

No	Working	Answer	Mark	Notes
1	14.44 – 8.660254038	5.77974(....)	2	M1 for 14.44 seen or 8.66(.....) seen or 5.7 or 5.8 or better, rounded or truncated A1 cao B1 ft
2	15 ÷ 24	6 62.5	1 2	M1 for 15 ÷ 24 or 1500 ÷ 24 or sight of digits 625 A1 cao
3	2.10 × 450	945	2	M1 for digits 210 × 450 or sight of digits 945 A1 cao
	63 ÷ 2.10	30	2	M1 for 63 ÷ digits 210 A1 cao
4	See diagram	$2(y + y)$ $2y + 2y$	2	B1 for $2(y + y)$ B1 for $2y + 2y$ (Deduct B1 for each additional tick (>2) to min 0)
5	$360^\circ \div 18 (=20)$ Sector angles: G= 60; S= 80; B=220; Correct sectors labelled correctly Use angle measurer	Angles drawn, labelled	4	B4 for fully correct and labelled pie chart (B3 for all angles correct or for a labelled pie chart with two angles correct) (B2 for labelled pie chart with one correct angle drawn) (B1 for $360 \div 18$ or 20 seen or implied)
6		Correct plane Correct net	2 2	B2 for a correct plane defined by showing at least 2 lines. (B1 for a line of symmetry on one face) B2 cao (B1 for 2 equilateral triangles joined appropriately to at least one rectangle or for 1 equilateral triangle joined appropriately to one of the three rectangles)
		Correct drawing	2	B1 for two extra sides of length 6 cm ($\pm 2\text{mm}$) B1 for construction arcs 6cm from each of the ends of the given line
7	$61 - 19 = 42$ $42 \div 3 = 14$	14	2	M1 for -19 or 42 seen or $3x + 19$ A1 cao

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8		15 15	1 1 2	B1 cao for 15(± 1) B1 cao for 15(± 0.4) B1 horiz. line from (2,20) to (3,20) B1 line from (3,20) to (5,0) or horiz. translation of it SC: B1 for any journey ending at (5,0)
9	$x+4+x+x+4+x$	$4x+8$	2	M1 for attempting to add $x+4, x, x+4, x$ may be implied by $4x+a, a>0$ A1 for $4x+8$ or $4(x+2)$
	$4x+8=54$ $4x=46$ $x=11.5$ Length = "11.5" + 4	15.5	3	M1 for "4x + 8" = 54 A1 cao for 11.5 seen B1 ft for "11.5" + 4
10	$0.4 + 0.15$ $1 - 0.55$	0.45	2	M1 for 1 – sum A1 for 0.45 oe SC: B1 for 0.81
11	$\pi \times 2.45$	3:1 7.7	1 2	B1 cao M1 for $\pi \times 2.45$ (accept π as 3.1 or better) A1 for 7.59 to 7.70
12	7×10000	70000	2	M1 for 7×10000 or $7 \times 100 \times 100$ A1 cao
13	$5.40 \div 3 \times 7$	12.60	3	M1 for $5.40 \div 3$ or sight of 1.8 M1 (dep) for "1.80" $\times 7$ A1 for 12.6 or equivalent

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14	$7.60 \times \frac{17.5}{100} = 1.33$ $7.60 + 1.33 = 8.93$ $1650 \times "8.93"$	£14734.50	4	<p>M1 for $7.60 \times \frac{17.5}{100}$ or 1.33 seen or 7.60×1.175 (oe)</p> <p>(Award M1 for 10%, 5% and 2½% correctly calculated) A1 for 8.93 or 893 M1 for $1650 \times "8.93"$ or digits 147345 seen A1 cao Accept 14734.5 OR M1 for 1650×7.6 or 12540 seen M1 for "12540" $\times \frac{17.5}{100}$ or 2194.5 seen or "12540" $\times 1.175$ (oe) (Award M1 for 10%, 5%, and 2½% correctly calculated) M1 for "12540" + "2194.5" (dep on both previous M marks) or digits 147345 seen A1 cao accept 14734.5</p>

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15	$285 \times 1000 / (60 \times 60) = 79.1\bar{6}$		3	M2 for $285 \times 1000 \div 60 \div 60 \div 60$ or $80 \times 60 \times 60 \div 1000$ or for a correct method to obtain two comparable values e.g $80 \times 60 \times 60$ and 285×1000 (M1 for $285 \div 60 \div 60$ or $0.079(\dots)$ seen or $80 \times 60 \times 60$ or 288000 seen or for 285×1000 or 285000 seen or $80 \div 1000$ or 0.08 seen) A1 for 288 or 79.(...) or for two correctly calculated comparable values e.g 288000 and 285000
16	(a) $4x + 12 = 6$ $4x = -6$	-1.5	3	B1 for $4x + 12$ or $x + 3 = \frac{6}{4}$ M1 for a correct re-arrangement of their 3 terms to isolate $4x$ or x A1 for -1.5 oe
	(b) $v - u = 5t$	$\frac{v - u}{5}$	2	M1 for isolating $\pm 5t$ or $\pm t$ or for dividing through by 5 A1 oe

