Scholarship Paper 2024

Subject: Mathematics Paper 2

Time: 1 Hour

You must have:
Pen
Pencil

Total Marks
70

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name.
- Answer the questions in the answer sheets provided**.**

  – *there may be more space than you need.*

Information

- The total mark for this paper is 70
- The marks for **each** question are shown in brackets

  – *use this as a guide as to how much time to spend on each question.*

Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Write your answers neatly and in good English.
- Try to answer every question.
- Check your answers if you have time at the end.

Questions

Q1.

Bill's weight decreases from 64.8 kg to 59.3 kg.

Calculate the percentage decrease in Bill's weight.
 Give your answer correct to 3 significant figures.

....

(Total for Question is 3 marks)

Q2.
A film starts at 17 50

The film ends at 19 30

(a) How long does the film last?

....

(2)

Jackie buys some tickets to see the film.

Each ticket costs £4.50

Jackie pays with two £20 notes.

Jackie gets £8.50 change.

(b) How many tickets did Jackie buy?

....

(3)

(Total for Question is 5 marks)

Q3.

Make *m* the subject of the formula $6m^2 = k$

$m = $ . . . .

(Total for Question is 2 marks)

Q4.

 * 14 students did a history test.

Here are the results.

Girls	3	8	2	4	3	4	4	6
Boys	3	6	3	3	1	4		

Adele says,
"The range of the girls' marks is 1 more than the range of the boys' marks."
Is Adele right?
 You must show your working.

(Total for Question is 3 marks)

Q5.

There are yellow discs, red discs, blue discs and green discs in a bag.
Dinesh is going to take at random a disc from the bag.

The table shows each of the probabilities that Dinesh will take a red disc, or a blue disc, or a green disc.

Colour	yellow	red	blue	green
Probability		0.40	0.25	0.15

(a) Work out the probability that he will take a yellow disc.

....
(2)

Dinesh takes at random a disc from the bag.
He writes down the colour of the disc.
He puts the disc back into the bag.

He will do this 60 times.

(b) Work out an estimate for the number of times he takes a red disc from the bag.

....
(2)

(Total for Question is 4 marks)

Q6.

The table shows information about some items for sale in a clothes shop.

Item	Size	Colour	Price
Dress	large	red	£28
Trousers	medium	black	£19
Shirt	medium	red	£15
Blouse	large	white	£12
Shorts	small	blue	£16
Fleece	extra large	red	£23

(a) Write down the colour of the blouse.

....

(1)

(b) Write down the size of the cheapest item that is red.

....

(1)

Kate bought the dress and the shirt.

(c) Work out the total cost.

£...

(1)

(Total for Question is 3 marks)

Q7.

The pictogram shows the number of tins of dog food sold in a shop on Monday, on Tuesday and on Wednesday last week.

On Thursday, 60 tins of dog food were sold in the shop.
On Friday, 35 tins of dog food were sold in the shop.

(a) Use this information to complete the pictogram.

(2)

More tins of dog food were sold on Tuesday than on Monday.

(b) How many more tins?

. . . .

(2)

(Total for Question is 4 marks)

Q8.

*   Jamie and Lily are at college.

They want to buy some lockers for their common room.
They decide to do a sponsored walk to raise the money to buy the lockers.

Some people will give them money for each mile they walk.
Some people will give them a fixed amount of money.

Here are Jamie's and Lily's sponsor forms.

Jamie's Form		
Name	**Amount**	**Total**
Jane	£1 per mile	
Neil	£12	£12
Nasir	£2 per mile	
	Total	

Lily's Form		
Name	**Amount**	**Total**
Claire	£10	£10
Ben	£15	£15
John	£1 per mile	
Sam	£5	£5
	Total	

Jamie and Lily each walk 18 miles.
The lockers cost £108

Do Jamie and Lily get enough money to buy the lockers?
You must show your working.

(Total for Question is 5 marks)

Q9.

