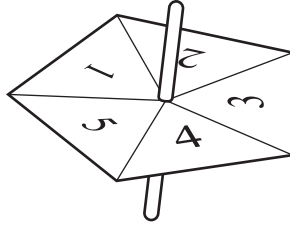




1



For  
Examiner's  
Use

Jonah uses a fair five-sided spinner in a game.

(a) What is the probability that the spinner lands on

(i) 3,

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

(ii) an even number,

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

(iii) a number greater than 5?

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

(b) Jonah spins the spinner 25 times and records the results in a frequency table.

Number that the spinner lands on	Frequency
1	8
2	4
3	5
4	
5	2

(i) Fill in the missing number. [1]

(ii) Write down the mode.

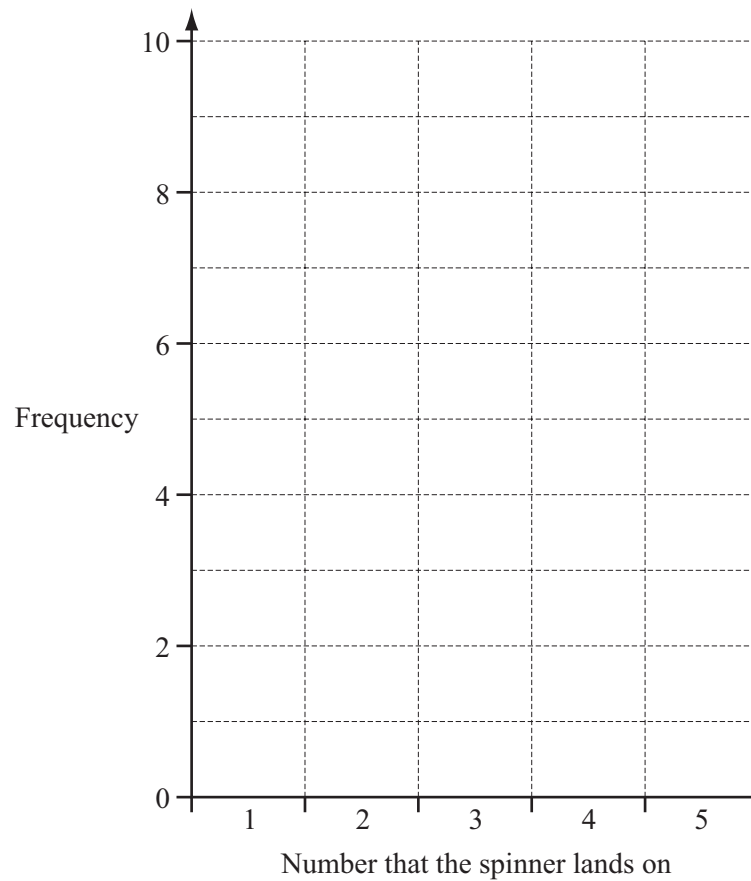
Answer(b)(ii) ..... [1]

(ii) Calculate the mean.

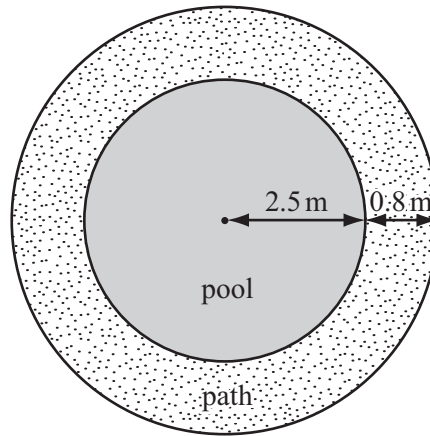
*For  
Examiner's  
Use*

*Answer(b)(iii)* ..... [3]

(iv) On the grid, draw a bar chart to show these results.



[3]



NOT TO SCALE

For Examiner's Use

The diagram shows a circular pool, of radius 2.5 metres, surrounded by a path 0.8 metres wide.

(a) Calculate

(i) the perimeter of the pool,

Answer(a)(i) ..... m [2]

(ii) the area of the pool,

Answer(a)(ii) ..... m<sup>2</sup> [2]

(iii) the area of the path.

