Name: _____

Year 9 End of Year Assessment

Envision Tuition

MATHEMATICS TUTORS

Date:

Time: 60 Minutes

Total marks available: 60

Total marks achieved: _____

Questions

Q1.

Write 27% as a fraction.

.....

(Total for question = 1 mark)

Q2.

Write 0.09 as a fraction.

.....

(Total for question = 1 mark)

Q3.

Write down the 17th odd number.

.....

(Total for question = 1 mark)

Q4.

Work out $2 + 7 \times 10$

.....

(Total for question = 1 mark)

Q5.

Solve $\frac{y}{4} = 10.5$

y = ...

(Total for question = 1 mark)

Q6.

Write down the value of the 7 in the number 8765

.....

(Total for question = 1 mark)

Q7.

Find the number that is exactly halfway between 7 and 15

.....

(Total for question = 1 mark)

Q8.

There are 3 red beads and 1 blue bead in a jar.
A bead is taken at random from the jar.

What is the probability that the bead is blue?

.....

(Total for question = 1 mark)

Q9.

A metal box has a weight of 8×10^3 grams.

Find, in standard form, the weight of 10 of these metal boxes.

..... grams

(Total for question = 1 mark)

Q10.

The table shows information about the times taken by 100 people in a fun run.

Time (t minutes)	Frequency
$20 < t \leqslant 30$	4
$30 < t \leqslant 40$	16
$40 < t \leqslant 50$	36
$50 < t \leqslant 60$	24
$60 < t \leqslant 70$	14
$70 < t \leqslant 80$	6

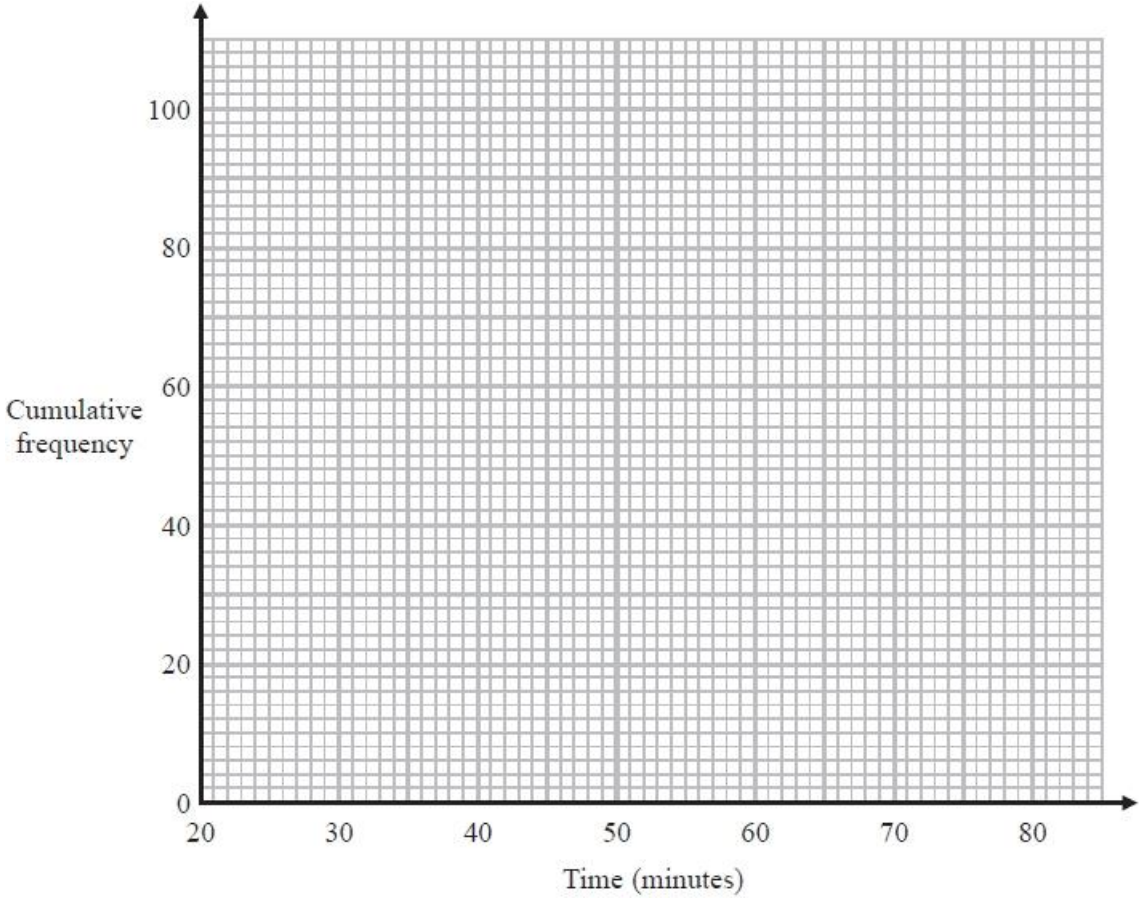
(a) Complete the cumulative frequency table for this information.

