1MA0_1H

Question		Working	Answer	Mark	Notes
1		180×1.5 40×1.5 110×1.5 30×1.5	Flour = 270 Ginger = 60 Butter = 165 Sugar = 45	3	M1 for ×24÷16 oe or 24/16 or 1.5 seen or 180 + 90 (=270) or 40 + 20 (=60) or 110 + 55 (=165) or 30 + 15 (=45) or sight of any one of the correct answers A2 for all 4 correct answers (A1 for 2 or 3 correct answers)
2	(a)		Positive (correlation)	1	B1 for positive (correlation) [do not accept a relationship]
	(b)		85	2	B2 for an answer in the range 83 to 87 OR M1 for a single straight line segment with positive gradient that could be used as a line of best fit or for an indication on the diagram from 148 on the height axis A1 ft from their line of best fit
3*			9	4	M1 for 7155 – 7095 or 60 seen or 7155×15 (or .15) or 7095×15 (or .15) or 107325 or 106425 or 1073.25 or 1064.25 M1 for '60' ×15 or 7155 ×15 – 7095 × 15 [or .15 instead of 15] A1 for 9 or 9.00 or 900 C1 (ft) for answer with correct units (money notation) identified as the answer.
4			Question Answer	2	B1 for an appropriate question with reference to a time frame with a unit of time or a question with a time frame with a unit of time implied by responses B1 for at least 3 non-overlapping boxes (ignore if not exhaustive) **or** for at least 3 exhaustive boxes (ignore if any overlapping) [Note: labels on response boxes must **not** be inequalities] Do not accept frequency tables or data collection sheets.

Question	Working	Answer	Mark	Notes
5		600	3	(M2 for $300 \div 0.5$ or 60×10 or 30×20) M1 for at least two of 30, 10 and 0.5 or sight of 300 or 60 or 20 A1 for 600 – 620 but not 601.1(198428…) **OR** (M2 for $310 \div 0.5$ or 62×10 or 31×20) M1 for at least two of 31, 10 and 0.5 or sight of 310 or 62 or 20 A1 for 600 – 620 but not 601.1(198428…)
6		Enlargement, scale factor 2.5, centre (0,0)	3	B1 for enlargement B1 for scale factor 2.5 oe B1 for (0,0); accept origin or *O* NB: if two different transformations are stated then 0 marks.

7	$\dfrac{9}{2} \times (12+18) = 135$
	$135 \div 20 = 6.75 (=7$ bags)
	7×4.99
	OR
	$18 \times 9 - \dfrac{1}{2}(6 \times 9) = 135$
	$135 \div 20 = 6.75 (=7$ bags)
	7×4.99
		34.93	4	M1 for $\dfrac{9}{2} \times (12+18)$ or $18 \times 9 - \dfrac{1}{2}(6 \times 9)$
				
				or $9 \times 12 + \dfrac{1}{2} \times (18-12) \times 9$ or 135 seen
				
				M1 (dep) for '135'÷ 20 or 6 or 7 seen
				M1 (dep on previous M1) for '6' × 4.99 or '7' × 4.99
				A1 cao
				
				[SC: M1 for (12×9 + 6×9) ÷ 20 (= 162÷20) or 8 or 9 seen
				      M1 (dep) for '8' × 4.99 or '9' × 4.99
				OR M1 for (18×9 − 6×9) ÷ 20 (= 108÷20) or 5 or 6 seen
				      M1 (dep) for '5' × 4.99 or '6' × 4.99]