Answer(a)(iii) ..... m<sup>2</sup> [2]

(b) The water in the pool has a depth of 0.4 metres.  
 Calculate the volume of water in the pool.  
 Give your answer in litres. [1 cubic metre = 1000 litres.]

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

(c) When the pool is emptied for cleaning, the water flows out at a rate of 250 litres each minute.  
 Calculate how long it takes to empty the pool.  
 Give your answer to the nearest minute.

Answer(c) ..... min [3]

- 3 (a) Bruce mixes blue and yellow paint to make green paint.  
He uses blue and yellow paint in the ratio blue : yellow = 7 : 3.

- (i) He makes 15 litres of green paint.  
How many litres of yellow paint does he use?

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

- (ii) He buys the yellow paint in tins. Each tin contains 2 litres of paint.  
Write down the number of tins of yellow paint he buys.

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

- (b) Tins of red paint cost \$9.25 each.  
In a sale, the shop reduces the price by 12%.

- (i) Calculate the sale price.

Answer(b)(i) \$ ..... [3]

- (ii) Bruce buys 4 tins of red paint in the sale.  
How much does he pay?

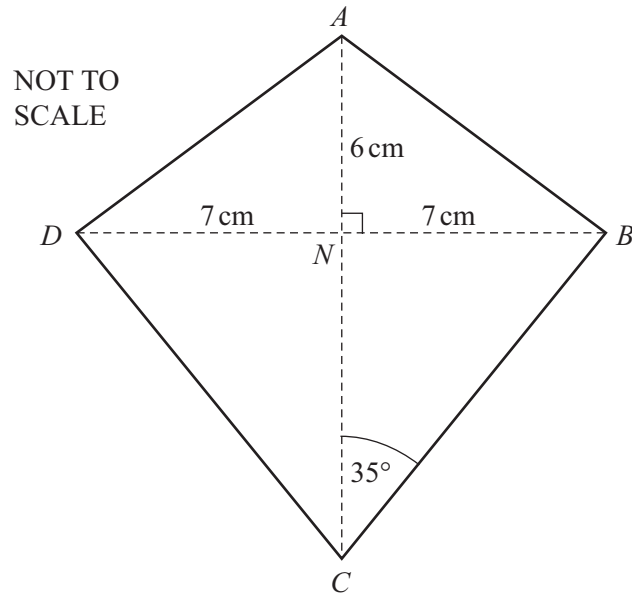
Answer(b)(ii) \$ ..... [1]

- (iii) Before the sale, he bought 5 tins at \$9.25 each.  
Calculate how much he paid for these 5 tins.

Answer(b)(iii) \$ ..... [1]

- (iv) Use **parts (b)(ii) and (b)(iii)** to find the average (mean) price he paid for a tin of red paint.

Answer(b)(iv) \$ ..... [3]



The diagram shows a kite  $ABCD$ , with  $AB = AD$  and  $DC = BC$ .  
 The diagonals  $AC$  and  $BD$  intersect at right angles at  $N$ .  
 $AN = 6\text{ cm}$  and  $NB = ND = 7\text{ cm}$ .  
 Angle  $BCN = 35^\circ$ .

(a) (i) What is the mathematical name for triangle  $BCD$ ?

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

(ii) Complete the following statement.

Triangle  $BNC$  is congruent to triangle ..... [1]

(iii) Write down the size of angle  $DCB$ .

Answer(a)(iii) Angle  $DCB =$  ..... [1]

**(b) (i)** Use trigonometry to calculate the size of angle  $NAB$ .

For  
Examiner's  
Use

*Answer(b)(i)* Angle  $NAB =$  ..... [2]

**(ii)** Calculate the length of  $AB$ .

*Answer(b)(ii)*  $AB =$  ..... cm [2]

**(c)** Use trigonometry to calculate the length of  $BC$ .

*Answer(c)*  $BC =$  ..... cm [3]

