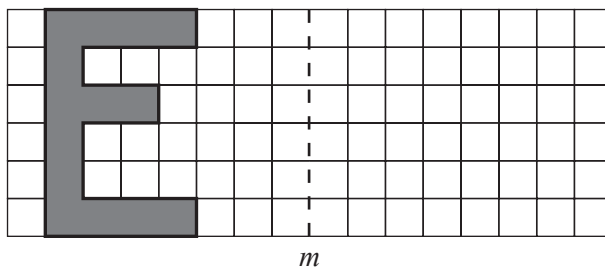




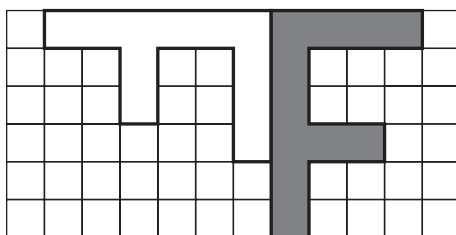
- 1 (a) Draw accurately the reflection of the letter E in the mirror line  $m$ .



[2]

- (b) Each diagram below shows a shaded letter and its image. In each case describe fully the single transformation which maps the **shaded** figure onto its image. Mark and label any points you need in your descriptions.

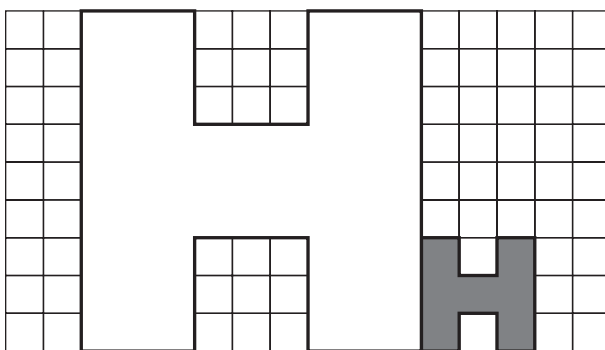
(i)



Answer(b)(i)

[3]

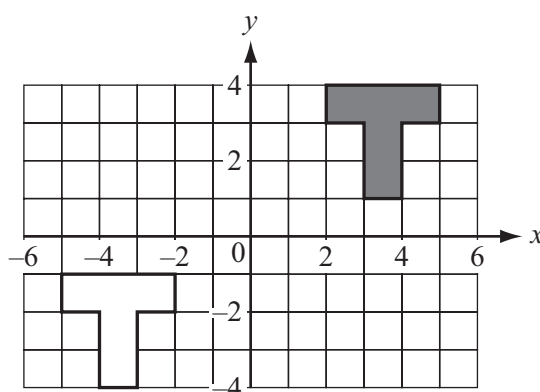
(ii)



Answer(b)(ii)

[3]

(iii)

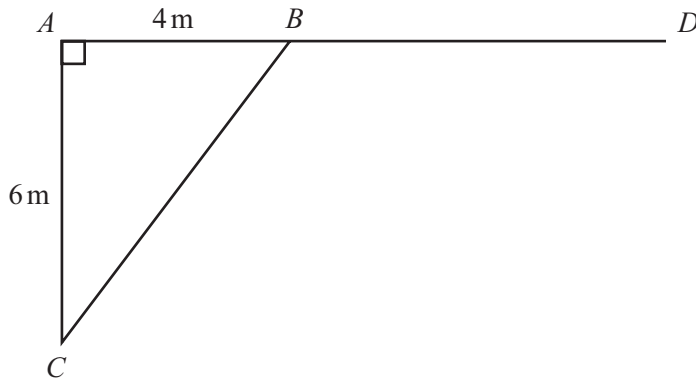


Answer(b)(iii)

[3]

For  
Examiner's  
Use

- 2 In the diagram below  $ABD$  is a straight line.  
 $AB = 4$  m and  $AC = 6$  m. Angle  $BAC = 90^\circ$ .



NOT TO  
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- (a) (i) Use **trigonometry** to calculate angle  $ABC$ .

Answer(a)(i) Angle  $ABC =$  ..... [2]

- (ii) Find angle  $CBD$ .

Answer(a)(ii) Angle  $CBD =$  ..... [1]

- (b) **Calculate** the length of  $BC$ .

Answer(b)  $BC =$  ..... m [2]

- (c) Work out the perimeter and area of triangle  $ABC$ .  
 Give the correct units for each.

