Paper: 1MA1/1H						
Question	**Working**	**Answer**	**Mark**	**Notes**		
4		Daisy is wrong (supported)	P1 P1 A1 C1	for process to find area of any relevant circle ie $\pi\times4^2$ (=16π), $\pi\times7^2$ (=49π), $\pi\times10^2$ (=100π) **or** 7^2 and 4^2 for completed method to find shaded area eg "$\pi\times7^2$" – "$\pi\times4^2$" (=33π) **or** use of radii eg $7^2 - 4^2$ (=33) for 2 comparable figures, eg 33π and 100π **or** 33 and 100 **or** 103 to 103.7 and 314 to 314.2 **or** 103 to 103.7 and 104.6 to 104.8 statement eg No because it should be $\frac{33}{100}$ and their accurate figures Allow use of π = 3 or better		
5 (a)		365	M1 M1 A1	*fx* with *x* consistent within intervals eg 200 × 1 , 300 × 11 , 400 × 5 , 500 × 0 , 600 × 3, if 200, 3300, 2000, 0, 1800 are seen without working then condone 1 error (dep) $\Sigma fx \div \Sigma f$ eg "7300" ÷ 20 cao		
(b)		Comment	C1	for comment about outliers affecting mean		
6		Shows reasoning to reach *y*=3	M1 M1 M1 A1	forms equation eg $2x + 6 = 5x - 9$ isolates *x* and number terms $3x = 15$ substitutes "5" into side length eg $2 \times 5 + 6$ (=16) 48÷16=3 **or** 16×3=48	48÷3 (=16) forms equation $2x+6=$"16" **or** $5x - 9=$"16" isolates *x* and number terms $2x =$ "10" **or** $5x =$ "25" shows *x*=5 for both solutions	$3(2x + 6) = 48$ **or** $3(5x - 9) = 48$, condone missing bracket Isolates *x* and number terms $6x =$ "30" **or** $15x =$ "75" forms the second equation *x*=5 from 2 different equations.

Modifications to the mark scheme for Modified Large Print (MLP) papers.

Only mark scheme amendments are shown where the enlargement or modification of the paper requires a change in the mark scheme.

The following tolerances should be accepted on marking MLP papers, unless otherwise stated below:
Angles: ±5º
Measurements of length: ±5 mm

PAPER: 1MA1_1H			
Question		**Modification**	**Mark scheme notes**
3		Diagram enlarged. Angles moved outside the angle arcs and the angle arcs made smaller. Arrow heads made longer and more obvious. Wording added 'AD is parallel to BC. AB is parallel to EC.'	Standard mark scheme
4		Diagram enlarged. Cross changed to a solid dot. Shading changed to dotty shading.	Standard mark scheme
5		Frequency column has been extended to allow for working.	Standard mark scheme
6		Diagram enlarged. Wording added 'All marked angles are right angles'. MLP only: *x* changed to *e*, *y* changed to *f*. Braille only: will label the corners of the rectangle A to D and will give information about the rectangle.	Standard mark scheme with *x* replaced by *e*, and *y* replaced by *f*.
7		Diagram enlarged. Crosses changed to solid dots.	Standard mark scheme

Paper: 1MA1/1H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
11	Rotation 90º clockwise centre (–4, 1)	M1 A2 (A1	for triangle **B** drawn at (4, 0), (4, –2), (3, –2) **or** for triangle **C** drawn at (–3, 0), (–3, –1), (–1, –1) **or** for rotating their **B** 90º clockwise about (1, 2) for rotation 90º clockwise centre (–4, 1) for any 2 of the 3 aspects)	Award for a triangle in the correct position without the label **B** or **C** as long as this is the only triangle in the quadrant. Accept just the vertices marked. Accept 270º (anticlockwise) Do not award A1 for 'rotation 90º clockwise' if triangle **C** is shown not in the correct orientation Do not award A marks if there is evidence of other transformations in the description or other ambiguity in the answer given
12 (i)	H	B1	cao	
(ii)	F	B1	cao	
(iii)	J	B1	cao	

Paper: 1MA1/2H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
15	$\frac{\sqrt{a}-1}{a-1}$	M1 A1	for a correct method to rationalise the denominator, eg, $\frac{1}{\sqrt{a}+1}\times\frac{\sqrt{a}-1}{\sqrt{a}-1}$ or $\frac{1}{\sqrt{a}+1}\times\frac{1-\sqrt{a}}{1-\sqrt{a}}$ for $\frac{\sqrt{a}-1}{a-1}$ or $\frac{1-\sqrt{a}}{1-a}$	Condone use of a prime number in place of a for the M1 Do not ISW
16	$-5 < x < \frac{3}{4}$	M1 A1	for critical values -5 **and** $\frac{3}{4}$ oe oe	 Could be written as two separate expressions, eg $x > -5$ **and** $x < \frac{3}{4}$ oe