**(d)** Calculate the perimeter of the kite.

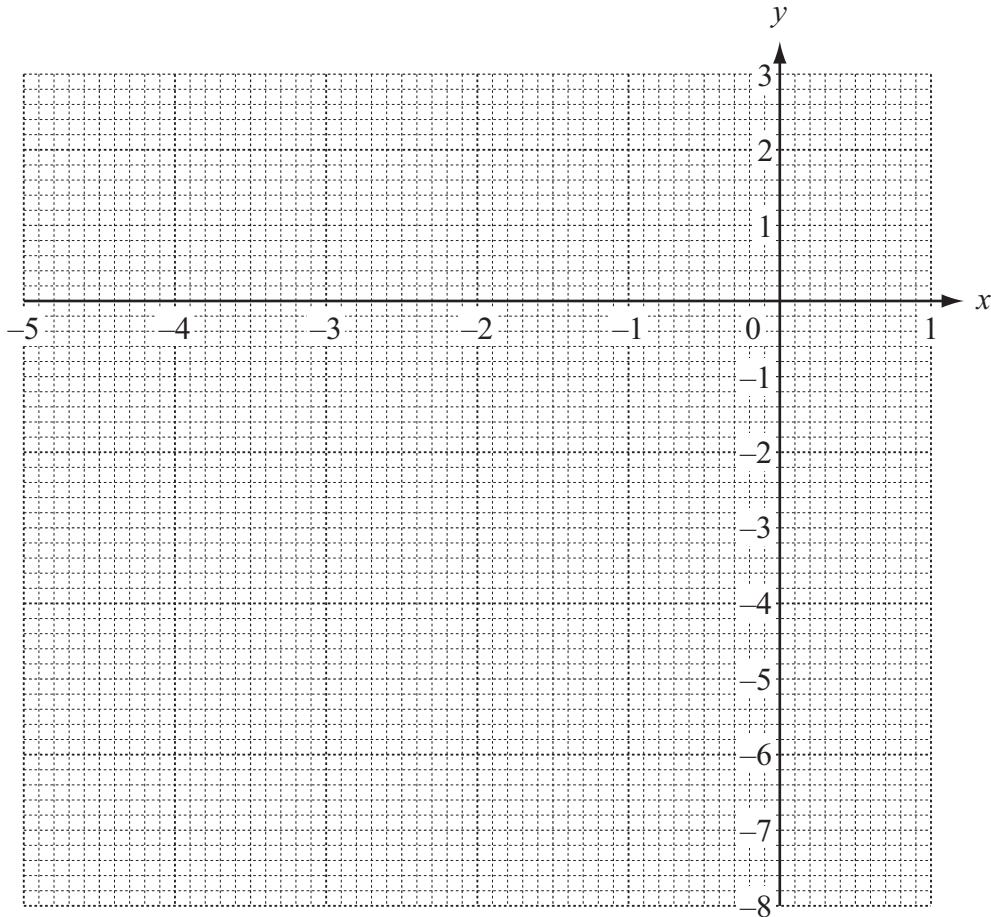
*Answer(d)* ..... cm [2]

- 5 (a) Complete the table of values for  $y = x^2 + 4x - 3$ .

$x$	-5	-4	-3	-2	-1	0	1
$y$		-3		-7	-6	-3	

[3]

- (b) On the grid below draw the graph of  $y = x^2 + 4x - 3$  for  $-5 \leq x \leq 1$ .



[4]

- (c) (i) Write down the co-ordinates of the lowest point of the graph.

*Answer(c)(i)* ( ..... , ..... ) [1]

- (ii) Write down the solutions of the equation  $x^2 + 4x - 3 = 0$ .

*Answer(c)(ii)*  $x = \dots\dots\dots$  or  $x = \dots\dots\dots$  [2]



(d) (i) Mark the point  $(-2, 1)$  on the grid and label it  $A$ . [1]

(ii) Draw the straight line joining  $A$  to the point where the graph of  $y = x^2 + 4x - 3$  cuts the  $y$ -axis. [1]

(iii) Find the gradient of your line.

Answer(d)(iii) ..... [2]

(iv) Write down the equation of your line in the form  $y = mx + c$ .

Answer(d)(iv)  $y =$  ..... [2]

6 Ravinder scores  $x$  marks in a test.

(a) Manpreet scores 4 more marks than Ravinder.  
Write down Manpreet's mark in terms of  $x$ .