Time (t minutes)	Cumulative frequency
$20 < t \leqslant 30$	
$20 < t \leqslant 40$	
$20 < t \leqslant 50$	
$20 < t \leqslant 60$	
$20 < t \leqslant 70$	
$20 < t \leqslant 80$	

(1)

(b) On the grid, draw a cumulative frequency graph for your table.

(2)



(c) Use your graph to find an estimate for the median time.

..... minutes

(1)

(d) Use your graph to find an estimate for the number of people who took longer than 63 minutes.

.....

(2)

(Total for question = 6 marks)

Q11.

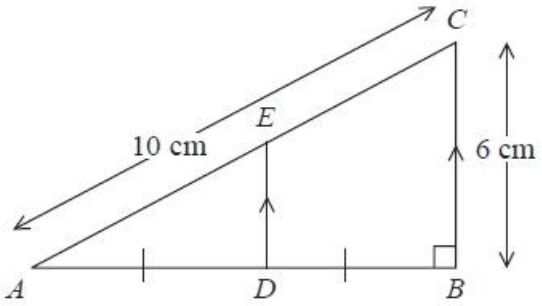


Diagram **NOT** accurately drawn

ADB and *AEC* are straight lines.
DE is parallel to *BC*.

Angle *ABC* = 90°
AC = 10 cm.
BC = 6 cm.

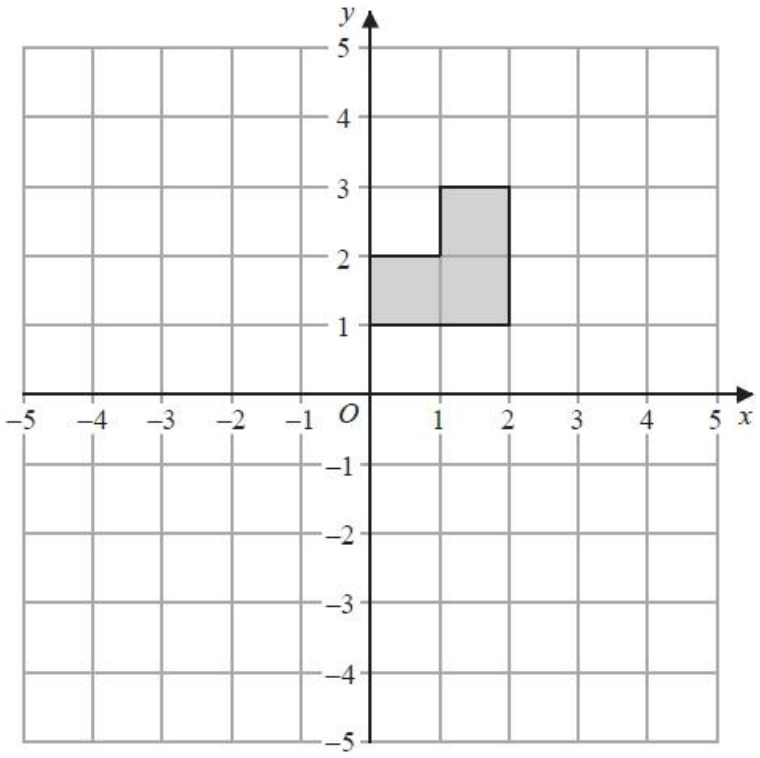
D is the midpoint of *AB*.

Work out the area of trapezium *BCED*.