Paper: 1MA1/1H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
16	$10\sqrt{2}$	P1	for process to find total surface area of sphere, eg $75\pi \div 3 \times 8$ (= 200π) or $75 \div 3 \times 8$ (= 200) **or** for setting up an equation, eg $\frac{3}{8} \times 4\pi r^2 = 75\pi$ or $\frac{3}{8} \times 4r^2 = 75$	Could work without π for the three P marks
		P1	for process to find r^2, eg $(r^2 =) \frac{"200\pi"}{4\pi}$ oe or $(r^2 =) \frac{75\pi}{4\pi} \times \frac{8}{3}$ oe or $r^2 =$ "50"	
		P1	for process to find radius, eg $(r =) \sqrt{\frac{"200\pi"}{4\pi}}$ oe or $\sqrt{"50"}$ or $5\sqrt{2}$ **or** for $(2r =) \sqrt{"200"}$	
		A1	cao	
17	$x = \frac{3y+28}{8-5y}$	M1	for clearing the fraction eg $y(5x + 3) = 4(2x - 7)$ **or** $5xy + 3y = 8x - 28$	Condone error in expansion of RHS for this mark
		M1	(dep M1) for isolating x terms in a correct equation eg $3y + 28 = 8x - 5xy$	
		M1	(dep on two terms in x) for factorising eg eg $x(8 - 5y) = 3y + 28$	
		A1	for $x = \frac{3y+28}{8-5y}$ oe eg $x = \frac{-3y-28}{5y-8}$	

Paper: 1MA1/1H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
14 (a)	4^{-2}	B1	for 4^{-2}	Accept $n = -2$
(b)	5	M1	for $8^{\frac{5}{3}} = \left(\sqrt[3]{8}\right)^5$ or 2^5 or $\sqrt[3]{8^5}$ or $\sqrt[3]{32768}$ **or** $9^{\frac{3}{2}} = \left(\sqrt{9}\right)^3$ or 3^3 or $\sqrt{9^3}$ or $\sqrt{729}$	
		M1	for correctly evaluating $8^{\frac{5}{3}}$ **or** $9^{\frac{3}{2}}$, eg 32 or 27 seen	
		A1	cao	
15	3	P1	for process to make the y term the subject of $6y + kx - 12 = 0$ eg $6y = 12 - kx$ or $y = 2 - \frac{k}{6}x$	
		P1	for process to find gradient of line perpendicular to $\mathbf{L_1}$, eg $2 \times m = -1$ or $m = -\frac{1}{2}$ **or** for process to find k, eg $-\frac{k}{6} \times 2 = -1$	
		A1	cao	A correct answer with no supportive working gets 0 marks

1MA0_1H					
Question		**Working**	**Answer**	**Mark**	**Notes**
4		2 | 9 3 | 1 3 5 6 9 4 | 2 3 3 4 6 8 9 5 | 2 4 5 **OR** 20 | 9 30 | 1 3 5 6 9 40 | 2 3 3 4 6 8 9 50 | 2 4 5	2 | 9 3 | 1 3 5 6 9 4 | 2 3 3 4 6 8 9 5 | 2 4 5 Key: 2 | 9 = 29	3	B3 for fully correct diagram with appropriate key (B2 for ordered leaves, with at most two errors or omissions **and** a key **OR** correct unordered leaves **and** a key **OR** correct ordered leaves) (B1 for unordered or ordered leaves, with at most two errors or omissions **OR** key) NB : Order of stem may be reversed; condone commas between leaves
5		$c = \frac{30 \times 40}{150}$	8	2	M1 for $\frac{30 \times 40}{150}$ **or** 1200 seen A1 cao
6	(a)		30	2	M1 for 25 ÷ 10 or 2.5 seen or 10 ÷ 25 or 0.4 seen or 12 + 12 + 6 oe or a complete method eg. 25 × 12 ÷ 10 oe A1 cao
	(b)	*1000 ÷ 200 × 12*	60	2	M1 for 500÷50 or 1000÷200 or 500÷10 OR correct scale factor clearly linked with one ingredient eg. 10 with sugar or 5 with butter or flour or 50 with milk OR answer of 120 or 600 A1 cao

