Centre Number						Candidate Number				
Surname										
Other Names										
Candidate Signature										

For Examiner's Use	
Examiner's Initials	
Pages	Mark
2 – 3	
4 – 5	
6 – 7	
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24 – 25	
26 – 27	
TOTAL	

General Certificate of Secondary Education
Foundation Tier
June 2012

Mathematics (Linear) 43652F

Paper 2

Wednesday 13 June 2012 9.00 am to 10.45 am

F

For this paper you must have:
- a calculator
- mathematical instruments.

Time allowed
- 1 hour 45 minutes

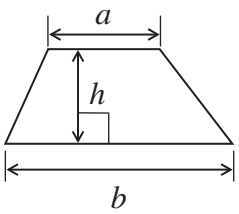
Instructions
- Use black ink or black ball-point pen. Draw diagrams in pencil.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
- Do all rough work in this book.

Information
- The marks for questions are shown in brackets.
- The maximum mark for this paper is 105.
- The quality of your written communication is specifically assessed in Questions 21, 22 and 23. These questions are indicated with an asterisk (*).
- You may ask for more answer paper, tracing paper and graph paper. These must be tagged securely to this answer book.

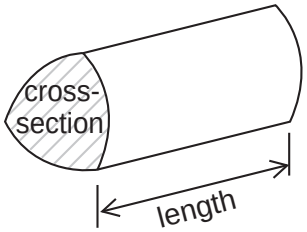
Advice
- In all calculations, show clearly how you work out your answer.

Formulae Sheet: Foundation Tier

Area of trapezium = $\frac{1}{2}(a+b)h$



Volume of prism = area of cross-section × length



Do not write outside the box

Answer **all** questions in the spaces provided.

1 The pictogram shows what people did when they went to a gym.

Dancing 

Yoga 

Zumba 

Judo 

Key  represents ..... people

1 (a) 20 people did Dancing.

Complete the key for the pictogram.

(1 mark)

1 (b) Altogether, how many people went to the gym?

.....

.....

Answer ..... *(3 marks)*

4

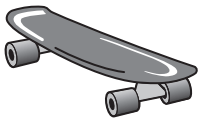
Turn over ▶

Do not write outside the box

2 Here are three items in a sports shop.

Football
£12

Dartboard
£9.99



Skateboard

2 (a) Matt bought a football and two dartboards.

Work out the total cost.

.....

.....

Answer £ ..... *(2 marks)*

2 (b) Sarah bought a skateboard and a football.
She paid with a £50 note.

Her change was £14.50

Work out the cost of the skateboard.

.....

.....

.....

.....

Answer £ ..... *(3 marks)*

Do not write outside the box

2 (c) Sarah only has the £14.50 change.

She sees this offer.

Can she afford to buy two pizzas?
You **must** show your working.

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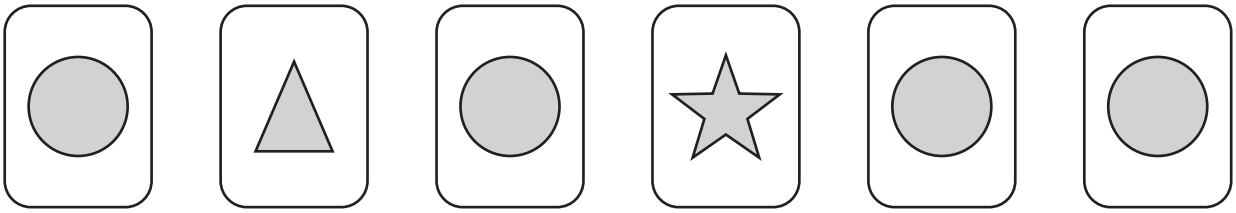
(2 marks)

Turn over for the next question

7

Do not write outside the box

3 Here are some cards.



Here is a list of words that describe chance.

impossible unlikely likely certain

A card is picked at random.

Complete each sentence using **one** word from the list.

It is ..... that the card will have a circle on it.