..... cm^2

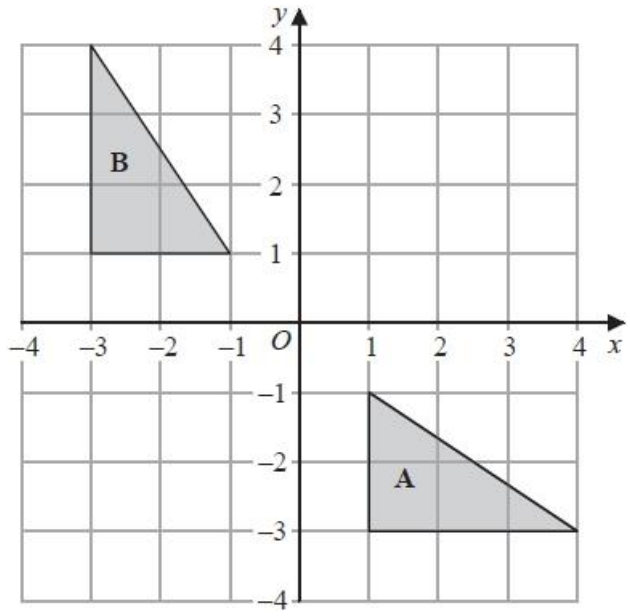
(Total for question = 4 marks)

Q12.



(a) On the grid above, reflect the shaded shape in the line with equation $x = -1$

(2)



Triangle **A** is a reflection of triangle **B**.

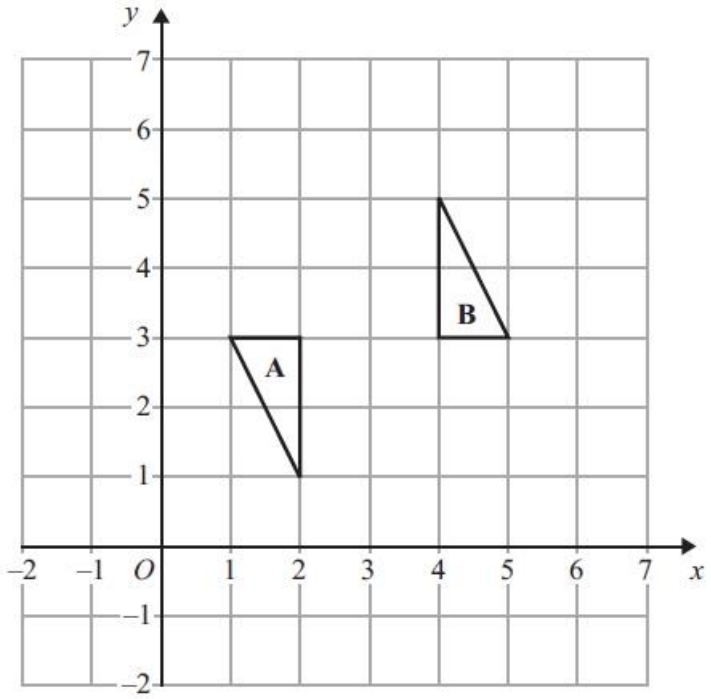
(b) Write down the equation of the line of reflection.

.....

(1)

(Total for question = 3 marks)

Q13.



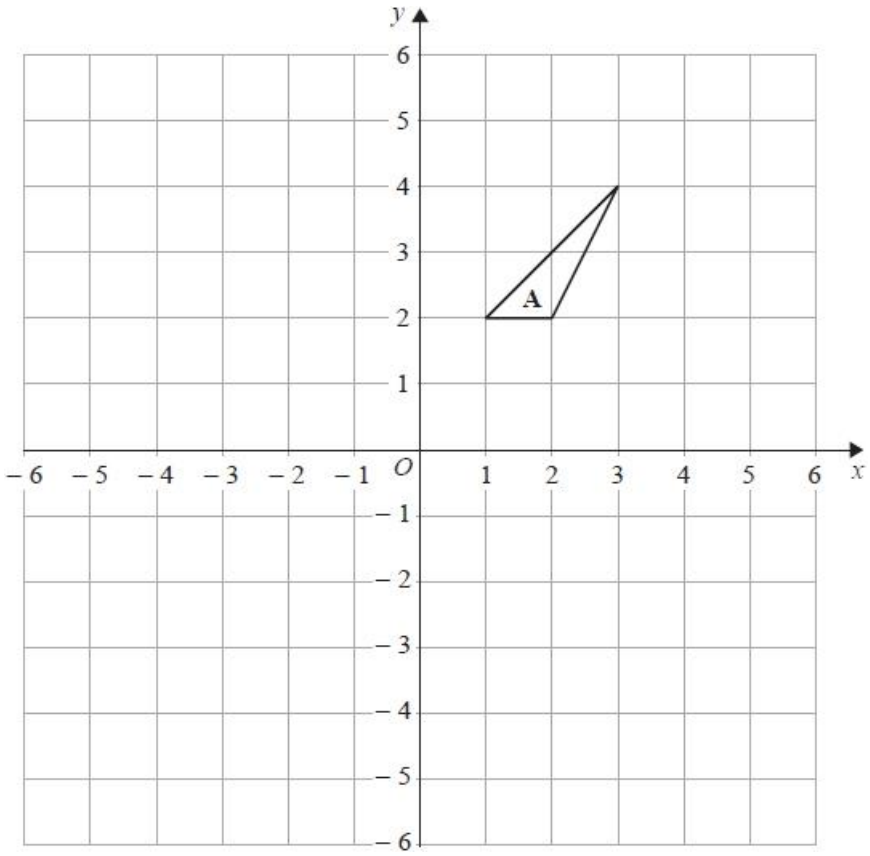
Describe fully the single transformation that maps triangle **A** onto triangle **B**.