1MA0_1H					
Question		**Working**	**Answer**	**Mark**	**Notes**
15			Required region	4	M1 arc radius 5 cm centre *C* M1 bisector of angle *BAD* M1 line 3 cm from *DC* A1 for correct region identified (see overlay)
16	(a)		820 000	1	B1 cao
	(b)		3.76×10^{-4}	1	B1 cao
	(c)		5×10^{8}	2	M1 for $2.3 \div 4.6 \times 10^{12-3}$ oe or 500 000 000 or 0.5×10^{9} A1 cao (accept 5.0×10^{8}
17			$\frac{12}{13}$	3	M1 for multiplying throughout by 10 oe or writing LHS as a single fraction e.g $2(4x-1)+5(x+4) = 3\times 10$ or $\frac{2(4x-1)+5(x+4)}{10}$ or $\frac{2(4x-1)}{10}+\frac{5(x+4)}{10}$ M1 (dep) for a complete correct method to obtain linear equation of the form $ax = b$ (condone one arithmetic error in multiplying out the bracket) A1 for $\frac{12}{13}$ oe (decimal equivalent is 0.923…)

1MA0_1H					
Question		**Working**	**Answer**	**Mark**	**Notes**
8			09 36	3	M1 for listing 9, 18, 27, 36, 45, ...(at least 3 correct multiples with at most one incorrect) M1 for listing 12, 24, 36, 48, ... (at least 3 correct multiples with at most one incorrect) A1 for 09 36 or 9 36 (am) **OR** M1 for listing 9.09 9.18 9.27 9.36 ...(at least 3correct times with at most one incorrect) M1 for listing 9.12 9.24 9.36 ... (at least 3 correct times with at most one incorrect) A1 for 09 36 or 9 36 (am) **OR** M1 for $9 = 3 \times 3$ **or** $12 = 2 \times 2 \times 3$ (could be in factor tree) M1 for $9 = 3 \times 3$ **and** $12 = 2 \times 2 \times 3$ (could be in a factor tree) A1 for 09 36 or 9 36 (am) **SC B2** for 9 36 pm or (after) 36 (minutes) on the answer line
9	(a)		a^9	1	B1 for a^{4+5} or a^9
	(b)		$9e^5f^6$	2	B2 cao (B1 for two of 9, e^{6-1}, f^{8-2} as a product)
	(c)		3	1	B1 (accept ± 3 but not just –3)

PAPER: 1MA0_1H					
Question		**Working**	**Answer**	**Mark**	**Notes**
25	(a)		$a = 4, b = 5$	3	M1 for sight of $(x-4)^2$ M1 for $(x-4)^2 - 16 + 21$ A1 for $a = 4, b = 5$ OR M1 for $x^2 - 2ax + a^2 + b$ M1 for $-2a = -8$ and $a^2 + b = 21$ A1 for $a = 4, b = 5$
	(b)		(4, 5)	1	B1 ft
26		50 1 1 1 50 1 1 1 50	$\frac{126}{720}$	4	M1 for 3 fractions $\frac{a}{10}, \frac{b}{9}, \frac{c}{8}$ where a < 10, b < 9 and c < 8 M1 for $\frac{7}{10}\times\frac{3}{9}\times\frac{2}{8}$ or $\frac{3}{10}\times\frac{7}{9}\times\frac{2}{8}$ or $\frac{3}{10}\times\frac{2}{9}\times\frac{7}{8}$ $(=\frac{42}{720})$ M1 for $\frac{7}{10}\times\frac{3}{9}\times\frac{2}{8} + \frac{3}{10}\times\frac{7}{9}\times\frac{2}{8} + \frac{3}{10}\times\frac{2}{9}\times\frac{7}{8}$ or $3\times\frac{3}{10}\times\frac{2}{9}\times\frac{7}{8}$ A1 for $\frac{126}{720}$ oe. eg. $\frac{7}{40}$ **Alternative Scheme for With Replacement** M1 for $\frac{7}{10}\times\frac{3}{10}\times\frac{3}{10}$ $(=\frac{63}{1000})$ M1 for $\frac{7}{10}\times\frac{3}{10}\times\frac{3}{10}\times 3$ $(=\frac{189}{1000})$ M0 A0 No further marks

