

5525/05				
No.	Working	Ans.	Mark	Notes
1(a)	$\frac{9}{12} + \frac{8}{12} = \frac{17}{12} = 1\frac{5}{12}$	$6\frac{5}{12}$	3	M1 for using a common denominator M1 for either $9/12$ or $8/12$ or $33/12$ or $44/12$ or $17/12$ oe A1 for $\frac{77}{12}$ or $6\frac{5}{12}$ <b>Alternative</b> M1 for converting $3/4$ and $2/3$ to decimals M1 for $0.75 + 0.66$ or better A1 for $6.41\dot{6}$ oe
(b)	$\frac{1}{2} = 0.5, \frac{1}{3} = 0.\dot{3}, \frac{1}{4} = 0.25,$ $\frac{1}{5} = 0.2$	$\frac{1}{3}$	2	B1 for $1/3$ oe B1 (dep) for valid reason e.g. it does not terminate, $1/3 = 0.333(3\dots)$ , 3 does not divide exactly into 1
2(a)		$90 + 0.5m$	2	B1 for $0.5 m$ B1 for $90 + '0.5m'$ (NB: ignore any £ signs)
(b)	$240 = 90 + 0.5m$ $150 = 0.5m$	300	3	M1 for $240 = '90 + 0.5m'$ M1 for $'0.5m' = 150$ A1 for 300 <b>Alternative</b> M1 for $240 - 90$ or 150 seen M1 for $'150' \times 2$ oe A1 for 300

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3(a)		8	2	M1 for attempt at prime factors of 24 and 64 A1 for 8 or $2^3$ or $2 \times 2 \times 2$
(b)		192	2	M1 for attempting at least one multiple of 24 and 64 or for two prime factors of 24 and 64 A1 for 192 or $2^6 \times 3$ oe (SC B1 for 384 or $2^5 \times 3$ or $2^7 \times 3$ )
4	Rotation $90^\circ$ clockwise centre $(-2, 3)$		3	B1 for rotation B1 for 90 clockwise or -90 or +270 or 270 anticlockwise or quarter clockwise or three quarters anticlockwise B1 for $(-2, 3)$ (B0 for a combination of transformations)
5	$60 \div 5 = 12$ $12 \times 2 =$	24	3	M1 for $60 \div 5$ M1 (dep) for '12' $\times 2$ A1 for 24 cao
6(a)	Continue sequence by +5	47	2	M1 for difference of 5 or for any term in the sequence or for $5n + a$ A1 for 47
(b)(i)		$3n - 7$	3	B1 for $3n - 7$
(ii)		2, 17. ...		B2 for 2 and 17 (or for any two of 2, 17, 32, 47, 62, ...) (B1 for one)

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7			3	<p>M1 for arcs construction of <math>60^\circ</math>  M1 for arcs bisector of '<math>60^\circ</math>' (not <math>90^\circ</math>)  A1 (dep on both M marks) for <math>30^\circ</math> within guidelines</p> <p><b>Alternative</b>  M1 for arc construction of <math>90^\circ</math>  M1 for arcs construction of <math>60^\circ</math> based on perpendicular  A1 (dep on both M marks) for <math>30^\circ</math> within guidelines</p>
8 (a)	$-3, \dots, 1, \dots, \dots, 7$	$-3, 1, 7$	2	B2 for all values correct (B1 for 2 values correct)
(b)			2	B2 for correct line between $x = -1$ and $x = 4$ B1 ft for 4 points plotted $\pm$ one 2mm sq or for a line with gradient 2 or for a line through $(0, -1)$
(c)		$x = 1.5$ $y = 2$	2	B1 ft for $x$ value = $1.5 \pm$ one 2mm sq B1 ft for $y$ value = $2 \pm$ one 2mm sq (SC B1 for $y = 1.5$ and $x = 2$ )
9(a)		$3a(a - 2)$	2	B2 for $3a(a - 2)$ (B1 for $3(a^2 - 2a)$ or $a(3a - 6)$ or $3a$ (linear expression in terms of $a$ ))
(b)		$\frac{1}{2}(P - 10)$	2	M1 for correctly isolating $2q$ or $-2q$ correctly dividing both sides by 2 or for a correct second step which may follow an incorrect first step A1 for $\frac{1}{2}(P - 10)$ oe

