (Signs interchanged, B1)
b	$\frac{(x+3)(x-3)}{(x-6)(x-3)}$	$\frac{x+3}{x-6}$	3	M1 (Num.) M1 (Denom.) A1
17ai		$2x - 4$		B1 M1
aii	his $2x - 4 = 0$	$x = 2$ $(2,-3)$ Coeff of x^2 +ve or shape is "U" oe	4	A1f Follow her linear y' A1f Follow her x
b		Min oe	2	B1 or any correct method B1dep B1
c	$x = \text{constant}$	$x = 2$	2	M1 A1
18	$\frac{1}{3} \square r^2 h = 12 \square$ $r^2 = \frac{36}{h}$	$r = \frac{6}{\sqrt{h}}$ oe	3	M1 $\frac{1}{3} \square r^2 h = 12$ M0 M1 $r^2 = \frac{36}{\square h}$ M1 A1

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19	7^2 or 49 seen	$7\sqrt{2}$	2	M1 A1
20ai	$3/10 \times 2/9$	$1/15$ or 0.066(66..) oe	2	M1 A1
ii	1 – her $1/15$	$14/15$ oe	2	M1 A1f
b	$4/12 \times 3/11 \times 8/10$	$4/55$ or 0.072(72..) oe	2	M1 A1