The scatter graph shows information about 8 people.
It shows each person's height and the circumference of their head.
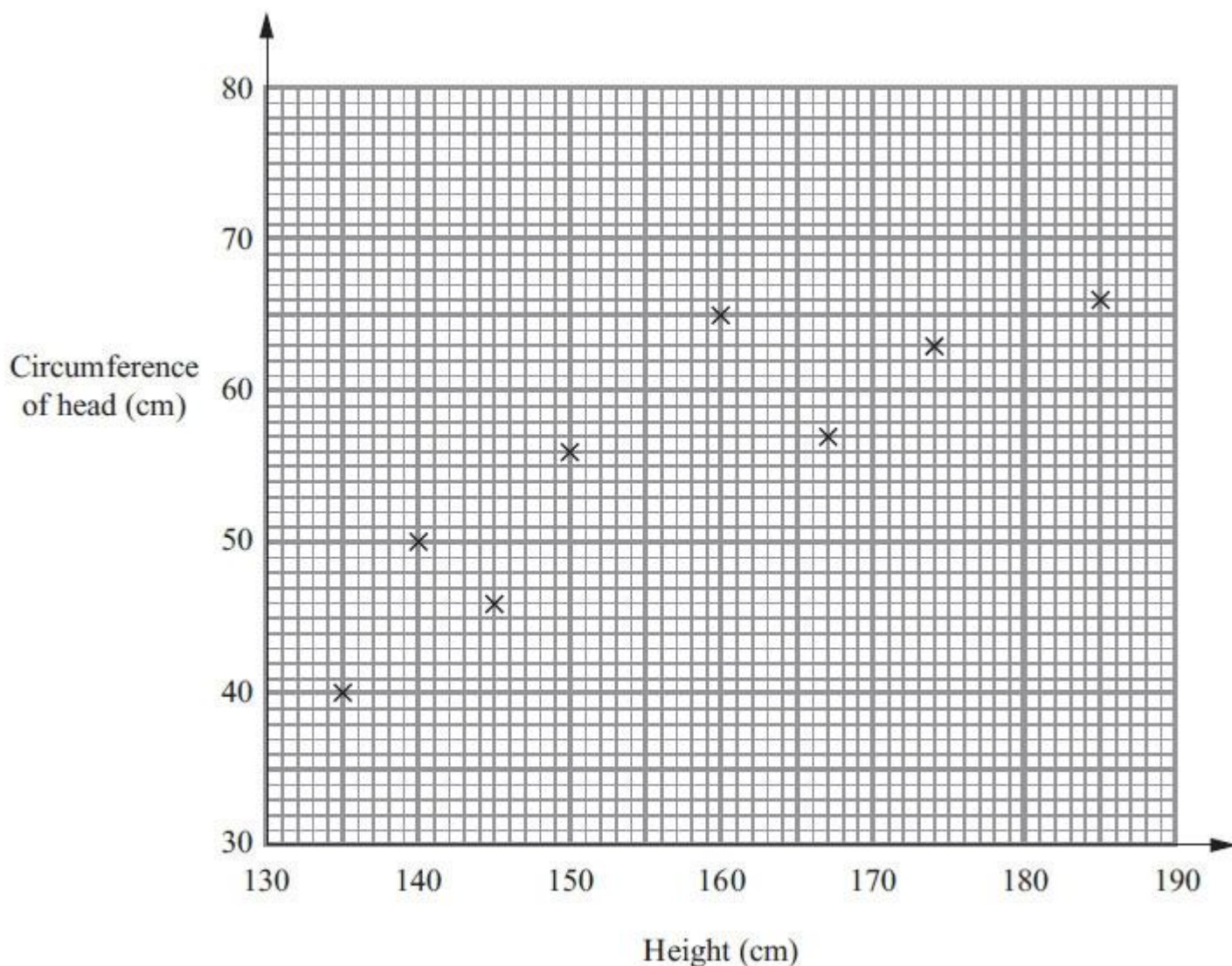
The table gives this information for 2 other people.

Height (cm)	180	170
Circumference of head (cm)	72	65

(a) On the scatter graph, plot the information from the table.

(1)

(b) Describe the correlation.