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17	<p>3→15 4→48 3.1→17.3(91) 3.2→19.9(68) 3.3→22.7(37) 3.4→25.7(04) 3.5→28.8(75) 3.4→25.7(04) 3.3→22.7(37) 3.35→24.1(95375)</p>	3.3	4	<p>B2 for trial between 3.3 and 3.4 inclusive (B1 for trial between 3 and 4 inclusive) B1 for different trial between 3.3 and 3.4 exclusive B1 (dep on at least one previous B1) for 3.3 NB trials should be evaluated to at least 1 dp truncated or rounded</p>
18 (a)	<p>$36 \div (7+3+2)$ “3” × 7</p>	21	3	<p>M1 for $36 \div (7+3+2)$ M1 (dep) for “3” × 7 or 3 or 2 A1 cao</p>
(b)	<p>$51.5 \times \frac{8.5}{100} = 4.3775$ $51.5 - 4.3775 = 47.1225$</p>	47 or 47.1 or 47.12	4	<p>M1 for $51.5 \times \frac{8.5}{100}$ or $4.37(75)$ seen M1 (dep) for $51.5 - “4.37(75)”$ A1 for 47 or better B1 (indep) for rounding their answer correctly to the nearest whole number or 1 or 2 d.p OR M1 for $51.5 \times \frac{100 - 8.5}{100}$ M1 for $51.5 \times “0.915”$ or $0.515 \times “91.5”$ A1 for 47 or better B1 (indep) for rounding their answer correct to the nearest whole number or 1 or 2 d.p</p>

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19 (a)		Angle in a semicircle	1	B1 oe
(b)	$12^2 + 16^2 = 400$ $\sqrt{400} = 20$	20	3	M1 for $12^2 + 16^2$ M1 for $\sqrt{144 + 256}$ A1 cao
(c)	$\pi \times 10^2$	314	3	M1 for $\pi \times \left(\frac{20}{2}\right)^2$ M1 (indep) for correct order of evaluation of $\pi \times r^2$ for any r A1 for 314 – 315 inclusive

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20 (a)	$(1 \times 10) + (3 \times 15) + (5 \times 30) + (7 \times 35) +$ $(9 \times 25) + (11 \times 5) = 730$ “730” $\div 120 = 6.08333$	6.08	4	M1 for use of fx with x consistent within intervals (including end points) M1 (dep) for use of midpoints M1 (dep on 1 st M1) for use of $\frac{\sum fx}{\sum f}$ A1 6.08 to 6.085
(b)		(10), 25, 55, 90, 115, 120	1	B1 for all correct
(c)		graph	2	B1 ft for 5 or 6 points plotted correctly ± 1 full (2mm) square at the end of interval dep on sensible table (condone 1 addition error) B1(dep) for points joined by curve or line segments provided no gradient is negative – ignore any part of graph outside range of their points. (SC: B1 if 5 or 6 points plotted not at end but consistent within each interval and joined)

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20	(d)	72–74	2	M1 (ft dep on graph being cf) for reading from graph at 7 A1 ft ± 1 full (2 mm) square Or B2 for 72 – 74
21	(a) (b) (c) (d)	a^7 $15x^3y^4$ $x - 1$ $(x + 3)(x - 3)$	1 2 1 1	B1 accept a^{4+3} B2 cao (B1 for two of $15, x^3, y^4$ in a product) B1 cao B1 cao
22	$80\% = 220$ $220 \div 80 \times 100$	275	3	M1 for recognising that 80% is equivalent to 220 M1 for $220 \div 80 \times 100$ oe A1 cao

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23		$x = 3$ $y = 0.5$	3	M1 for coefficients of x or y the same followed by correct operation, condone one arithmetical error M1 (dep) for substituting found value in one equation A1 cao SC: B1 for one correct answer only if M's not awarded
24		1.4×10^{10}	2	B2 for 1.4×10^{10} or 1.44×10^{10} (B1 for 14.4×10^9 or $14400,000,000$ or $14000,000,000$ or 14×10^9)
25 (a)	$\tan x = \frac{1.9}{3.2}$ $x = \tan^{-1} \left(\frac{1.9}{3.2} \right) = 30.7$	30.7	3	M1 for $\tan x = \frac{1.9}{3.2}$ or $\tan \frac{1.9}{3.2}$ M1 for $\tan^{-1} \left(\frac{1.9}{3.2} \right)$ A1 for $30.6 - 30.7$
(b)	$90 + "30.7"$	121	1	B1 (indep) ft for $90 + "30.7"$ rounded to 3 or 4 s.f

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26	$SF = \frac{12}{9}$ $\frac{12}{9} \times 6 = 8$	2	2	M1 for $\frac{12}{9}$ or $\frac{9}{12}$ or 1.33... seen or 0.75 seen or 8 seen or $\frac{6}{9}$ or $\frac{9}{6}$ or 0.66... or 1.5 or $\frac{1}{3}$ or 3 or seen A1 cao