PAPER: 1MA0_1H					
Question		**Working**	**Answer**	**Mark**	**Notes**
5			12	3	M1 for a method to find volume of a cuboid, eg. $2 \times 10 \times 15$ (= 300) or $5 \times 5 \times x$ (= $25x$) M1 (dep) for "300" ÷ "25" oe A1 cao OR M1 for 10 ÷5 (= 2) and 15 ÷ 5 (= 3) or 10 ÷5 (= 2) and 2 ÷ 5 (= 0.4) M1 (dep) for 2 × "2" × "3" or 15 × "2" × "0.4" A1 cao
6	(a)		Relationship	1	B1 for a description of a dynamic relationship eg "The older the car the lower the price" or "The newer the car the greater the price" oe (accept negative correlation)
	(b)		6400 to 7000	2	M1 for a single straight line segment with negative gradient that could be used as a line of best fit or vert. line from 3.5 or a point plotted at (3.5, y), where y is in the range 6400 to 7000 A1 for 6400 - 7000
7	(a)		Triangle with vertices at (–3, 3), (–3, 4) and (–1, 4)	2	B2 for a triangle with vertices at (–3, 3), (–3, 4), (–1, 4) (B1 for triangle in correct orientation and size or rotated 90º clockwise about centre O or three correct vertices without joining)
	(b)		Reflection in line $y = x$	2	B1 for reflection B1 for (in the line) $y = x$ Note: award no marks if more than one transformation is given

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Question		Working	Answer	Mark	Notes
12	(a)		2, 0, 0, 6	2	B2 for 2, 0, 0, 6 (B1 for at least two of 2, 0, 0, 6); could be taken from graph
	(b)		Correct curve	2	M1 (ft) for at least 5 points plotted correctly A1 for a fully correct curve
	(c)		−0.6, 3.6	2	M1 (ft if M1 awarded in (b) and at least B1 in (a)) for indicating a point or line drawn at $y=4$, or one solution given A1 (ft) for both solutions
13			20	3	M1 for 30×14 (=420) or 18×10 (=180) M1 for $30 \times 14 - 18 \times 10$ or "420" – "180" (=240) A1 cao
14			126	4	M1 for method to find exterior or interior angle of octagon M1 for method to find exterior or interior angle of pentagon M1 for complete method A1 cao

Paper: 1MA1/3H				
Question	**Working**	**Answer**	**Mark**	**Notes**
4		15	P1	strategy to start the problem, eg 8 : 20 and 20 : 5
			P1	process to solve the problem, eg $\frac{5}{33}\times 100$ or 24 : 60 : 15
			A1	cao
5 (a)		0.625	B1	cao
(b)		$9.75 \leq x < 9.85$	B2	for $9.75 \leq x < 9.85$
			[B1	for 9.75 or 9.85 (or $9.84\dot{9}$)]
6		147	P1	starts process, eg uses x and $x + 7$
			P1	starts to work with at least 6 correct sides, may be on the diagram or in an expression
			P1	(dep on previous P1) gives a correct expression for the perimeter, eg $x + x + 7 + x + 7 + x + 7 + x + x + 7 + x + 7 + x + 7$ or adds at least 6 correct sides and equates to 70
			A1	for width = 3.5 oe **and** length = 10.5 oe
			B1	ft (dep P2) for correct area for their x
7		0.000 745 2	M1	digits 7452 seen
			A1	cao

Paper: 1MA1/1H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
19	Result shown	M1	(indep) for writing $\sqrt{12}$ as $2\sqrt{3}$	This mark can be awarded whenever this is seen, which might be later in the process.
		M1	for method to rationalise the denominator eg $\frac{8+\sqrt{12}}{5+\sqrt{3}}\times\frac{5-\sqrt{3}}{5-\sqrt{3}}$ **or** $\frac{8+2\sqrt{3}}{5+\sqrt{3}}\times\frac{5-\sqrt{3}}{5-\sqrt{3}}$ oe	
		M1	(dep on previous M1) for expanding terms, condone one error in numerator or denominator eg $\frac{40-8\sqrt{3}+5\sqrt{12}-\sqrt{12}\sqrt{3}}{25-5\sqrt{3}+5\sqrt{3}-\sqrt{3}\sqrt{3}}$ **or** $\frac{40-8\sqrt{3}+10\sqrt{3}-2\sqrt{3}\sqrt{3}}{25-5\sqrt{3}+5\sqrt{3}-\sqrt{3}\sqrt{3}}$ **or** $\frac{34+2\sqrt{3}}{22}$ oe	
		A1	for a complete chain of reasoning leading to $\frac{17+\sqrt{3}}{11}$	
20	$x = 2.1$, $y = 5.1$ $x = -2.9$, $y = -4.7$	M1	for drawing the graph of $y - 2x = 1$	
		A1	for one correct pair of values **or** for both correct x values, **or** for both correct y values	For both A marks accept answers in the ranges $x = 2.0$ to 2.2, $y = 5.0$ to 5.2 $x = -2.8$ to -3.0, $y = -4.6$ to -4.8
		A1	for both correct pairs, correctly matched	Accept values given as coordinates