....

(1)

(c) Draw a line of best fit on your scatter graph.

(1)

(d) Estimate the circumference of the head of a person who is 156 cm tall.`

. . . . cm

(1)

(Total for Question is 4 marks)

Q10.

In the space below, use ruler and compasses to **construct** an equilateral triangle
with sides of length 8 cm.

You must show all your construction lines.
One side of the triangle has already been drawn for you.

_____

(Total for Question is 2 marks)

Q11.

(a) Write ¼ as a decimal.

. . . .

(1)

(b) Write the fraction ¹⁸⁄₂₄ in its simplest form.

. . . .

(1)

(c) Shade ⅗ of this shape.

(1)
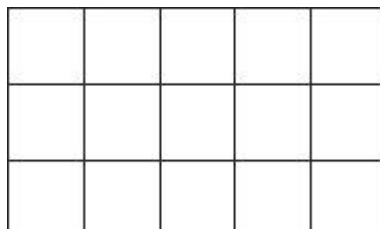
(Total for Question is 3 marks)

Q12.

John is walking along a path.

He sees this sign.
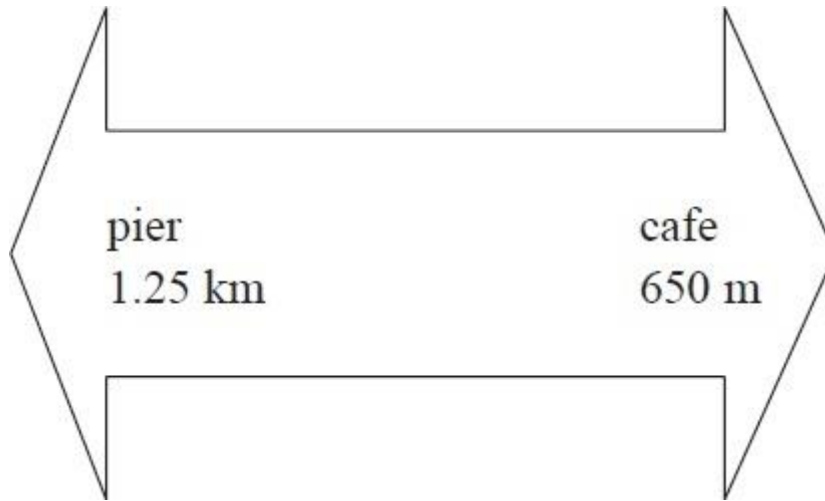
How far is it from the pier to the cafe along the path?

....

(Total for Question is 3 marks)

Q13.

Here is a cuboid.
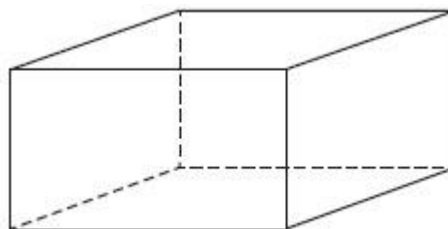
The following sentences are about cuboids.

Complete each sentence by writing the correct number in the gap.

(a) (i) A cuboid has .... faces.

(ii) A cuboid has .... edges.

(iii) A cuboid has .... vertices.

(3)

Here is a different cuboid.

3 cm

4 cm

10 cm
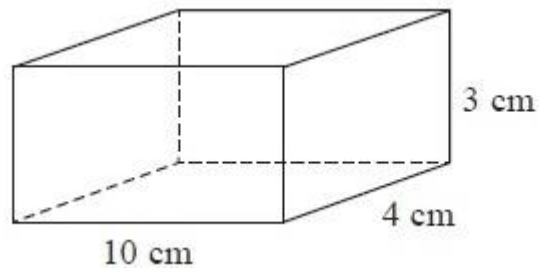
Diagram **NOT** accurately drawn

(b) Work out the volume of the cuboid.

.... cm³

(2)

(Total for Question is 5 marks)

Q14.