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(c)	$y^2 + 3y - 4y - 12$	$y^2 - y - 12$	2	B2 for $y^2 - y - 12$ (B1 for 3 out of 4 terms in $y^2 + 3y - 4y - 12$ )
(d)		$(2p + 3q)(2p - 3q)$	2	M1 for $(2p \pm 3q)(2p \pm 3q)$ or $(2p)^2 - (3q)^2$ A1 for $(2p + 3q)(2p - 3q)$
10(a)(i) (ii)		$7.9 \times 10^3$ $3.5 \times 10^{-4}$	2	B1 cao B1 cao
(b)	$4 \div 8 = 0.5$ $10^3 \div 10^{-5} = 10^8$	$5 \times 10^7$	2	M1 for $(4 \div 8 =) 0.5$ or $(10^3 \div 10^{-5} =) 10^8$ or $4000/0.00008$ or $5 \times 10^x$ where $x \neq 7$ A1 for $5 \times 10^7$ cao
11(i) (ii)	$80 - 65$	73 15	3	B1 for 72 - 74 M1 for identifying 30 and 90 (check lines on diagram) A1 for 14 - 17
12(a)	$\frac{PQ}{2} = \frac{12}{3}$ $PQ = \frac{12 \times 2}{3}$	8	2	M1 for $\frac{12}{3}$ or $\frac{3}{12}$ or $\frac{1}{4}$ or 4 or 0.25 or $\frac{2}{3}$ or $\frac{3}{2}$ A1 for 8
(b)	$\frac{BC}{3} = \frac{10}{12}$ $BC = \frac{10 \times 3}{12} = 2.5$	12.5	3	M1 for $\frac{10}{12}$ or $\frac{12}{10}$ or $\frac{10}{4}$ or $\frac{4}{10}$ or 0.4 A1 for 2.5 A1 ft for '2.5' + 10 (dep on M1 awarded)

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13(a)			2	B1 for appropriate question, e.g. which of these vegetables do you eat?, tick the boxes of the vegetables you eat B1 (dep) for response boxes or a list of vegetables (condone one vegetable missing and ignore additions)
(b)	$800 \times 30/50$	480	2	M1 for $800 \times 30/50$ or $800 \times 0.6$ or '800/50' $\times 30$ or $2400 \div 5$ or 60% of 800 A1 for 480 cao (SC B1 for 480/800)
14	$-3 \leq y < 2.5$	-3, -2, -1, 0, 1, 2	3	M1 for dividing a list of integers by 2 or for $y \geq -3$ and/or $y < 5/2$ seen or implied A2 for all integers correct (A1 for 5 correct with no more than one extra)
15	$3^2 + 4^2 + 12^2 = 169$ $\sqrt{169}$	13	3	M1 for $3^2 + 4^2$ or $3^2 + 12^2$ or $4^2 + 12^2$ or $a^2 + 12^2$ (where $a$ is the length of their base diagonal) M1 for $3^2 + 4^2 + 12^2$ A1 for 13 cao
16(a)		$a^8$	1	B1 for $a^8$ or $a^{2 \times 4}$
(b)	$2^{30} \div (2^3)^9 = 2^{30-27}$	3	2	M1 for $(2^3)^9$ or $2^{27}$ or $2^3$ or $8^{10}$ A1 for 3 cao

