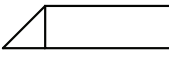
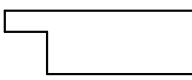


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No	Working	Answer	Mark	Notes
1	(a) Accurate drawing of triangle		2	B1 cao for $38^\circ (\pm 2^\circ)$ B1 cao (indep) for BC drawn 7.3 cm (± 2 mm) and completing the triangle.
	(b) Measure angle A	63°	1	B1 for $63^\circ (\pm 2^\circ)$ or ft their diagram ($\pm 2^\circ$)
2	(a) $0 \times 1 = 0$ $1 \times 1 = 1$ $2 \times 4 = 8$ $3 \times 8 = 24$ $4 \times 8 = 32$ $5 \times 7 = 35$	100	3	M1 col 1 \times col 2 (at least 3 shown) could be implied by answers. M1 (dep) sum of totals A1 cao SC: M1 M1 A0 for 101
	(b) Either $\$35.50 \div 1.42 = \text{£}25$; $\text{£}26.99 - \text{£}25 = \text{£}1.99$ Cheaper in the USA Or $\text{£}26.99 \times 1.42 = \38.33 ; $\$38.33 - \$35.50 = \$2.83$ Cheaper in the USA		3	M1 $35.50 \div 1.42$ A1 25 seen B1 ft (dep on M1) $\text{£}1.99$ with conclusion; units needed OR: M1 26.99×1.42 A1 38.33 or 38.32...seen B1 ft (dep on M1) $\$2.83$ or $\$2.82$ with conclusion; units needed
3	(a)	-1, (1), (3), 5, 7, 9	2	B2 cao (B1 for 2 values)
	(b)	Graph	2	B1 ft for plotting points $\pm 1/2$ square B1 cao for line between $x = -2$ and $x = 3$
	(c)(i) (ii)	0.4 1.2	2	B1 0.4 or ft single straight line with positive gradient B1 1.2 or ft single straight line with positive gradient

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No	Working	Answer	Mark	Notes
4	(a)		2	B1 Rectangle drawn B1 Triangle attached Ignore additional internal lines; 3D sketch gets B0
	(b)		2	B1 single Rectangle drawn B1 Attached smaller rectangle drawn Accept rotated plan, Ignore internal lines down; Nets get B0
5	(a)	8	3	M1 163.25 - £35.50 = £127.75 £127.75 ÷ £18.25 = 7
	(b)	75.20	2	M1 163.25 – £35.50 (or sight of £127.75) M1 (dep) “127.75” ÷ 18.25 A1 cao SC: M2 for 7 days
	(c)	128.52	2	M1 1.175 × 64.00 0.175 × 64 oe or 11.20 or 75.2 seen OR 6.40, 3.20, and 1.60 seen A1 cao M1 54 × £2.38 A1 cao
6	Tessellation	Drawing	2	B2 seven additional hexagons, with at least 2 points at which 3 hexagons meet (B1 one point at which 3 hexagons meet).
7		200 150 225 150 10	3	B3 cao (B2 for three correct, or B1 for one correct)
8	(a)(i)	70	2	B1 70 ± 4
	(ii)	317	2	B1 317 ± 4
	(b)	Locus (circle) drawn & shaded	2	B1 circle ±2 mm centre Manchester B1 shading with accurate or approximate circle within tolerance

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No	Working	Answer	Mark	Notes
9	(a)	Plots	1	B1 cao
	(b)	Description	1	B1 dynamic relationship or “positive” (correlation)
	(c)	Line of best fit	1	Line within overlay region, and to the extent of.
	(d)(i)	Reading	2	B1 ft from single straight line of positive gradient ($\pm 1/2$ square)
	(ii)	Reading		B1 ft from single straight line of positive gradient ($\pm 1/2$ square)
10	(a)		2	B2 for all correct (B1 for 1 error or all correct but wrong order, or use of a common denominator decimals).
	(b)		2	B2 for all correct (B1 for 1 error or all correct but wrong order or conversions to decimals oe)
11	(a)	182, 178, 180, 184	2	M1 mean of any three consecutive months, eg (147 + 161 + 238) - 3 oe A1 cao
	(b)	Sale price = 80% Fun Friday price = 70% of 80% = 56% (oe)	2	B1 B1 for a fully correct explanation involving a worked example (oe) B1 a partially complete explanation

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No	Working	Answer	Mark	Notes
12	(a)	Reason	1	B1 makes a mention of bias, either directly, or making reference to an insufficient or biased range of responses.
	(b)(i)	Reason	1	B1 make some mention of any one of (a) an insufficient range of responses (b) no mention of money (c) no time frame in the question (d) misunderstanding of “a lot” or “not much”
	(ii)	Question	2	B2 B1 for each of the following upto B2 (a) an improved question eg time frame made clear (b) response boxes (imperfect) (c) response boxes no errors OR For suggesting a generally improved question (a) a question clearly in the context of changes to the canteen (b) at least 3 boxes showing a full range of responses
13	(a)	$20y - 18y = 16 - 9$ oe $2y = 7$	$3\frac{1}{2}$ oe	3 M1 $20y - 18y = 16 - 9$ oe M1 $2y = 7$ A1 cao
	(b)	$40 - x = 3(4 + x)$ $40 - x = 12 + 3x$ $40 - 12 = x + 3x$ $4x = 28$	7	3 M1 multiplying through by 3: $3 \times \frac{40 - x}{3} = 3 \times 4 + 3 \times x$ A1 $40 - 12 = x + 3x$ A1 cao
14	(a)	$12(x-4)$	1	B1 for $12(x - 4)$ or $12x - 48$ or $12 \times x - 48$ oe $x = 12(x - 4)$ gets B0
	(b)	$18x-48$	2	M1 $6x + “12(x - 4)”$ or $6x + “12x - 48”$ A1 ft a linear expression $18x - 48$, $2(9x - 24)$, $3(6x - 16)$, $6(3x - 8)$