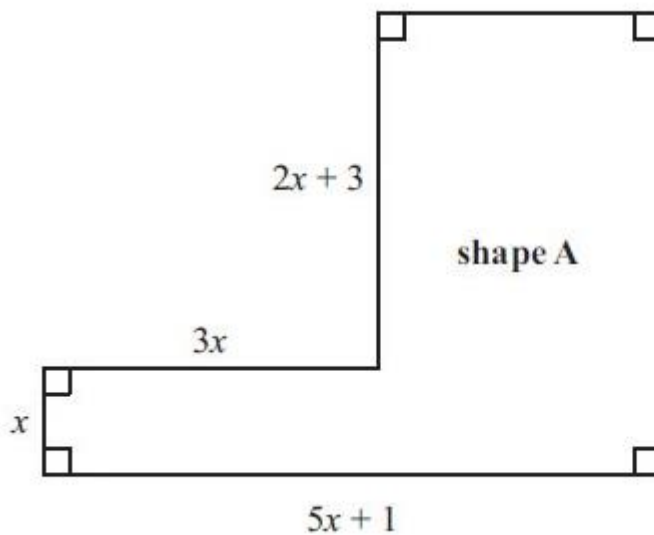The diagram shows **shape A**.

All the measurements are in centimetres.

Diagram **NOT** accurately drawn

2x + 3

shape A

3x

x

5x + 1

(a) Find an expression, in terms of *x*, for the perimeter of **shape A**.

. . . .

(3)

A square has the same perimeter as **shape A**.

(b) Find an expression, in terms of x, for the length of one side of this square.

. . . .

(1)

(Total for Question is 4 marks)

Q15.

Brian is x years old.
Peter is 4 years older than Brian.
Amy is 2 years younger than Brian.

The total of their ages is 26 years.
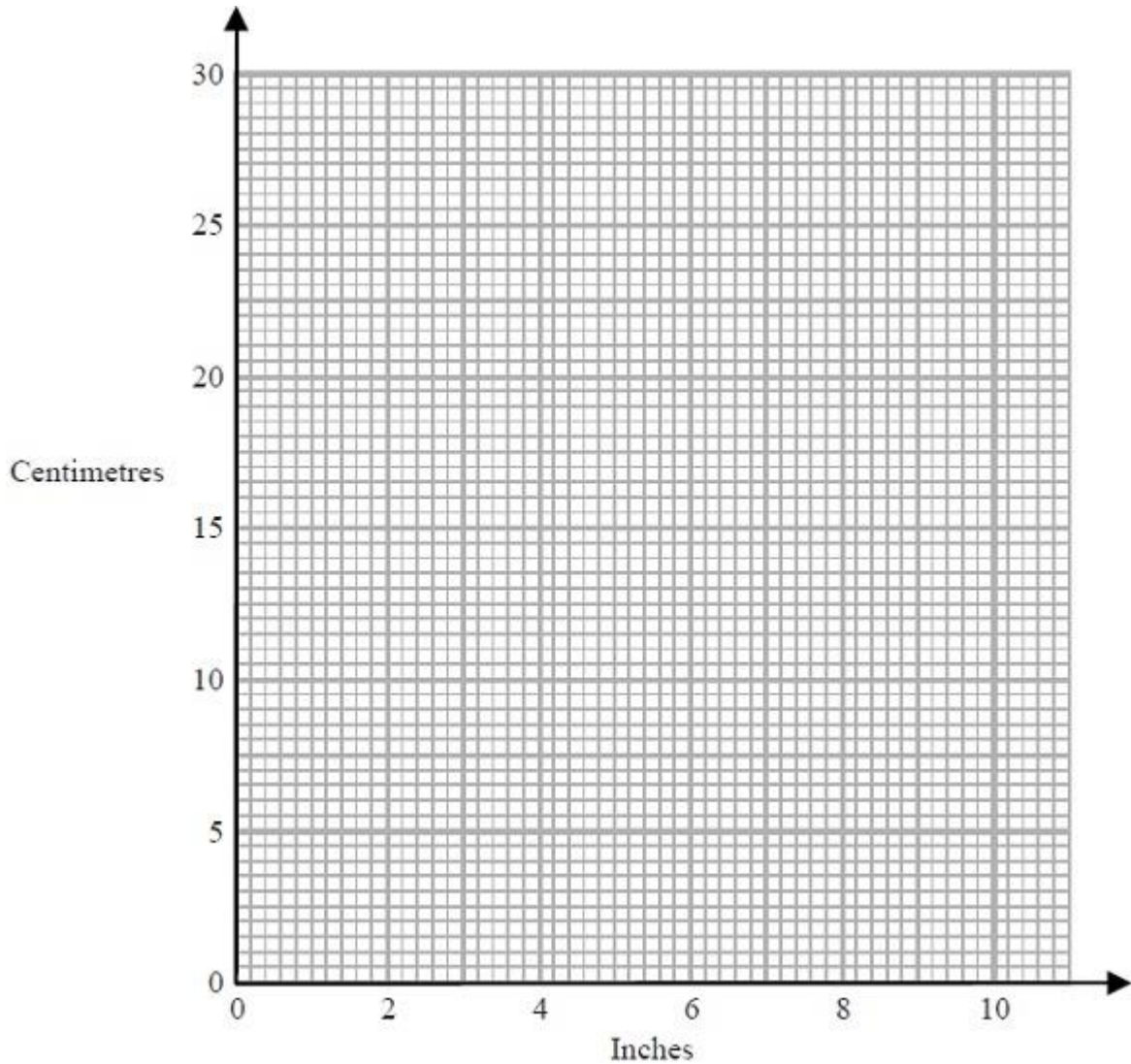
Work out the value of x.