.....

.....

(Total for Question is 3 marks)

Q14.



Triangle **A** is rotated 90° clockwise about the point (0, 1) to give triangle **B**.

Triangle **B** is translated by the vector $\begin{pmatrix} -3 \\ -1 \end{pmatrix}$ to give triangle **C**.

Describe fully the single transformation that maps triangle **A** onto triangle **C**.

.....

.....

(3)

(Total for question = 3 marks)

Q15.

***** One sheet of paper is 9×10^{-3} cm thick.

Mark wants to put 500 sheets of paper into the paper tray of his printer.
The paper tray is 4 cm deep.

Is the paper tray deep enough for 500 sheets of paper?
You must explain your answer.

(Total for Question is 3 marks)

Q16.

(a) Write down the value of $100^{\frac{1}{2}}$

.....

(1)

(b) Find the value of $125^{\frac{2}{3}}$

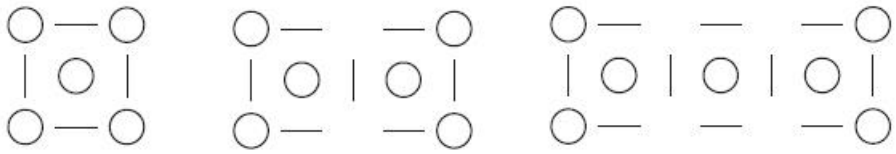
.....

(2)

(Total for question = 3 marks)

Q17.

Here are the first three patterns in a sequence.
Each pattern is made from lines and circles.



pattern number 1 pattern number 2 pattern number 3

(a) In the space below, complete pattern number 4

pattern number 4

(1)

(b) Complete the table.

Pattern number	1	2	3	4	5
Number of lines	4	7	10		

(1)

(c) Find the number of **lines** in pattern number 12

.....

(1)

(d) Find the number of **circles** in pattern number 20

.....

(1)

(Total for question = 4 marks)

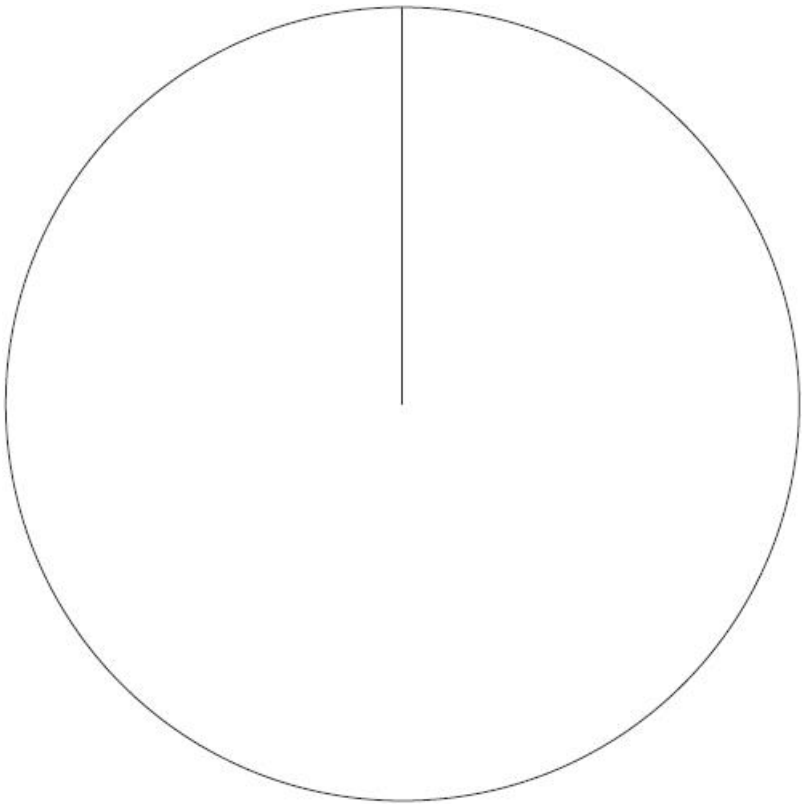
Q18.

