Questions		Working	Answer	Mark	Notes
1			3, 6, 6, 7.5	2	B2 all four correct (B1 for two correct)
2		$360° \div 20° =$	18	2	M1 $360 \div 20$ A1 cao
3			$14G + 121$	2	B2 cao (B1 for $14G$)
4		$3.142 \times 20.9 = 65.6678$ (65.6-65.7) $65.6678 \div 2 = 32.8339$ (32.8 - 32.9) $32.8339 + 20.9 =$	53.7	4	M1 for 3.142×20.9 or $\pi \times 20.9$ or $3.142 \times 20.9/2$ or $\pi \times 20.7/2$ or 65.7 seen A1 for 32.8-32.9 seen for arc length B1 ft (indep) for "32.8" + 20.9 or 53.7-53.8 A1 for rounding to 53.7 NB: allow use of 3.14, 22/7 instead of 3.142
5	(a)	$6^2 + 4.5^2 = 56.25$ $\sqrt{56.25} = 7.5$	7.5	2	M1 for $6^2 + 4.5^2$ A1 cao
	(b)	$6 \times 4.5 \div 2 = 13.5$ 13.5×10	135	3	M1 for $6 \times 4.5 \div 2$ M1 (dep) for 13.5 A1 cao
6			$3x^5y^5$	2	B2 cao (B1 for $3x^?y^5$ or $3x^5y^?$ where ? is not 5)
7			3.2	4	B2 for a trial between 3.1 and 3.5 incl (B1 for a trial between 3 and 4 incl) B1 for a trial between 3.2 and 3.3 excl B1 for 3.2 (dep on at least B1)
8			2nd, 6th, 7th	3	B3 (B1 for each, −1 each extra)

Questions		Working	Answer	Mark	Notes
9	(a)	84 × 92.5 =	£77.70	3	M2 84 × 92.5 (M1 for 84 – (84 × 7.5/100) A1 cao
	(b)	12 000 × 0.75 = 9000 9000 × 0.75 = 6750 6750 × 0.75 = 5062.5	£5062.50	3	M1 for 12 000 × 0.75 or sight of 9000 M1 for continued use of 0.75 (at least one further step) A1 cao
	(c)	0.8 × 0.8 × 0.8 × 0.8	0.4096	2	M1 0.8 × 0.8 × 0.8 × 0.8 or 0.8^4 A1 cao
10	(a)	18 × (63/81) =	14	2	M1 63/81 or 81/63 or 1.2857.. or 0.7777.. A1 cao
	(b)	Cosine Rule: $70^2 = 18^2 + 81^2 - 2 \times 18 \times 81 \times \cos A$	47.1°	3	M1 $70^2 = 18^2 + 81^2 - 2 \times 18 \times 81 \times \cos A$ M1 either cos A = $\dfrac{18^2 + 81^2 - 70^2}{2 \times 18 \times 81}$ or $70^2 = 6885 - 2916 \cos A$ A1 cao
11		D, C, E, F, A, B	DCEFAB	3	B3 cao (B2 for 4 correct B1 for 2 correct)
12		$5x - 3x \leq 14 - 7$ $2x \leq 7$	$x \leq 3.5$	2	M1 for $5x - 3x \leq 14 - 7$ o.e. A1 for $x \leq 3.5$ o.e.
13		18.85 ÷ 3.6	5.23611111	2	B1 for 18.85 as numerator or 3.6 as denominator B1 5.23611 or better
14			$n = 3$ $p = 37$ 111	2 1	B1 for n cao B1 for p cao B1 cao
15		$(2 + \sqrt{5})(2 + \sqrt{5}) = 4 + 2\sqrt{5} + 2\sqrt{5} + 5$	$9 + 4\sqrt{5}$	2	M1 for $4 + 2\sqrt{5} + 2\sqrt{5} + 5$ or better A1 cao (accept $a = 9, b = 4$)

Questions	Working	Answer	Mark	Notes
16 **(a)**	Total time = $\dfrac{D_1}{V_1} + \dfrac{D_2}{V_2}$ = $\dfrac{20}{x} + \dfrac{20}{x-2}$ So $\dfrac{20}{x} + \dfrac{20}{x-2} = 4$		2	M1 any two of $\dfrac{20}{x}$, $\dfrac{20}{x-2}$, $=4$ A1 cao
(b)	$20(x-2) + 20x = 4x(x-2)$ $20x - 40 + 20x = 4x^2 - 8x$ $4x^2 - 48x + 40 = 0$ $x^2 - 12x + 10 = 0$		2	M1 Correct removal of denominators A1 Convincing algebra throughout .
(c)	$\dfrac{-(-12) \pm \sqrt{(12^2 - 4.1.10)}}{2}$ $\dfrac{12 \pm \sqrt{104}}{2}$ $x = 11.099$ or 0.90098	11.1, 0.9	3	M1 correct substitution A2 11.1 and 0.9 (A1 one answer)
(d)			1	B1: Substitution of 0.9 into the speed for the return home $(x - 2)$ would give a negative value
17	Height s.f. = $20 \div 12 = \dfrac{5}{3}$ Vol s.f. = $\left(\dfrac{5}{3}\right)^3$ $V = 162 \times \left(\dfrac{5}{3}\right)^3$	750	3	B1 for volume s.f. M1 for vol s.f. $\times$ 162 A1 cao