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17(a)		R	1	B1 for R or $y=x+5$
(b)		S	1	B1 for S or $y=-1/2x+6$
(c)(i)		(0, 5)	2	B1 cao
(ii)		(-2.5, 0)		B1 for (-2.5, 0) oe
18	$n + (n+1)+(n+2)+(n+3) = 4n + 6$ $(n+3)(n+2) - (n+1)n = n^2+5n+6-n^2 - n = 4n + 6$		4	M1 for adding $n + (n + 1) + (n + 2) + (n + 3)$ M1 for writing $(n+3)(n+2) - (n+1)n$ M1 for 4 correct terms from $n^2+5n+6-n^2 - n$ ignoring signs A1 for establishing equality between LHS and RHS
19(a)		8, 6	2	B1 cao B1 cao
(b)		Bars of ht 4cm, 5cm	2	B1 for height = $4 \pm 1$ mm B1 for height = $5 \pm 1$ mm
20a(i)		5p	4	B1 for 5p or $\begin{pmatrix} 5p \\ 0 \end{pmatrix}$ or $\begin{pmatrix} 0 \\ 5p \end{pmatrix}$
(ii)		2q		B1 for 2q or $\begin{pmatrix} 0 \\ 2q \end{pmatrix}$ or $\begin{pmatrix} 2q \\ 0 \end{pmatrix}$
(iii)		4p - q		B2 for 4p - q or $\begin{pmatrix} 4p \\ -q \end{pmatrix}$ or $\begin{pmatrix} -q \\ 4p \end{pmatrix}$
				(B1 for 4p+q or -4p-q or PM + MQ or PM - QM)

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(b)	$\begin{aligned} &\rightarrow \rightarrow \rightarrow \\ &RT = RP + PT \\ &\quad \rightarrow \\ &= -5\mathbf{p} + 2(PQ) \\ &= -5\mathbf{p} + 2(4\mathbf{p} - \mathbf{q}) \\ &= -5\mathbf{p} + 8\mathbf{p} - 2\mathbf{q} \end{aligned}$	$3\mathbf{p} - 2\mathbf{q}$	4	B1 for $PT=2PQ$ or $PQ=QT$ seen or implied M1 for a valid vector journey, e.g. $RP+PT$ or $RM+MQ+QT$ seen or implied M1 for $-5\mathbf{p} + 2 \times '4\mathbf{p} - \mathbf{q}'$ or $-\mathbf{p}-\mathbf{q}+'4\mathbf{p}-\mathbf{q}'$ A1 for $-5\mathbf{p} + 2 \times 4\mathbf{p} - \mathbf{q}$ or $-\mathbf{p}-\mathbf{q}+4\mathbf{p}-\mathbf{q}$ or better
21	Volume 27 : 125 Length 3 : 5 Area 9 : 25	100	3	M1 for recognising need for cube root of 27 or 125 M1 for recognising need to square their scale factor A1 for 100
22	$\begin{aligned} 3(x-3)-4(x+3) &= 5x \\ 3x-9-4x-12 &= 5x \\ -x-21 &= 5x \\ 6x &= -21 \end{aligned}$	$-3.5$	4	M1 for $\frac{3}{x+3} \times (x+3)(x-3) - \frac{4}{x-3} \times (x+3)(x-3)$ or $\frac{3(x-3)-4(x+4)}{(x+3)(x-3)}$ or $\frac{3}{x+3} \times \frac{x-3}{x-3} - \frac{4}{x+3} \times \frac{x+3}{x+3}$ or $\frac{5x}{x^2-9} \times (x+3)(x-3)$ M1 (dep) for $3(x-3)-4(x+3)$ or $5x$ M1 for $3x-9-4x \pm 12 = 5x$ A1 for $-3.5$
23	$\frac{50}{500} \times 50$	5	2	M1 for $\frac{50}{500} \times 50$ oe A1 for 5

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24		C D A F B E	4	B4 for all 6 correct (B3 for 4 or 5 correct) (B2 for 2 or 3 correct) (B1 for 1 correct)