Year 9 students from Halle School were asked to choose one language to study.

The table shows information about their choices.

Language	Number of students	
French	56	
Spanish	40	
German	24	

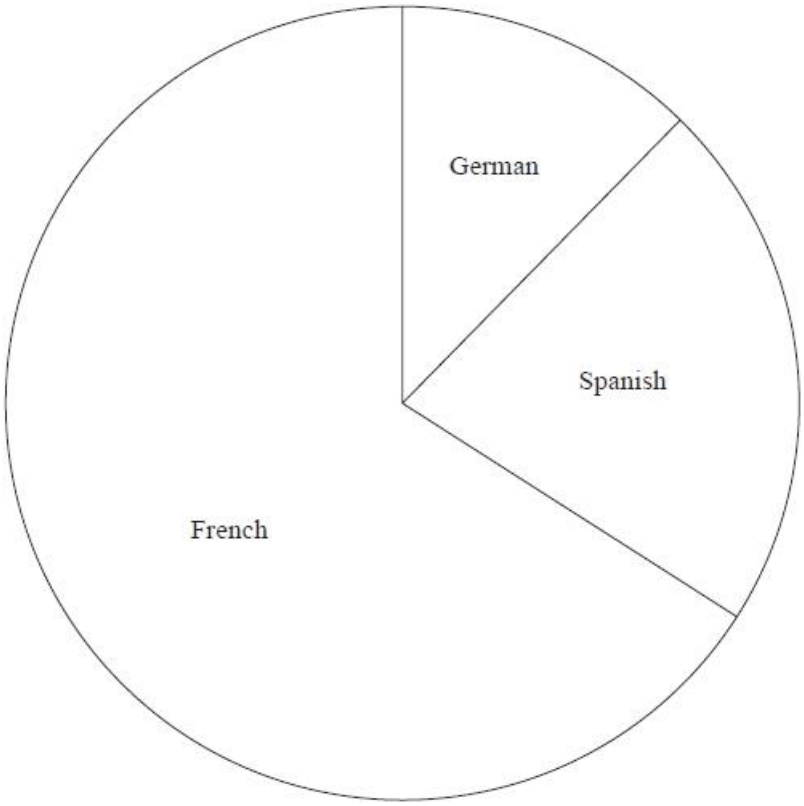
(a) Draw an accurate pie chart to show this information.



(3)

Year 9 students from Lowry School were also asked to choose one language to study.

This accurate pie chart shows information about their choices.



Shameena says,

"The pie chart shows that French was chosen by more Year 9 students at Lowry School than at Halle School."

(b) Is Shameena right?

You must explain your answer.

.....

.....

.....

(1)

(Total for question = 4 marks)

Q19.

Here is a prism.

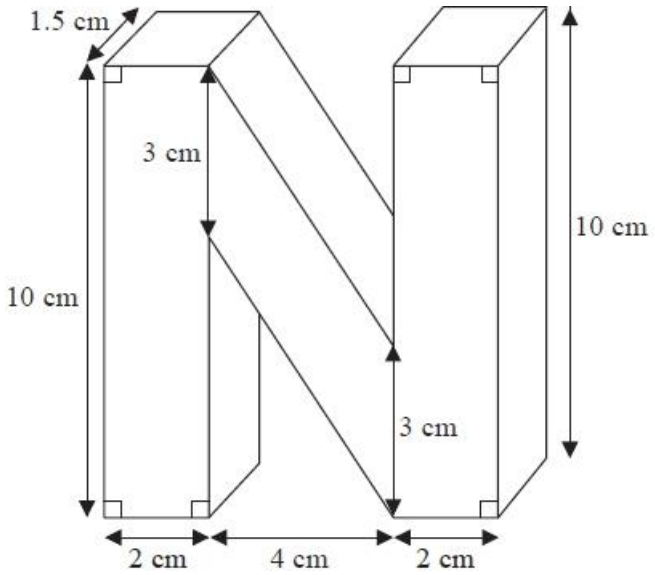


Diagram **NOT** accurately drawn

Work out the volume of the prism.