Answer (c) Perimeter = ..... Area = ..... [3]

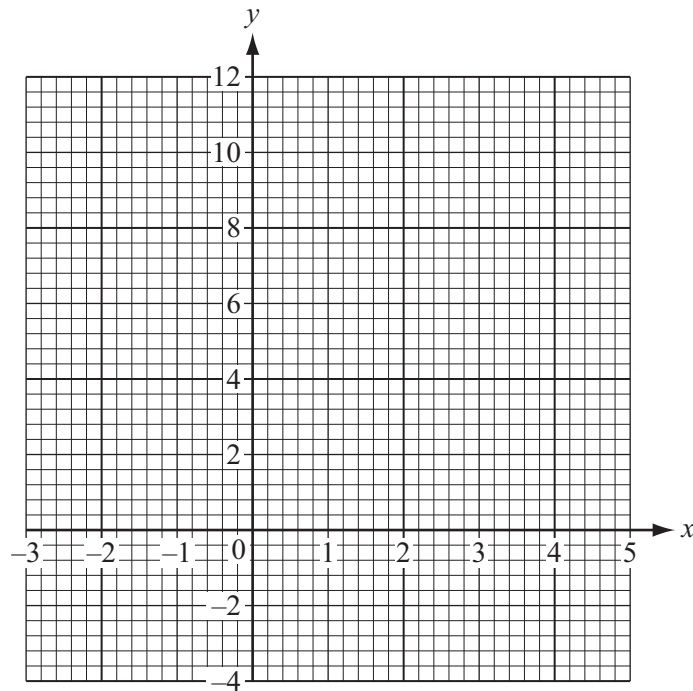
For  
Examiner's  
Use

- 3 (a) (i) Complete the table of values for  $y = x^2 - 2x - 3$ .

$x$	-3	-2	-1	0	1	2	3	4	5
$y$	12		0		-4	-3	0	5	

[3]

- (ii) Draw the graph of  $y = x^2 - 2x - 3$  on the grid below.



[4]

- (iii) Use your graph to find the solutions to  $x^2 - 2x - 3 = -1$ .  
Give your answers to 1 decimal place.

Answer(a)(iii)  $x = \dots\dots\dots$  or  $x = \dots\dots\dots$  [2]

- (b) (i) Complete the table of values for the equation  $y = \frac{2}{x}$ .

$x$	0.25	0.5	1	2	3	4	5
$y$		4		1	0.7	0.5	0.4

[1]

- (ii) On the same grid draw the graph of  $y = \frac{2}{x}$  for  $0.25 \leq x \leq 5$ .

[3]

- (iii) Write down the  $x$  co-ordinate of the point of intersection of your two graphs.

Answer(b)(iii)  $x = \dots\dots\dots$  [1]

For  
Examiner's  
Use

- 4 Jane records the number of telephone calls she receives each day for two weeks.

5 6 10 0 15 6 12 2 13 16 0 16 6 10

For  
Examiner's  
Use

- (a) Calculate the mean.

Answer(a) ..... [3]

- (b) Find the median.

Answer(b) ..... [2]

- (c) Write down the mode.

Answer(c) ..... [1]

- (d) Complete the frequency table below.

Number of calls	0 – 4	5 – 9	10 – 14	15 – 19
Frequency				

[2]

- (e) Find the probability that Jane receives

- (i) ten or more calls,

Answer(e)(i) ..... [1]

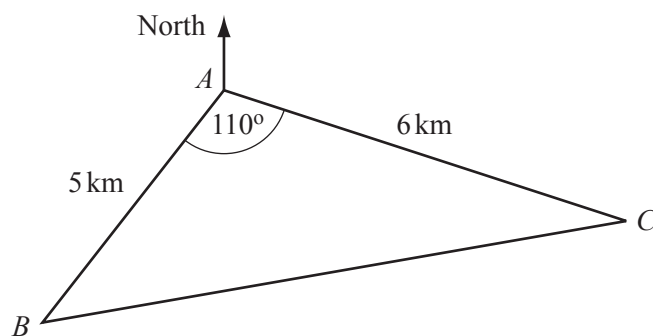
- (ii) less than five calls.

Answer(e)(ii)..... [1]

- (f) Estimate the number of days in the next six weeks that Jane can expect to receive 10 – 14 calls.

Answer(f) ..... days [2]

5

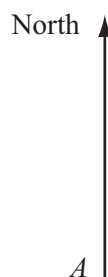


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In triangle  $ABC$ ,  $AB = 5$  km,  $AC = 6$  km and angle  $BAC = 110^\circ$ .

The bearing of  $C$  from  $A$  is  $100^\circ$ .

- (a) Make a scale drawing of the triangle  $ABC$ .  
Use a scale of 1 centimetre to represent 1 kilometre.  
Start at the point  $A$  marked below, where a North line has been drawn.