....

(Total for Question is 4 marks)

Q16.
The table shows some lengths in inches changed into lengths in centimetres.

Length in inches	0	2	6	10
Length in centimetres	0	5	15	25

(a) On the grid, use this information to draw a line graph that can be used to change between inches and centimetres.

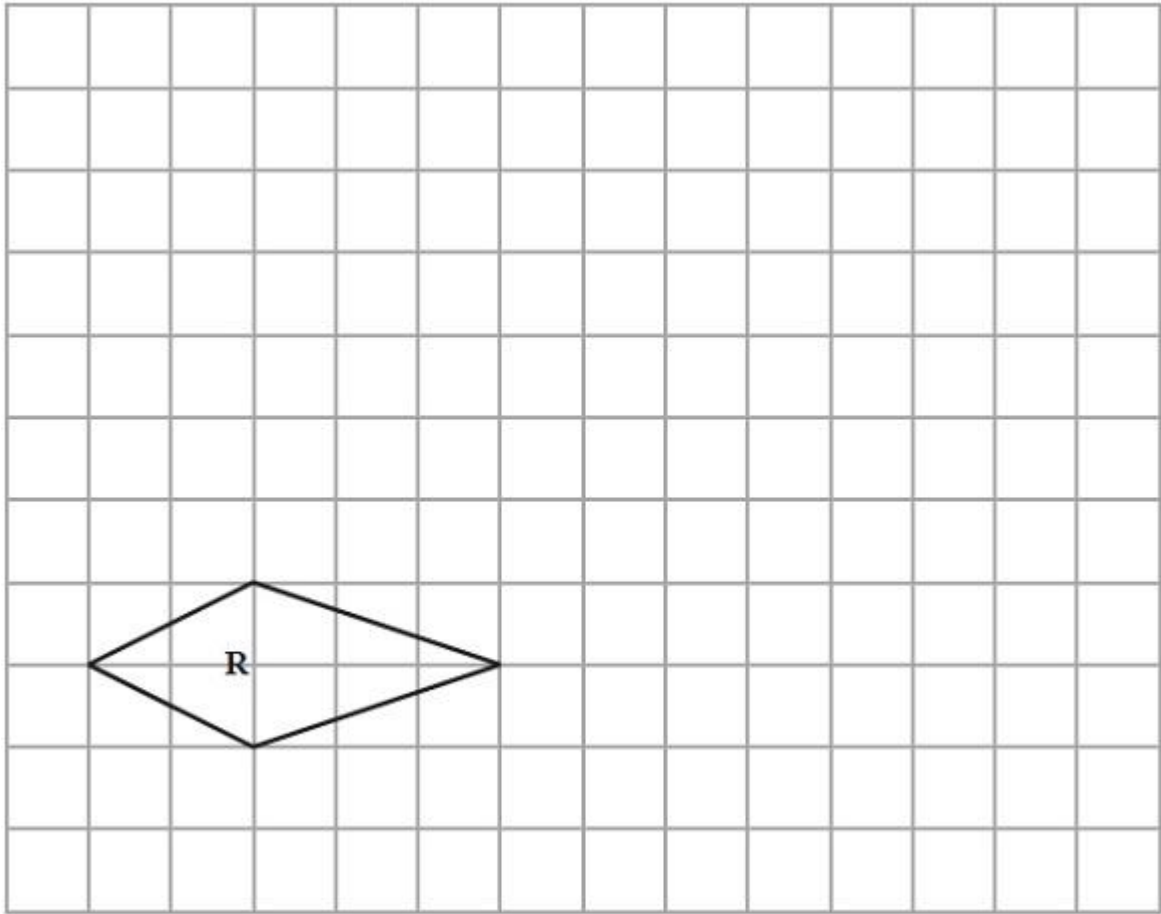
(2)