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

(b) Tamsin scores 3 times as many marks as Ravinder.  
Write down Tamsin's mark in terms of  $x$ .

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

(c) (i) Write down and simplify the total of the three marks in terms of  $x$ .

Answer(c)(i) ..... [2]

(ii) The mean of these marks is 28. Show that  $5x + 4 = 84$ .

Answer (c)(ii)

[1]

(iii) Solve the equation  $5x + 4 = 84$ .

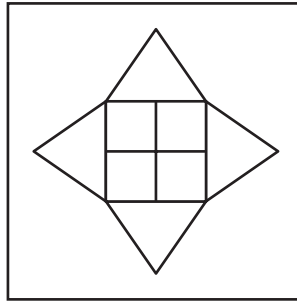
Answer(c)(iii)  $x =$  ..... [2]

(d) What mark did Tamsin score?

Answer(d) ..... [1]

(e) Dinesh scored 63 marks out of 75.  
Work out the mark Dinesh scored as a percentage.

Answer(e) ..... % [2]



Peter makes square tiles, like the one shown above.

- (a) Write down the order of rotational symmetry of the tile.

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

- (b) On the diagram, draw all the lines of symmetry of the tile. [2]

- (c) Charles orders 2800 tiles from Peter at 1.75 euros (€) each.  
He pays Peter €2300 now.  
Calculate the amount he still has to pay.

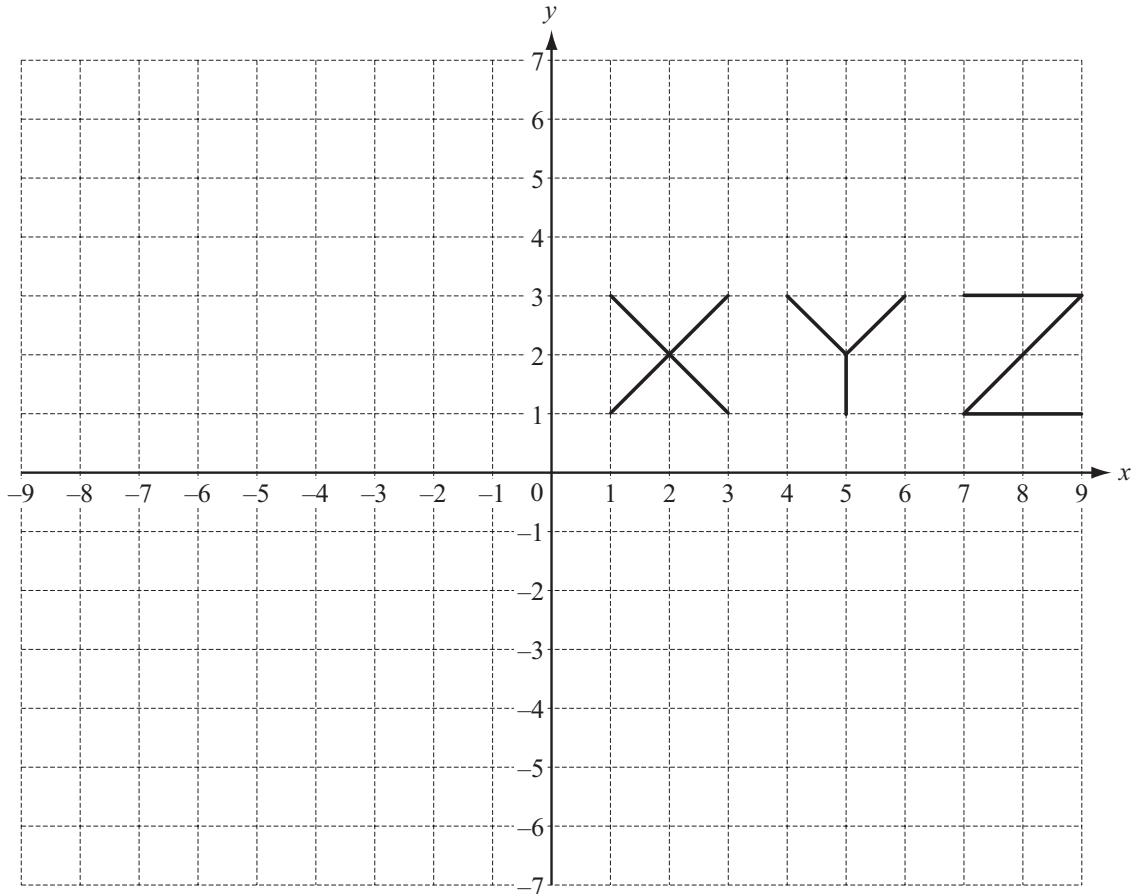
Answer(c) € ..... [3]