For  
Examiner's  
Use

[4]

**(b) Measure** and write down

**(i)** angle  $ABC$ ,

*Answer(b)(i)* Angle  $ABC =$  ..... [1]

**(ii)** the bearing of  $B$  from  $C$ .

*Answer(b)(ii)* ..... [1]

**(c)** Find the distance in kilometres between  $B$  and  $C$ .

*Answer(c)* ..... km [1]

**(d)** A well is 4 kilometres from  $A$  and 5 kilometres from  $C$ .

**(i)** Use your compasses to find **two** possible positions for the well.  
Label the two positions  $P$  and  $Q$ .

[3]

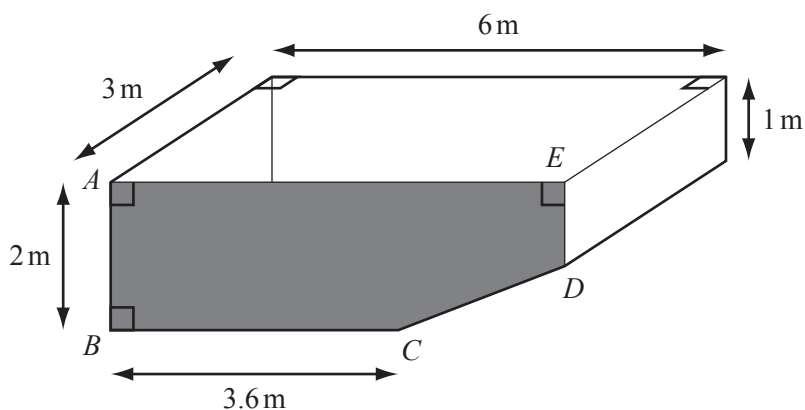
**(ii)** The well is less than 6 kilometres from  $B$ .  
Use a measurement from your drawing to complete the following statement.

*Answer(d)(ii)* The well is at position ..... and is ..... kilometres from  $B$ . [2]

---

- 6 The diagram shows a swimming pool with cross-section  $ABCDE$ .  
The pool is 6 metres long and 3 metres wide.  
 $AB = 2$  m,  $ED = 1$  m and  $BC = 3.6$  m.

For  
Examiner's  
Use



NOT TO  
SCALE

- (a) (i) Calculate the area of the cross-section  $ABCDE$ .  
**Show your working.**

Answer(a)(i) .....  $\text{m}^2$  [4]

- (ii) Calculate the volume of the water in the pool when it is full.  
Give your answer in **litres**.  
[1 cubic metre is 1000 litres.]

Answer(a)(ii)..... litres [2]

- (iii) One litre of water evaporates every hour for each square metre of the water surface.  
How many litres of water will evaporate in 2 hours?

Answer(a)(iii) ..... litres [2]



- (b) **Another pool** holds 61 500 litres of water.  
Jon uses a hosepipe to fill this pool.  
Water flows through the hosepipe at 1000 litres per hour.
- (i) Calculate how long it takes to fill the pool.  
Give your answer in hours and minutes.

Answer(b)(i) ..... hours ..... minutes [2]

- (ii) Change 61 500 litres to gallons.  
[4.55 litres = 1 gallon.]

Answer(b)(ii) ..... gallons [1]

- (iii) Every 10 000 **gallons** of water needs 2.5 litres of purifier.  
How many litres of purifier does Jon use for this pool?

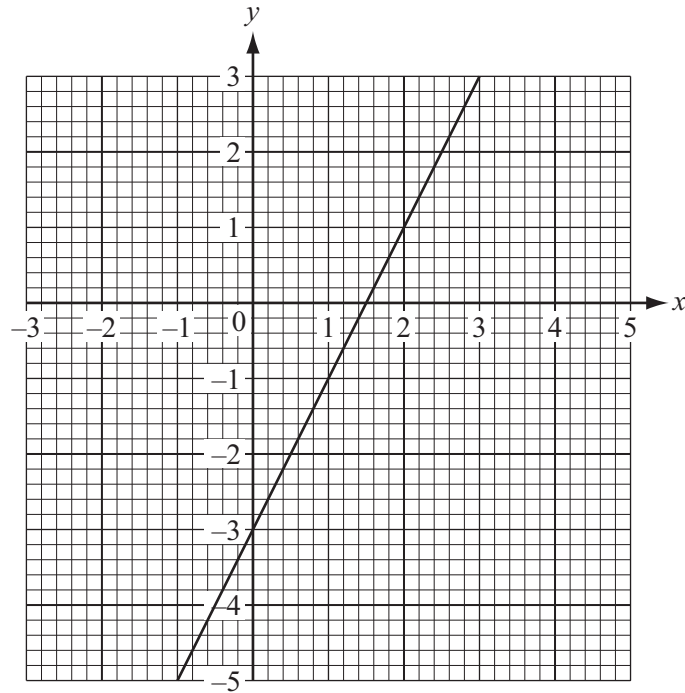
Answer(b)(iii) ..... litres [2]

- (iv) The purifier is sold in 1 litre bottles.  
How many **bottles** of purifier must Jon buy for this pool?