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8 (a)		0.15	2	M1 for 1 – (0.2 + 0.5) oe or sight of 0.3 A1 oe
(b)		48	2	M1 for 240 × 0.2 oe or 48 + 120 + 36 +36 A1 cao
9		380	3	M1 for 4×7 + 5×2 (=38) or 9×2 + 5×4 (=38) or 4×7×10 or (7×9 − 5×5) or 5×2×10 (=100) or 9×2×10 (=180) or 5×4×10 (=200) or 9×7×10 (=630) or 5×5×10 (=250) M1 (dep) for '38'×10 or 380 or 4×7×10 + 5×2×10 or 9×2×10 + 5×4×10 or ×10 A1 cao
10		Region shaded	3	B1 for circle arc of radius 3cm (± 2mm) centre Burford B1 for circle arc of radius 5 cm (± 2mm) centre Hightown B1 for overlapping regions of circle arcs shaded
11 (a)		$12x + 20$	1	B1 cao
(b)		$5x + 7$	2	M1 for 2×x − 2×4 or 3×x + 3×5 A1 cao
(c)		$x^2 + 10x + 24$	2	B2 cao (B1 for 4 correct terms with or without signs, or 3 out of no more than 4 terms, with correct signs. The terms may be in an expression or in a table)

Question	Working	Answer	Mark	Notes
12		$36 - 9\pi$	3	M1 for $\pi \times 6 \times 6$ or 36π seen value 113.03-113.2 M1 for $(12 \times 12 - '\pi \times 6 \times 6') \div 4$ or value 7.7-7.8 A1 for $36 - 9\pi$ oe **OR** M1 for $\pi \times 6 \times 6 \div 4$ or 9π seen or value 28.2-28.3 M1 for $6 \times 6 - '\pi \times 6 \times 6 \div 4'$ or value 7.7-7.8 A1 for $36 - 9\pi$ oe NB: for M marks π may be given numerically.
13*	$180 \div 9 \times 1 : 180 \div 9 \times 3 : 180 \div 9 \times 5$ $=20:60:100$ Not enough cement (but enough sand and enough gravel) OR $1 \times 15 : 3 \times 15 : 5 \times 15$ $=15:45:75$ $15+45+75=135$ (<180) Not enough cement (to make 180kg of concrete)	No + reason	4	M1 for $180 \div (1+3+5)$ (= 20) or 3 multiples of 1: 3: 5 M1 for $1\times"20"$ or $3\times"20"$ or $5\times"20"$ or 20 seen or 60 seen or 100 seen A1 for (Cement =) 20, (Sand =) 60, (Gravel) = 100 C1 ft (provided both Ms awarded) for not enough cement oe **OR** M1 for $(1\times15$ and) 3×15 and 5×15 or 9×15 or sight of the numbers 15, 45, 75 together. M1 for '15' + '45' + '75' A1 for 135 (<180) C1 ft (provided both Ms awarded) for not enough cement oe

Question		Working	Answer	Mark	Notes
14			230	2	M1 for 180 + 50 A1 cao **OR** M1 for 360 − (180 − 50) or 360 − 130 A1 cao **OR** M1 for 50 + (90 − 50) + 90 + 50 or 50 + 40 + 90 + 50 A1 cao **OR** M1 for a suitable diagram (sketch) with bearing of lighthouse from ship indicated and 50° marked at lighthouse; diagram only intended to indicate position of 50°; ignore other labels and markings unless they create ambiguity. A1 cao
15	(a)		m^2	1	B1 for m^2 or m^{5-3}
	(b)		$5x^6y^4$	2	M1 for $x^{4+2}y^a$ or $x^b y^{3+1}$ A1 cao

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Question	Working	Answer	Mark	Notes
16		84	4	M1 for $x - 1 + 3x + 1 + 3x$ (= 56) or $7x = 56+1-1$ or $\dfrac{3x(x-1)}{2}$ oe M1 for $7x = 56$ or 8 seen M1 for $0.5×('8' - 1)×(3×'8')$ A1 cao Ignore any statement of units. SC B2 for 8 as the answer or 7 identified as the height and 24 identified as the base of the triangle.
17		(4,3), (4,4), (4,5), (5.4) marked	3	M2 for identifying the correct region or at least 3 correct points with no more than 3 incorrect points (M1 for drawing $x = 3$ (solid or dashed line) or at least 1 correct point with no more than 3 incorrect points) A1 cao