- (d) Peter changes the €2300 into dollars (\$) when the exchange rate is €1 = \$1.348.  
Calculate how many dollars Peter receives.  
Give your answer correct to 2 decimal places.

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

- (e) Peter borrows \$5000 from a bank at a rate of 9.2% per year **compound** interest.  
Calculate the amount he owes after 2 years.  
Give your answer correct to 2 decimal places.

Answer(e) \$ ..... [3]



(a) On the grid,

(i) translate X by the vector  $\begin{pmatrix} -7 \\ 2 \end{pmatrix}$ , [2]

(ii) rotate Y through  $90^\circ$  anticlockwise about the origin. [2]

(b) (i) On the grid, reflect Z in the x-axis. This is the image  $Z_1$ . [2]

(ii) On the grid, reflect the image  $Z_1$  in the line  $x = 4$ . This is the image  $Z_2$ . [2]

(iii) Describe a **single** transformation which maps the image  $Z_2$  onto the original Z.

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

Question 9 is printed on the next page.

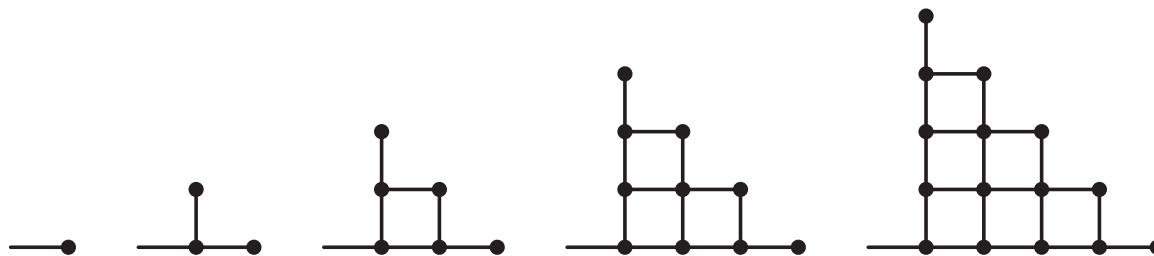


Diagram 1    Diagram 2    Diagram 3    Diagram 4    Diagram 5

The diagrams show a pattern of lines and dots.

(a) Complete the table below.

Diagram number	1	2	3	4	5
Number of lines	1	3	7		
Number of dots	1	3	6		

[4]

(b) Work out the number of lines and the number of dots in Diagram 7.

Answer(b) Number of lines = ..... ,      Number of dots = ..... [2]

(c) The number of dots in Diagram  $n$  is  $\frac{1}{2}n(n + 1)$ .

(i) Use this formula to check your result for Diagram 5.

**You must show your working.**

Answer (c)(i)

[2]

(ii) How many dots are there in Diagram 20?

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

(d) The number of lines in Diagram  $n$  is  $n^2 + kn + 1$ .

Use the information about Diagram 3 from the table to calculate the value of  $k$ .

Answer(d)  $k =$  ..... [2]

Permission to reproduce items where third-party owned material protected by copyright is included has been sought and cleared where possible. Every reasonable effort has been made by the publisher (UCLES) to trace copyright holders, but if any items requiring clearance have unwittingly been included, the publisher will be pleased to make amends at the earliest possible opportunity.

University of Cambridge International Examinations is part of the Cambridge Assessment Group. Cambridge Assessment is the brand name of University of Cambridge Local Examinations Syndicate (UCLES), which is itself a department of the University of Cambridge.