Paper: 1MA1/1H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
22	21	P1	for a relevant probability, eg P(green) = $\frac{x}{2x+3}$ or P(blue) = $\frac{x+3}{2x+3}$	the number of green and blue pens could be $x-3$ and x or equivalent probabilities must be in an algebraic form in a single variable
		P1	for a relevant product, eg. "$\frac{x}{2x+3}$"×"$\frac{x-1}{2x+2}$" or "$\frac{x+3}{2x+3}$" × "$\frac{x+2}{2x+2}$"	
			OR $\left("\frac{x}{x+3}"\right)^2 + \left("\frac{x+3}{2x+3}"\right)^2 = \frac{27}{75}$	This is an exception using replacements. No further credit is available
		P1	forms an appropriate equation, eg. "$\frac{x}{2x+3} \times \frac{x-1}{2x+2}$" + "$\frac{x+3}{2x+3} \times \frac{x+2}{2x+2}$" = $\frac{27}{55}$	
		P1	(dep P3) process to reduce equation to $ax^2 + bx + c = 0$ eg. $x^2 - 25x + 84 = 0$	
		P1	process to solve quadratic equation eg. $(x-21)(x-4) = 0$	
		A1	cao	

Paper: 1MA1/1H					
Question		**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
4	(a)	200	M1	for 120 × 5 ÷ 3 oe	
			A1	cao	
	(b)	statement	C1	Statement that each tap fills at the same rate or that the rate does not change over time Examples **Acceptable responses:** Taps are running at the same speed They (clearly referring to taps) all fill the pool with the same volume of water The amount of water is the same in the same time (again referring to taps) Each tap is doing a fifth of the filling That all taps take equal time to fill the pool All taps produce the same amount of water That the water flow stays at the same rate over the whole time. **Non acceptable responses** It will take more time because there are less taps The less taps used the longer it takes to fill the pool That 1 tap can take up to 24 mins each 3 taps will take longer to fill the pool	Any statement referring to the same amount of water flowing from each tap is acceptable.
5	(a)	16 to 20	P1	for using time = $\frac{\text{distance}}{\text{speed}}$, eg $\frac{1}{200}$ or $\frac{1}{213}$ **or** for 1 hour = 60 × 60 (= 3600) seconds	
			P1	complete process, eg $\frac{1}{200} \times 60 \times 60$ oe or $\frac{1}{213} \times 60 \times 60$ oe	Calculation could be done in stages.
			A1	for answer in range 16 to 20	
	(b)	decision with reason	C1	(dep on correct use of time = $\frac{\text{distance}}{\text{speed}}$) for reason related to their response to part(a), eg overestimate as speed rounded down	

Paper: 1MA1/1H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
12	$\frac{4}{9}$	P1	for process to find link between volume of Q and volume of P **or** between volume of R and volume of Q, eg ratio 1.5 : 1 **or** Q = 1.5P **or** P = $\frac{2}{3}$Q **or** two values in the ratio 1 : 1.5 such as 100 and 150	
		P1	for process to find link between volume of R and volume of P eg 1.5^2 : 1 **or** two values in the ratio 1 : 2.25 such as 100 and 225	$1.5^2 (=\frac{9}{4})$ is enough for this mark, award P1P1
		A1	for $\frac{4}{9}$ oe fraction eg $\frac{100}{225}$	Accept P = $\frac{4}{9}$R
13	Proof shown	C2	for complete argument, eg $n(n-1)$ is the product of two consecutive integers and must be even as either n or $n-1$ must be even **or** gives correct reasoning for n odd **and** n even n odd: odd × odd = odd and odd – odd = even n even: even × even = even and even – even = even **or** n odd: $(2n+1)^2 - (2n+1) = 4n^2 + 2n = 2(2n^2 + n)$ n even: $(2n)^2 - (2n) = 4n^2 - 2n = 2(2n^2 - n)$	
		(C1	for factorising, eg $n(n-1)$ **OR** gives correct reasoning for n odd **or** n even **OR** gives a partial explanation using n odd **and** n even, eg odd^2 – odd = even and even^2 – even = even)	