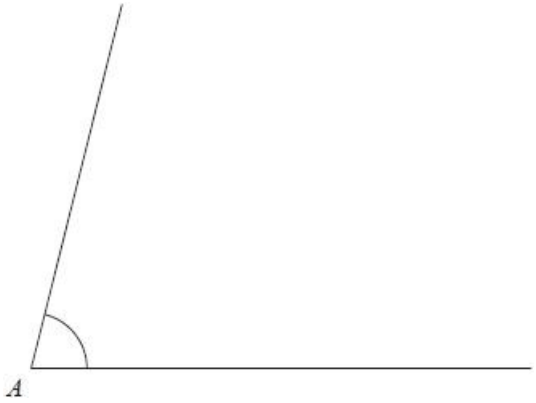
.....cm^3

(Total for question = 4 marks)

Q20.

(a) Use ruler and compasses to bisect the angle at *A*.

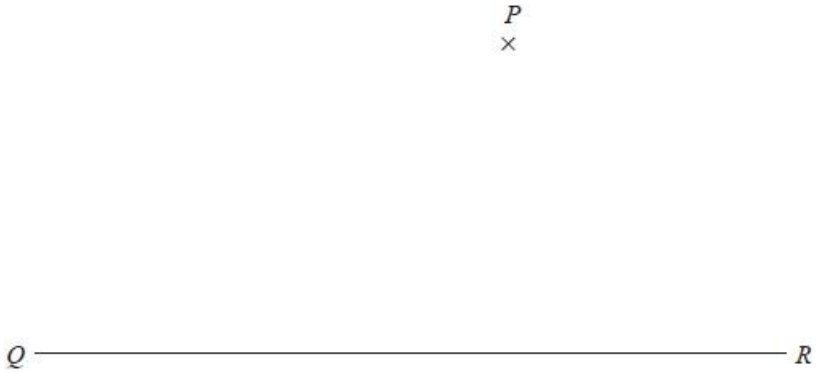
You must show all your construction lines.



(2)

(b) Use ruler and compasses to construct the perpendicular from the point *P* to the line *QR*.

You must show all your construction lines.

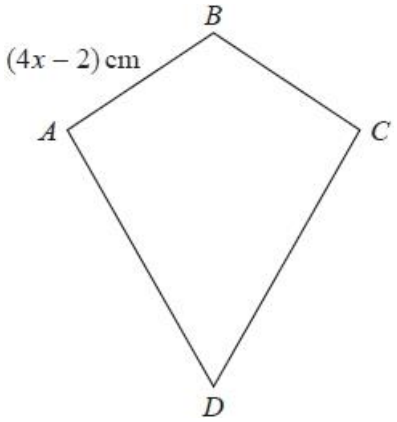


(2)

(Total for question = 4 marks)

Q21.

ABCD is a kite.



AB = (4*x* – 2) cm

Jasper says that *x* could be 0.5

(a) Explain why Jasper cannot be correct.

.....

.....

.....

(1)

AD = 3*AB*
The kite has a perimeter of 64 cm.

(b) Find the value of *x*.

x = ...

(3)

(Total for question = 4 marks)

Q22.

(a) Factorise $3e^2 + 5e$

.....

(1)

(b) Solve $7(k - 3) = 3k - 5$

k = ...

(3)

(c) Make a the subject of the formula $f = \frac{a+1}{2}$

.....

(2)

(Total for Question is 6 marks)

Mark Scheme

Q1.

Question	Working	Answer	Mark	Notes
		$\frac{27}{100}$ oe	B1	

Q2.

Question	Working	Answer	Mark	Notes
		$\frac{9}{100}$	B1	

Q3.

Question	Working	Answer	Mark	Notes
		33	B1	cao

Q4.

Question	Working	Answer	Mark	Notes
		72	B1	cao

Q5.

Question	Working	Answer	Mark	Notes
		42	B1	cao

Q6.

Question	Answer	Mark	Mark scheme	Additional guidance
	700	B1	for 700 Accept 7 hundreds	

Q7.

Question	Answer	Mark	Mark scheme	Additional guidance
	11	B1	cao	

Q8.

Paper 1MA1: 1F			
Question	Working	Answer	Notes
		$\frac{1}{4}$	B1 $\frac{1}{4}$ oe

Q9.

Question	Working	Answer	Mark	Notes
		8×10^4	B1	cao

Q10.