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Question		Working	Answer	Mark	Notes
18			12	4	B1 for 60 seen M1 for (360 – 60) ÷ 2 (=150) M1 for 360 ÷ (180 – 150) or 150×n=180(n-2) oe A1 cao **OR** B1 for 60 seen M1 for 60 ÷ 2 (=30) M1 for 360 ÷ (60÷2) A1 cao **OR** M2 for 30 seen M1 for 360 ÷ 30 A1 cao
19	(a)		Box plot	2	B2 cao (B1 for ends of whiskers at 18 and 44 (as part of a box plot diagram) **OR** for ends of box at 25 and 33 with median at 29)
	(b)		2 comparisons	2	B2 ft for two comparisons with at least one referring to IQR or median values (B1 ft for one comparison of IQRs, medians, or other values) As well as median or interquartile range accept other valid references to spread if explained correctly within a statistical context. Statements need to be true.

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Question		Working	Answer	Mark	Notes
20		0.38×10^{-1}, 3800×10^{-4}, 0.038×10^2, 380	Correct order	2	M1 changing any one correctly or at least 3 in the correct order (ignoring one) or reverse order A1 for correct order (accept any form)
21	(a)		11, 34, 65, 92, 100	1	B1 cao
	(b)		cf graph	2	B1 for 5 or 6 points plotted correctly ±1 full 2 mm square at the upper end of the interval dep on sensible table (condone one error in addition) B1 (dep) for points joined by curve or line segments provided no gradient is negative. Ignore any point or graph outside range of their points. SC B1 for 5 or 6 points plotted not at end but consistently within each interval and joined.
	(c)		18 – 24	2	M1 for indication of taking a reading from 90 or ft from their cf graph A1 for 18 – 24

Question	Working	Answer	Mark	Notes
22	$12x + 8y = 16$ $12x + 15y = 51$ $7y = 35$ $3x + 2 \times 5 = 6$ Alternative method $x = \dfrac{4 - 2y}{3}$ $4\left(\dfrac{4 - 2y}{3}\right) + 5y = 17$ $16 - 8y + 15y = 51$ $7y = 35$ $x = \dfrac{4 - 2 \times 5}{3}$	$x = -2$ $y = 5$	4	M1 for a correct process to eliminate either x or y or leading to substitution (condone one arithmetic error) A1 for either $x = -2$ or $y = 5$ M1 (dep) for correct substitution of their found value A1 cao SC If M0 scored B1 for $y = -2$ and $x = 5$

Question	Working	Answer	Mark	Notes
23		7.5	4	B1 for identifying A at 3 or D at 6 or A(3, 0) or D(0, 6) oe eg may be seen as labels on the diagram M1 for $0 = \frac{-1}{-2} \times 3 + c$ M1 (dep on previous M1) for 6 + '1.5' A1 cao **OR** B1 for identifying A at 3 or D at 6 or A(3, 0) or D(0, 6) oe eg may be seen as labels on the diagram M1 for 3/6 = OP/3 or 1.5 oe seen (from similar triangles) M1 for 6 + '1.5' A1 cao **OR** B1 for identifying A at 3 or D at 6 or A(3, 0) or D(0, 6) oe eg may be seen as labels on the diagram M1 for $(6+OP)^2 = (6^2+3^2) + (3^2+OP^2)$ oe (from Pythagoras) M1 for 6 + '1.5' A1 cao
24		$t = \dfrac{3-4p}{p+2}$	4	M1 for intention to multiply both sides by 4+t eg $p \times 4 + t = 3 - 2t$ M1 for intention to correctly move their t terms to one side, and correctly move their other terms to the other side eg $p \times 4 + t - 4p + 2t = 3 - 2t + 2t - 4p$ M1 for intention to factorise eg $t(p \pm 2)$ A1 for $t = \dfrac{3-4p}{p+2}$ oe