Paper: 1MA1/1H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
21	Proof	M1	for $\overrightarrow{DQ}$ = ½ (**b** − **a**) oe or $\overrightarrow{EQ}$ = ½ (**a** − **b**) oe	Vectors could be written on the diagram
		M1	for $\overrightarrow{PQ}$ = ½ **a** + $\overrightarrow{DQ}$ **or** ½ **a** + ½ (**b** − **a**) oe **or** $\overrightarrow{PQ}$ = − ½ **a** + **b** + $\overrightarrow{EQ}$ **or** − ½ **a** + **b** + ½ (**a** − **b**) oe	
		B1	for $\overrightarrow{PQ}$ = ½ **b**	
		C1	for complete proof with statement, eg $FE = 2PQ$ **or** FE is a multiple of PQ **or** **b** = 2(½ **b**)	
22	0.5	P1	derive an algebraic expression for the area of A eg $\frac{1}{8}\pi\,[\,(5x-1)^2-(3x-1)^2\,]$	
		P1	expand and simplify for either area A or area B eg $\frac{1}{8}\pi\,(16x^2-4x)$ **or** $\pi(x^2-2x+1)$	
		P1	(dep P2) equate and rearrange into a quadratic eqn of the form $ax^2 + bx + c = 0$ eg $2x^2 + 3x - 2 = 0$	
		P1	(dep P3) factorise eg $(2x - 1)(x + 2) = 0$ **or** use of formula eg $\frac{-3\pm\sqrt{3^2-4\times2\times-2}}{2\times2}$	
		A1	oe	Accept only the single value of 0.5 oe but award 0 marks for a correct answer with no supportive working

PAPER: 1MA1/1H			
Question		**Modification**	**Mark scheme notes**
22		Wording added "Look at the diagram for Question 22 in the Diagram Book." The wording "The diagram shows…" removed and replaced by "It shows…" Diagram enlarged. Open headed arrows. Shading changed to dotty shading. Angle moved outside of the angle arc the angle arc made smaller. The shapes labelled 'shape A' and 'shape B.' The labels "(3x-1) cm" and "2x cm" added to the bottom of the diagram. The label "(5x-1) cm" added to the top of the diagram.	Standard mark scheme
23		Wording added: "Look at the information for Question 23 in the Diagram Book. It shows the four types of cards in a game." Diagram enlarged. Black cards changed to dotty shading. All reference of 'black' changed to 'shaded'. Headings added above the cards e.g. "shaded circle".	Standard mark scheme

Paper: 1MA1/1H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
7	20 or 24 or 168	B1	for identification of the range of the girls (20) **or** the range (24) **or** the median (168) of the boys	
	Comparison	C2	for a correct comparison of medians **and** a correct comparison of ranges supported by correct figures eg the median height for girls (165) is less than the median height for boys (168) and the range for girls (20) is less than the range for boys (24) At least one comparison must be in context referring to height or quoting cm.	Simply quoting values for median, range is insufficient; they must be compared.
		(C1	for a correct comparison of medians **or** a correct comparison of ranges that could ft their incorrect figure(s))	Context not necessary for C1
8	450	M1 M1 A1	for $18 \div 3$ (=6) for substitution eg. $75 = \frac{F}{"6"}$ or $75 \times$ "6" cao	Ignore units
9	0.000 672, 67.2×10^{-4} 6.72×10^{5} 672×10^{4}	B2 (B1	cao for correct conversions to same format, condoning one error **or** for 3 numbers in the correct order (ignoring one) **or** for all 4 numbers listed in reverse order)	Accept correct numbers in any form

PAPER: 1MA1/1H			
Question		**Modification**	**Mark scheme notes**
7		Wording added "Look at the table and the diagram for Question 7 in the Diagram Book." Wording "This stem and leaf diagram shows…" removed and replaced with "The stem and leaf diagram shows…" The wording "…of a group of Year 9 girls" removed and replaced by "…of a group of girls in Year 9". The wording "…of a group of 15 Year 9 boys" removed and replaced by "…of a group of 15 boys in Year 9". Table enlarged and kept on the same page as the stem and leaf diagram. Diagram enlarged and a tracking line added. Key moved above the diagram.	Standard mark scheme
8		Model provided for all candidates with a base added to represent the horizontal floor. Wording added "Look at the diagram for Question 8 in the Diagram Book. You may be provided with a model." The wording "The diagram shows a prism…" removed and replaced by "The diagram and the model show a prism…". Diagram enlarged. Dashed lines to be made thicker and longer. The pressure formula to be kept in the Question Paper and moved to the left of the diagram in the Diagram Book.	Standard mark scheme
9		The wording "Write these numbers in order of size" removed and replaced by "Write these four numbers in order of size."	Standard mark scheme
10		The letter *a* changed to *w*. The letter *b* changed to *x*. The letter *c* changed to *y*.	Standard mark scheme except for the letter changes indicated.