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No	Working	Answer	Mark	Notes
15	$x^3 - 2x$ 4.1 60.7(21) 4.2 65.6(88) 4.3 70.9(07) 4.22 66.7(114) 4.23 67.2(269) 4.24 67.7(45) 4.25 68.2(656)	4.2	4	B2 for trial $4.1 \leq x \leq 4.3$ evaluated (B1 for trial $4 < x < 5$ evaluated) B1 for different trial $4.225 \leq x \leq 4.25$ evaluated B1 (dep on at least one previous B1) for 4.2 cao
16 (a)		1.0×10^{-9}	1	B1 accept 1×10^{-9} or just 10^{-9}
(b)	$1 \div 5 \times 10^{-9}$	2×10^8	2	M1 for $1 \div ("5 \times 10^{-9}")$ or digit 2 with zeros only seen Condone omission of bracket for M1. A1 cao
17 (a)	$\frac{6.27 \times 4.52}{4.81 + 9.63} = \frac{28.3404}{14.44} = 1.962631579$	1.9626...	2	B2 for 1.9626... (B1 for 28.34 or 14.44)
(b)		1.96	1	B1 ft from (a) as rounded to 1dp or 2dp. Do not accept 2, 2.00, but accept 2.0
18		$d = 4n + 6$	2	B2 $d = 4n + 6$ oe (B1 $d = 4n + k$, k an integer or 0, $4n + 6$, $n = 4n + 6$)
19	Vol = $\pi \times 3.8^2 \times 2.5 = \pi \times 14.44 \times 2.5$ = $45.36... \times 2.5 = 113.411$ Mass = "113" $\times 1.5 = 170.1165$	170	4	M1 for $\pi \times r^2 \times 2.5$ where $r =$ is 3.8 or 7.6 A1 if $r = 3.8$ M1 for "113" $\times 1.5$ A1 for 169.5 – 170.3 cao

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No	Working	Answer	Mark	Notes
20 (a)	$10^2 + 6^2$ or 136 $\sqrt{(100 + 36)}$ or $\sqrt{136} = 11.66\dots$	11.7	3	M1 $10^2 + 6^2$ or 136 seen M1 (dep) $\sqrt{100 + 36}$ or $\sqrt{136}$ A1 11.66 – 11.7
20 (b)	$\cos x = \frac{8}{10}$ or 0.8 $x = \cos^{-1} 0.8 = 36.869^\circ$	36.9	3	M1 for $\cos = \frac{8}{10}$, $\cos = 0.8$ (oe) M1 (dep) for \cos^{-1} (oe) A1 for 36.86 – 36.9
21	$18x - 6y = 99$ $12x - 4y = 66$ $8x + 6y = 18$ $12x + 9y = 27$ $\underline{26x = 117}$ $\underline{-13y = 39}$	$x = 4 \frac{1}{2}$ $y = -3$	4	M1 correct process to eliminate either x or y (condone one error) A1 cao for non – eliminated one. M1 (dep on 1 st M1) for correct substitution of their found value. A1 cao (need both)
22	$\frac{133}{72} = 1.8472, \frac{160}{82} = 1.9512$ OR $\frac{72}{133} = 0.54135, \frac{82}{160} = 0.5125$ OR $\frac{160}{133} = 1.203\dots, \frac{82}{72} = 1.1388\dots$ OR $\frac{133}{160} = 0.83125\dots, \frac{72}{82} = 0.878$	$1.84\dots \neq 1.95\dots$ $1.20\dots \neq 1.13\dots$	3	M1 for $\frac{133}{72}$ (= 1.8472...) oe Accept 1.8, 1.85 M1 for $\frac{160}{82}$ (=1.9512...) oe consistent pairing Accept 2.0, 1.9 OR M1 for $\frac{160}{133}$ (= 1.203...) oe M1 for $\frac{82}{72}$ (=1.1388) oe A1 for enough decimal places to show that the ratios are not equal since the scale factors are different the shapes cannot be similar. NB Do Not need conclusion

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No	Working	Answer	Mark	Notes
23 (a)		0.4, 0.6 0.4, 0.6, 0.4	2	B1 for LHS: (0.6), 0.4 B1 for RHS: 0.6, 0.4, 0.6, 0.4
(b)	$(30 \times 42) - (25 \times 42.8) = 1260 - 1070 = 190$ $190 \div 5 =$	38	3	M1 for $(30 \times 42) - (25 \times 42.8)$ or $1260 - 1070$ or 190 seen M1 (dep) for "190" $\div 5$ A1 cao
24 (a)	$\pounds 12000 \times 0.25 = \pounds 3000$; $\pounds 12000 - \pounds 3000 = \pounds 9000$ $\pounds 9000 \times 0.25 = \pounds 2250$; $\pounds 9000 - \pounds 2250 = \pounds 6750$ $\pounds 6750 \times 0.25 = \pounds 1687.50$; $\pounds 6750 - \pounds 1687.50 =$	$\pounds 5062.50$	3	M1 for $12000 \times 0.75 (=9000)$ oe or $\pounds 3000$ or $\pounds 23437.50$ seen M1 (dep) for at least two further depreciation calculations (complete steps) A1 cao OR M2 for $12000 \times (0.75)^3$ or 5062.50 seen (M1 for $12000 \times (0.75)^n$, $n = 2$ or 4)
(b)	$0.8 \times 0.8 \times 0.8 \times 0.8$ (oe)	0.4096	2	M1 0.8^4 (oe) A1 cao