Kate's height is 62 inches.

Helen's height is 150 centimetres.

(b) Who is the tallest?

(3)

(Total for Question is 5 marks)
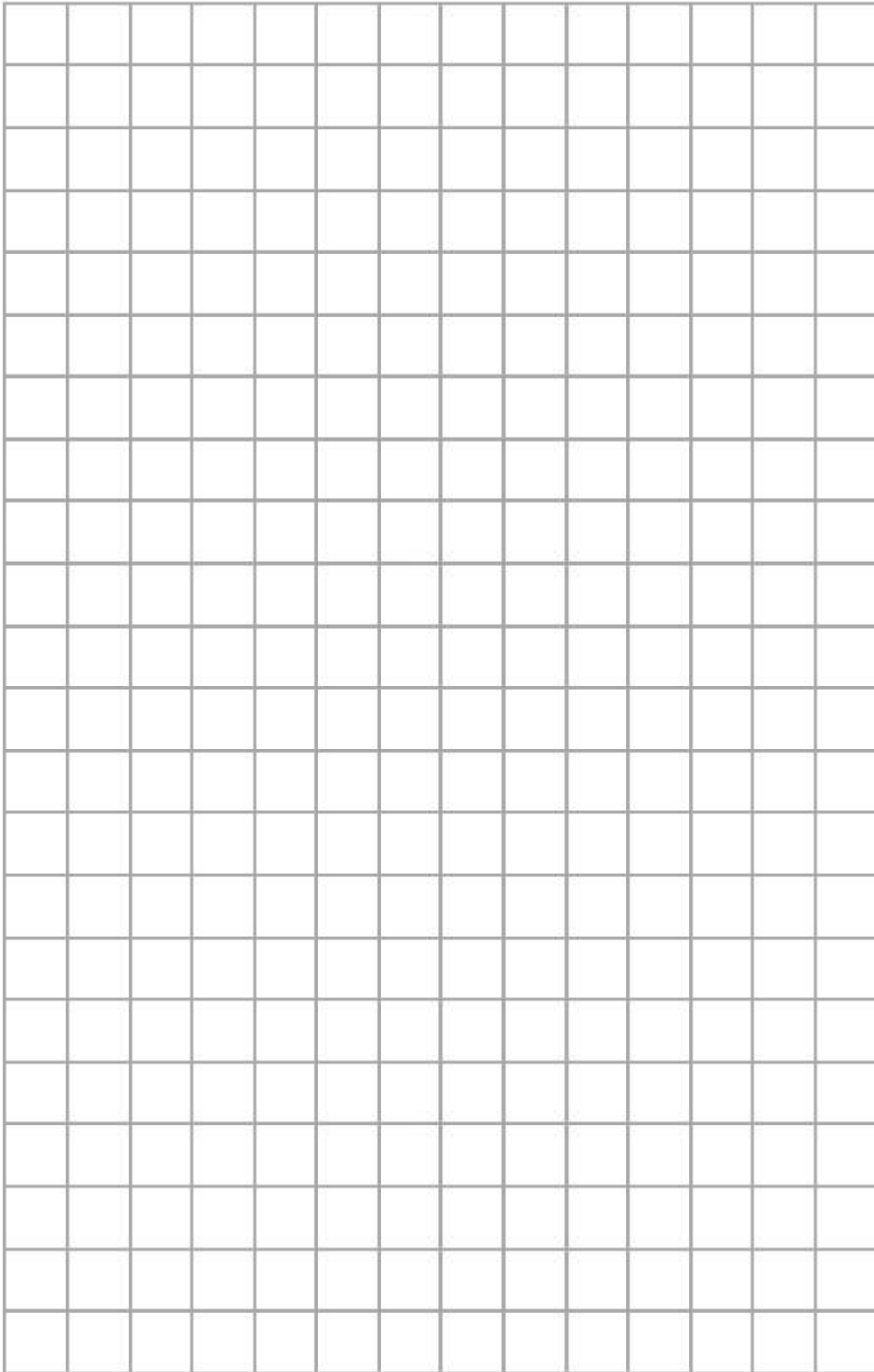
Q17.