Paper: 1MA1/1H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
5	20	P1	for process to find SP of 24 chocolate bars, eg. 0.50 × 24 (= 12) oe **or** for process to find the overall profit eg (24 × 0.5) – 10 (= 2) **or** for process to find CP of one chocolate bar, eg. 1000 ÷ 24 (= 41.66…) oe	Working can be carried out in either pounds or pence.
		P1	(dep) for start to a process to find percentage profit, eg. using $\frac{"12"-10}{10}$ **or** $\frac{"12"}{10}$ **or** $\frac{50-"41.66..."}{"41.66..."}$ oe with consistent units	
		A1	cao	
6	85 with working and reasons	M1	for correct use of corresponding angles eg *AEB* = 63 **or** co-interior angles eg *BCD* = 180 – 148 (= 32) or *DEB* = 180 – 63 (= 117)	Angles must be clearly labelled on the diagram or otherwise identified. Full solution must be seen.
		M1	(dep) for a complete method to find angle *EAB* eg. 180 – "63" – (180 – 148) **or** 148 – "63" **or** "117" – (180 – 148)	Correct method can be implied from angles on the diagram if no ambiguity or contradiction.
		A1	for *EAB* = 85 (identified)	
		C2	(dep on M2) all working correct with all appropriate reasons stated. Corresponding angles are equal Allied angles / Co-interior angles add up to 180 Angles on a straight line add up to 180 Angles in a triangle add up to 180 The exterior angle of a triangle is equal to the sum of the interior opposite angles.	When reasons are given the key words underlined must be present. Reasons need to be linked to their method; any reasons not linked, do not credit. There should be no incorrect reasons given.
		(C1	for **one** reason relating to parallel lines clearly used and stated **or** for any **two** reasons clearly stated for their fully correct method)	

PAPER: 1MA1/1H			
Question		**Modification**	**Mark scheme notes**
3		Wording added "Look at the diagram for Question 3 in the Diagram Book." The wording "The diagram shows four graphs" removed and replaced by "It shows four graphs labelled graph A, graph B, graph C and graph D." Diagrams enlarged. Graph lines made thicker. Open headed arrows. Headings moved above the graph.	Standard mark scheme
4		Wording added "Look at the diagram for Question 4 in the Diagram Book." The wording "The diagram shows four triangles" removed and replaced by "It shows four triangles." Diagram enlarged. Headings moved above the diagrams. Angles moved outside of the angle arcs and the angle arcs made smaller. Triangles straightened up so a 10 cm side lies horizontally. Braille only: Description added of the triangles.	Standard mark scheme
6		The wording "ADC is a triangle" removed. Diagram enlarged. Wording added "Look at the diagram for Question 6 in the Diagram Book. It shows the triangle ADC." Angles moved outside of the angles arcs and the angle arcs made smaller.	Standard mark scheme

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Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
1	$3n - 2$	B2 (B1	for $3n - 2$ oe for $3n + k$ where $k \neq -2$ or is absent unambiguously shown)	Accept a different variable, eg. $3x - 2$ $n = 3n - 2$ gets B1 only $n + 3$ gets NO marks
2	Shown	M1 M1 C1	for conversion to improper fractions eg. $\frac{7}{3}$ **or** $\frac{15}{4}$ (dep) for method to multiply fractions, eg. $\frac{7\times15}{3\times4}\left(=\frac{105}{12}\right)$ **or** $\frac{28\times45}{12\times12}\left(=\frac{1260}{144}\right)$ oe for complete working showing each stage as far as $\frac{35}{4}$ or $8\frac{9}{12}$	Need not be shown with operators
3	B C D A	B2 (B1	cao for two or three correct)	
4	A & D	B1	cao	