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Question	Working	Answer	Mark	Notes
25 (a)		640	2	M1 for $80 \times \left(\dfrac{8}{4}\right)^3$ or $80 \div \left(\dfrac{4}{8}\right)^3$ A1 cao
(b)		40	2	M1 for $160 \div \left(\dfrac{8}{4}\right)^2$ or $160 \times \left(\dfrac{4}{8}\right)^2$ or ft their scale factor from (a) A1 cao

Question		Working	Answer	Mark	Notes
26	(a)		$\dfrac{5\sqrt{2}}{2}$	2	M1 for $\dfrac{5}{\sqrt{2}}\times\dfrac{\sqrt{2}}{\sqrt{2}}$ oe A1 for $\dfrac{5\sqrt{2}}{2}$ oe
	(b)		$8\sqrt{3}$	2	M1 for $2\times2+2\sqrt{3}+2\sqrt{3}+\sqrt{3}\times\sqrt{3}$ or $\left(4+4\sqrt{3}+3\right)-\left(4-4\sqrt{3}+3\right)$ or $2\times2-2\sqrt{3}-2\sqrt{3}+\sqrt{3}\times\sqrt{3}$ at least three terms in either correct; could be in a grid. A1 cao **OR** Difference of two squares M1 for $\left(\left(2+\sqrt{3}\right)-\left(2-\sqrt{3}\right)\right)\left(\left(2+\sqrt{3}\right)+\left(2-\sqrt{3}\right)\right)$ A1 cao
27	(a)		Circle, centre *O*, radius 2	2	B2 cao (B1 for a circle radius 2 any centre or for a circle or part of a circle centre (0, 0) any radius)
	(b)		Cosine curve crossing at (0, 1), (90, 0), (270, 0) and (360, 1)	2	B2 cao (ignore if sketch outside region) (B1 for a curve with correct intercepts but incorrect amplitude OR for a curve starting at (0,1) with correct amplitude but incorrect intercepts; curves must have a shape that approximates to a cosine curve)

Question	Working	Answer	Mark	Notes
28 (a)		$\mathbf{a} - 3\mathbf{b}$	1	B1 for $\mathbf{a} - 3\mathbf{b}$ oe
(b)			4	M1 for $(\mathbf{NC} =)\ 2\mathbf{a} - 2\mathbf{b}$ oe
				M1 for $(\mathbf{NM} =)\ \mathbf{b} + \dfrac{1}{2}"(\mathbf{a} - 3\mathbf{b})"$
				A1 for $\dfrac{1}{2}(\mathbf{a} - \mathbf{b})$ oe and $2\mathbf{a} - 2\mathbf{b}$ oe
				C1 for **NC** is a multiple of **NM** (+ common point)
				OR
				M1 for $(\mathbf{NC} =)\ 2\mathbf{a} - 2\mathbf{b}$ oe
				M1 for $(\mathbf{MC} =)\ \dfrac{1}{2}"(\mathbf{a} - 3\mathbf{b})" + \mathbf{a}$
				A1 for $\dfrac{3}{2}(\mathbf{a} - \mathbf{b})$ oe and $2\mathbf{a} - 2\mathbf{b}$ oe
				C1 for **NC** is a multiple of **MC** (+ common point)
				OR
				M1 for $(\mathbf{NM} =)\ \mathbf{b} + \dfrac{1}{2}"(\mathbf{a} - 3\mathbf{b})"$
				M1 for $(\mathbf{MC} =)\ \dfrac{1}{2}"(\mathbf{a} - 3\mathbf{b})" + \mathbf{a}$
				A1 for $\dfrac{1}{2}(\mathbf{a} - \mathbf{b})$ oe and $\dfrac{3}{2}(\mathbf{a} - \mathbf{b})$ oe
				C1 for **NM** is a multiple to **MC** (+ common point)