On the grid, draw an enlargement of shape **R** with a scale factor of 2

(Total for Question is 2 marks)

Q18.

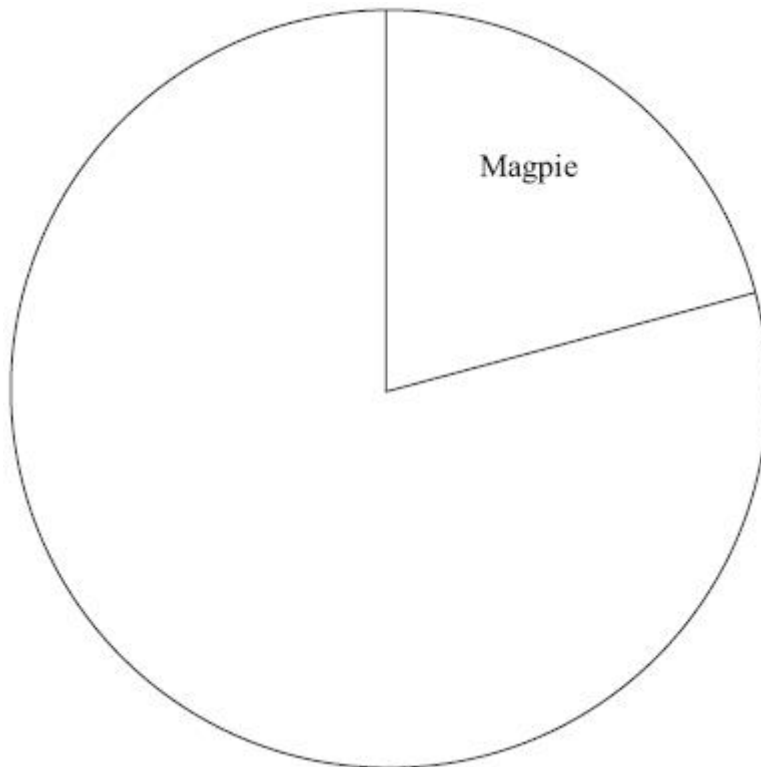On the grid, draw the graph of $y = 3x + 2$ for values of x from -2 to 2

(Total for Question is 4 marks)

Q19.

The table gives some information about the birds Paula sees in her garden one day.

Bird	Frequency
Magpie	15
Thrush	10
Starling	20
Sparrow	27

Complete the accurate pie chart.

(Total for Question is 3 marks)

Q20.

$$\frac{89.3 \times 0.51}{4.8}$$

Work out an estimate for the value of

....

(Total for Question is 2 marks)