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Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
19	$\frac{5\pm\sqrt{15}}{2}$	M1	for using a common denominator eg $\frac{x-1}{(2x-1)(x-1)}+\frac{3(2x-1)}{(2x-1)(x-1)}$ (= 1) **or** $(x-1)+3(2x-1)=(2x-1)(x-1)$	
		M1	for expanding and rearranging to get $2x^2-10x+5$ (= 0)	Note we don't need to see "= 0"; just the LHS is sufficient Accept other forms of the 3 term quadratic, eg $2x^2-10x=-5$
		M1	(dep M1) ft for a method to solve their 3 term quadratic equation eg $\frac{10\pm\sqrt{(-10)^2-4\times2\times5}}{2\times2}$ or $\frac{10\pm\sqrt{60}}{4}$ **or** $2\left[\left(x-\frac{5}{2}\right)^2-\left(\frac{5}{2}\right)^2\right]+5=0$ oe	Correct use of formula or completing the square
		A1	cao	

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Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
16	0.78	P1	for using 0.75 or 0.25 in a relevant product, eg $0.75 \times x$ **or** $0.25 \times y$	Allow different letters Could work with fractions
		P1	for using two products to form an equation, eg $0.75x + 0.25y = 0.36$	
		P1	for a correct equation in one variable, eg $0.75(1 - p) + 0.25p = 0.36$ **or** $0.75f + 0.25(1 - f) = 0.36$	Could set up an equation for pass × pass + fail × fail = 0.64
		A1	oe	Accept 78% or any equivalent fraction, eg $\frac{39}{50}, \frac{156}{200}$
17	$y = \frac{40}{\sqrt{x^3}}$	P1	for setting up an equation with a constant term, eg $y = k\sqrt{t}$ **or** $t = \frac{K}{x^3}$	Condone the use of 'α' instead of '=' for the first two P marks Equation can be implied by correct substitution
		P1	for a process to substitute values in one equation, eg $15 = k\sqrt{9}$ or $k = 5$ **or** $8 = \frac{K}{2^3}$ or $K = 64$	
		P1	(dep P2) for combining the two equations ft their values of k and K, eg $y = 5\sqrt{\frac{64}{x^3}}$ **OR** for $y = 5\sqrt{t}$ **and** $t = \frac{64}{x^3}$	
		A1	oe	Formula must include 40 Accept other forms for the power of x but must be a single term in x

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Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
13	Relationship shown	M1	for use of Pythagoras' theorem, eg $d_A^2 = d_B^2 + d_C^2$ **or** $a^2 = b^2 + c^2$ **or** $(2x)^2 = (2y)^2 + (2z)^2$ **or** $a = \sqrt{b^2 + c^2}$ **or** uses a 3, 4, 5 triangle	May be seen at any stage Where d_A, a, $2x$, etc are their diameters Could be any Pythagorean triple
		M1	for forming correct expressions for the areas of at least 2 of the 3 semicircles, eg at least two of $\frac{1}{2}\pi\left(\frac{a}{2}\right)^2$, $\frac{1}{2}\pi\left(\frac{b}{2}\right)^2$, $\frac{1}{2}\pi\left(\frac{c}{2}\right)^2$ or at least two of $\frac{1}{2}\pi x^2$, $\frac{1}{2}\pi y^2$, $\frac{1}{2}\pi z^2$ or at least two of $\frac{1}{2}\pi\left(\frac{5}{2}\right)^2$, $\frac{1}{2}\pi\left(\frac{3}{2}\right)^2$, $\frac{1}{2}\pi\left(\frac{4}{2}\right)^2$	Where a, b, c are their diameters Where $2x$, $2y$, $2z$ are their diameters Where 3, 4, 5 are their diameters
		C1	for a fully correct and convincing chain of reasoning, eg showing that eg $\frac{1}{2}\pi\left(\frac{a}{2}\right)^2 = \frac{1}{2}\pi\left(\frac{b}{2}\right)^2 + \frac{1}{2}\pi\left(\frac{c}{2}\right)^2$ can be reduced to $a^2 = b^2 + c^2$ **or** that $(2x)^2 = (2y)^2 + (2z)^2$ is the same as $\frac{1}{2}\pi x^2 = \frac{1}{2}\pi y^2 + \frac{1}{2}\pi z^2$	
14 (a)	0.9	M1	for drawing a tangent at $t = 2$	
		M1	for a complete method to find the gradient eg tangent at $t = 2$ and "2.7" ÷ "3"	Use of change in y over change in x Working may be seen on the diagram
		A1	for answer in the range 0.7 to 1.1	Accept answers in the form $\frac{a}{b}$ where a and b are integers
(b)	Statement	C1	eg distance (travelled)	If units are given they must be correct