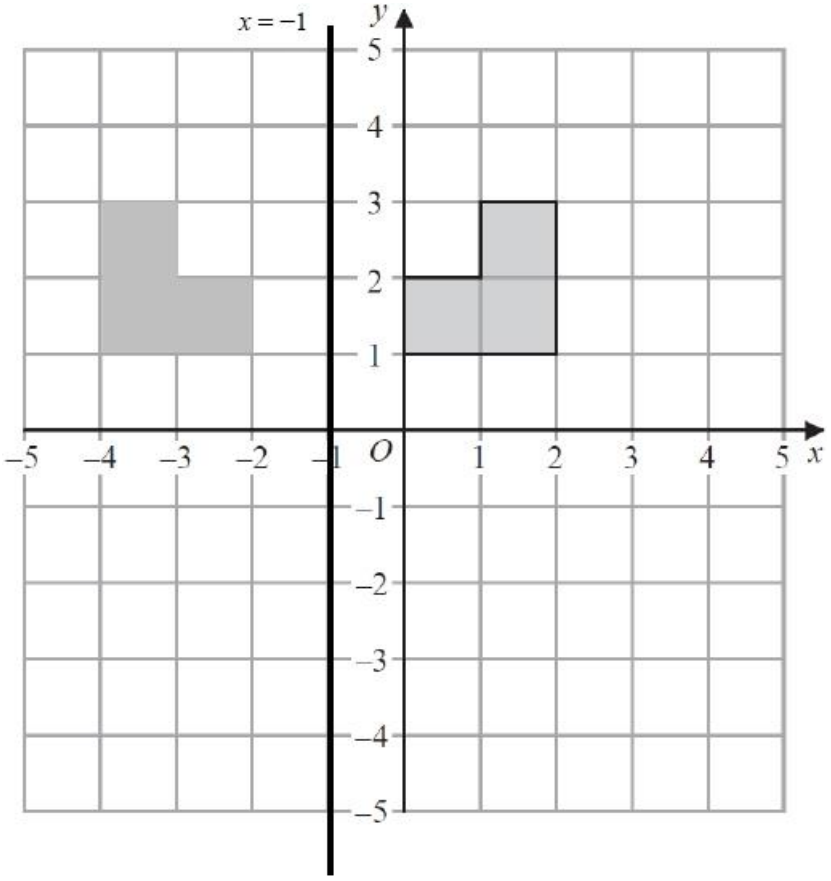
PAPER: 1MA0_1H				
Question	**Working**	**Answer**	**Mark**	**Notes**
(a)		4, 20, 56, 80, 94, 100	1	B1 cao
(b)		graph	2	M1 ft from their table for at least 5 points plotted correctly at the ends of the intervals provided table values are cumulative, condoning one arithmetic error, or if the shape of the graph is correct for 5 or 6 points plotted not at the ends but consistently within each interval and joined A1 cao for correct graph with points joined by curve or straight line segments
(c)		47 to 49	1	B1 for 47 to 49 or ft their cf graph at cf = 50
(d)		13 to 16	2	M1 for reading a value from their cf graph at time = 63 (84 to 87) A1 for answer in the range 13 to 16 or ft from their graph

Q11.

Question	Working	Answer	Mark	Notes
		18	4	M1 for correct initial use of Pythagoras eg $(AB^2 =)\ 10^2 - 6^2$ (= 64) or $AB = 8$ M1 (dep M1) for "$\sqrt{64}$" ÷ 2 (= 4) M1 for method to find area of trapezium eg $\frac{1}{2} \times$ "4" × (6 + 2 + 6) A1 cao OR M1 for correct initial use of Pythagoras eg $(AB^2 =)\ 10^2 - 6^2$ (= 64) or $AB = 8$ M1 (dep M1) for method to find area of ΔABC eg $\frac{1}{2} \times$ "$\sqrt{64}$" × 6 (= 24) or area of ΔAED $\frac{1}{2} \times 6 \div 2 \times$ "4" (= 6) or $24 \times (\frac{1}{2})^2$ (= 6) M1 for a complete method to find area of $EDBC$ e.g $\frac{3}{4} \times$ "24" eg "24" − "6" A1 cao

Q12.

Question	Working	Answer	Mark	Notes
(a)		Reflection drawn	B2 [B1]	for a fully correct reflection [for either identifying the line $x = -1$ or a correct reflection in a different vertical line]
(b)		$y = x$	B1	for $y = x$ oe



Q13.

Question		Working	Answer	Mark	Notes
			Rotation 180° Centre (3, 3) **or** Enlargement Scale factor -1 Centre (3, 3)	3	B1 for rotation B1 for 180° B1 for (3, 3) **OR** B1 for enlargement B1 for scale factor -1 B1 for (3, 3) B0 for a combination of transformations

Q14.