Answer(b)(iv) ..... [1]

---

7 (a)



The simultaneous equations  $2x - y = 3$  and  $x + y = 2$  can be solved graphically.

- (i) Which of these equations is shown by the line on the grid above?

Answer(a)(i) ..... [1]

- (ii) Find the gradient of the line on the grid.

Answer(a)(ii) ..... [2]

- (iii) Complete the table below for the other equation.

$x$	-1	0	1	2	3
$y$					

[2]

- (iv) Draw this line on the grid above.

[1]

- (v) Use **your graphs** to write down the solution to the two equations.

Give your values correct to 1 decimal place.

Answer(a)(v)  $x =$  .....

$y =$  ..... [3]

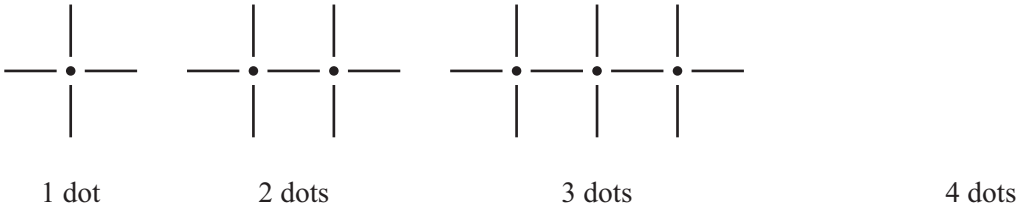
- (b) Use algebra to solve the following simultaneous equations **exactly**.  
Show all your working.

$$\begin{aligned} 2x - y &= 3, \\ x + y &= 2. \end{aligned}$$

Answer(b)  $x = \dots\dots\dots$

$y = \dots\dots\dots$  [4]

- 8 The diagram below shows a sequence of patterns made from dots and lines.



- (a) Draw the next pattern in the sequence in the space above. [1]

- (b) Complete the table for the numbers of dots and lines.

Dots	1	2	3	4	5	6
Lines	4	7	10			

[2]

- (c) How many lines are in the pattern with 99 dots?

Answer(c)  $\dots\dots\dots$  [2]

- (d) How many lines are in the pattern with  $n$  dots?

Answer(d)  $\dots\dots\dots$  [2]

- (e) Complete the following statement.

There are 85 lines in the pattern with  $\dots\dots\dots$  dots. [2]

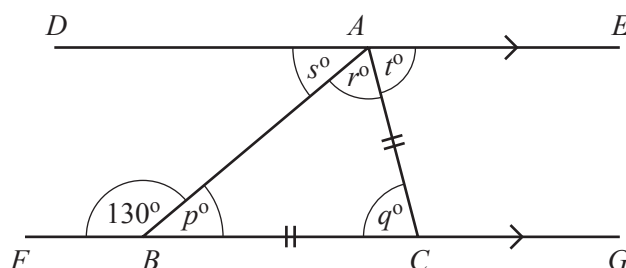
For  
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- 9 (a) Calculate the size of one exterior angle of a regular heptagon (seven-sided polygon).  
Give your answer correct to 1 decimal place.

For  
Examiner's  
Use

Answer(a) ..... [3]

(b)



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SCALE

In the diagram above,  $DAE$  and  $FBCG$  are parallel lines.  
 $AC = BC$  and angle  $FBA = 130^\circ$ .

- (i) What is the special name given to triangle  $ABC$ ?

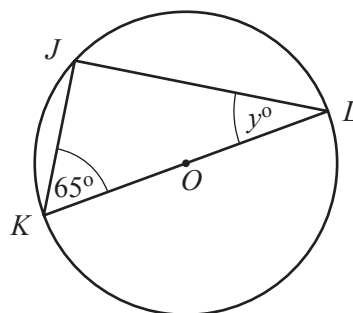
Answer(b)(i) ..... [1]

- (ii) Work out the values of  $p$ ,  $q$ ,  $r$ ,  $s$  and  $t$ .

Answer (b)(ii)  $p = \dots\dots\dots q = \dots\dots\dots r = \dots\dots\dots s = \dots\dots\dots t = \dots\dots\dots$  [5]

(c)

$J$ ,  $K$  and  $L$  lie on a circle centre  $O$ .  
 $KOL$  is a straight line and angle  $JKL = 65^\circ$ .  
Find the value of  $y$ .



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Answer(c)  $y = \dots\dots\dots$  [2]

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