PAPER: 1MA0/1H				
Question	**Working**	**Answer**	**Mark**	**Notes**
	B at (1, 0), (1, –1), (3, –2) **C** at (–2, –1), (–2, –2), (0, –3) Rotation 90° clockwise (or 270° anti-clockwise) about (–2, 2)	Rotation 90° clockwise centre (–2, 2)	3	M2 for stating rotation 90° clockwise (or 270° anti-clockwise) or centre (–2, 2) (M1 for showing **B** and **C** correctly on the grid) A1 for a fully correct description NB Award a maximum of M1 if more than one transformation is given

Q15.

		Working	Answer	Mark	Notes
* **QWC**			No + explanation	3	M1 for $500 \times 9 \times 10^{-3}$oe A1 for 4.5 C1 (dep M1) for correct decision based on comparison of their paper height with 4 **OR** M1 for $4 \div 500$ oe A1 for 0.008 C1 (dep M1) for correct decision based on comparison of their paper thickness with 0.009 **OR** M1 for $4 \div (9 \times 10^{-3})$ oe A1 for 444(.4...) C1 (dep M1) for correct decision based on comparison of their number of sheets of paper with 500

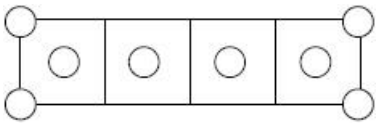
Q16.

Question	Working	Answer	Mark	Notes
(a)		10	B1	accept ±10
(b)		25	M1	for $(\sqrt[3]{125})^2$ **or** $\sqrt[3]{125} = 5$ **or** $125^2 = 15625$ **or** $\sqrt[3]{125^2}$
			A1	cao

Q17.

Question	Working	Answer	Mark	Notes
(a)		Diagram	1	B1 for correct addition to diagram
(b)		13, 16	1	B1 cao
(c)		37	1	B1 cao
(d)		24	1	B1 cao

(a)



Q18.

Question	Working	Answer	Mark	Notes
(a)		168°, 120°, 72°	M1	for correct working to find an angle (could be implied by one angle drawn correctly on the pie chart)
			A1	for all three angles drawn ±2°
			B1	(dep on M1) for correct labels (languages)
(b)		No and reason	C1	NO and reason given e.g. "don't have actual figures for Lowry"

Q19.

5MB2F November 2016					
Question	Working	Answer	Mark	Notes	Type
	$4 \times 3 = 12$ $2 \times 10 = 20$ $(12 + 20 + 20) \times 1.5$ $8 \times 10 \times 1.5 = 120$ $\frac{1}{2} \times 4 \times 7 \times 1.5 = 21$ $120 - 21 - 21$	78	4	M1 for method to find area of parallelogram or 2 triangles M1 for method to find whole cross sectional area M1 for complete method to find volume A1 cao OR M1 for method to find volume of enclosing cuboid or volume of a single cuboid. M1 for method to find volume of triangular prism(s) of method to find parallelogram prism M1 for complete method to find volume of prism. A1 cao	E

Q20.

Question	Working	Answer	Mark	Notes
(a)		Correct construction	2	M1 for correct construction arcs or bisector within guidelines but no (or incorrect) construction arcs A1 for bisector within guidelines with correct arcs shown
(b)		Correct construction	2	M1 for correct construction arcs or perpendicular within guidelines but no (or incorrect) construction arcs A1 for perpendicular within guidelines with correct arcs shown

Q21.

Question	Answer	Mark	Mark scheme	Additional guidance
(a)	Explanation	C1	for explanation, eg AB cannot be zero (cm) **or** shows AB to be zero, eg $4 \times 0.5 - 2 = 0$	Accept say 'AB would then be 0'
(b)	2.5	P1	for a correct expression for AD, eg $3(4x - 2)$ **or** $12x - 6$ **OR** $2(3AB + AB) = 64$ oe **or** $3AB + AB = 32$ oe **or** $AB = 8$ **OR** for an equation with mixed variables, eg. $6AB + 2(4x - 2) = 64$	May be seen on diagram
		P1	for forming a correct equation in x, eg $4x - 2 + 4x - 2 + 3(4x - 2) + 3(4x - 2) = 64$ **or** $4x - 2 = 8$ **or** $4x - 2 + 3(4x - 2) = 32$	
		A1	cao	

Q22.

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
	(a)		$e(3e+5)$	1	B1 for $e(3e+5)$
	(b)		4	3	M1 for intention to expand brackets eg $7k-21$ **or** division of all terms on RHS by 7 as a first step M1 for correct method to isolate terms in k in an equation A1 cao
	(c)		$a=2f-1$	2	M1 for a correct first step eg intention to multiply both sides by 2 A1 cao