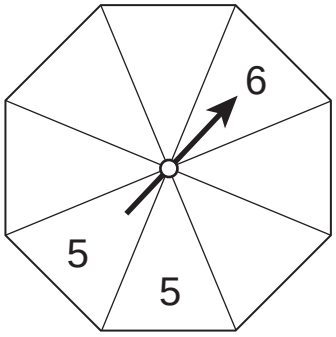
It is ..... that the card will have a number on it.

It is ..... that the card will have a triangle on it.

(3 marks)

Do not write outside the box

4 Here is a fair spinner with equal-sized sections.



Fill in the missing numbers on the spinner so that

the arrow is equally likely to land on 4 or 5

and the arrow is more likely to land on 3 than 6

and the total of all sections is 32.

(3 marks)

Turn over for the next question

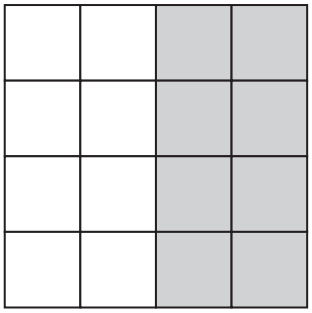
6

Do not write outside the box

5 Use your calculator to work out 13×24^2

Answer ..... *(1 mark)*

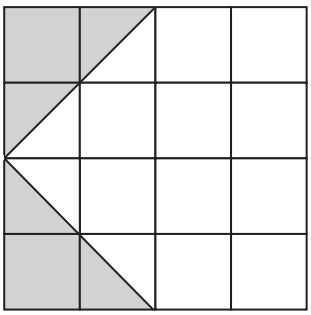
6 (a) Here is a square grid.



What percentage of the grid is shaded?

Answer ..... % *(1 mark)*

6 (b) Here is another square grid.



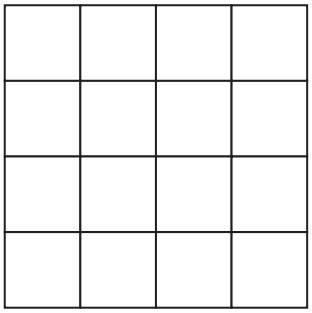
What fraction of the grid is shaded?
Give your answer in its simplest form.

.....

Answer ..... *(2 marks)*

Do not write outside the box

6 (c) Shade $\frac{1}{8}$ of this square grid.



(1 mark)

Turn over for the next question

5

Do not write outside the box

7 Here is a sign in a car park.

7 (a) Lucy paid £2.85 to park.

How many hours did she pay for?

.....

Answer ..... hours *(2 marks)*

7 (b) Lucy paid exactly £2.85

She used **six** coins.
She did **not** use any £1 coins.

Show **three** different ways she could have paid.

.....

.....

.....

Answer 1 ..... , ... , ... , ... , ... , ...

Answer 2 ..... , ... , ... , ... , ... , ...

Answer 3 ..... , ... , ... , ... , ... , ...

(3 marks)

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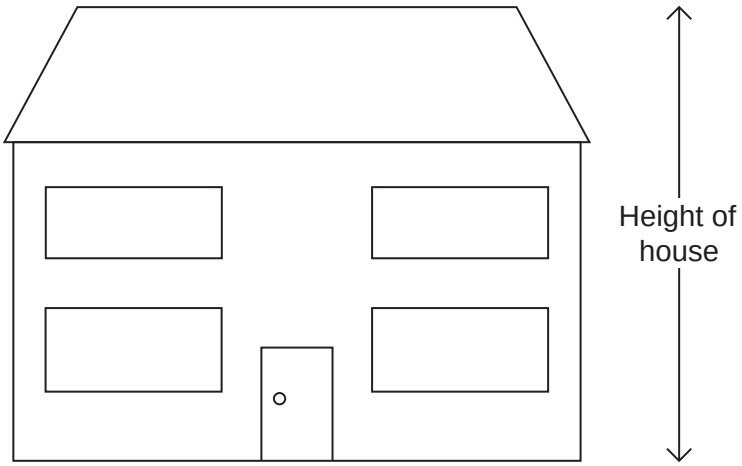
8 Here is a scale drawing of the front of a house.



The actual height of the door is 2 metres.

Work out the actual height of the house.

.....

.....

.....

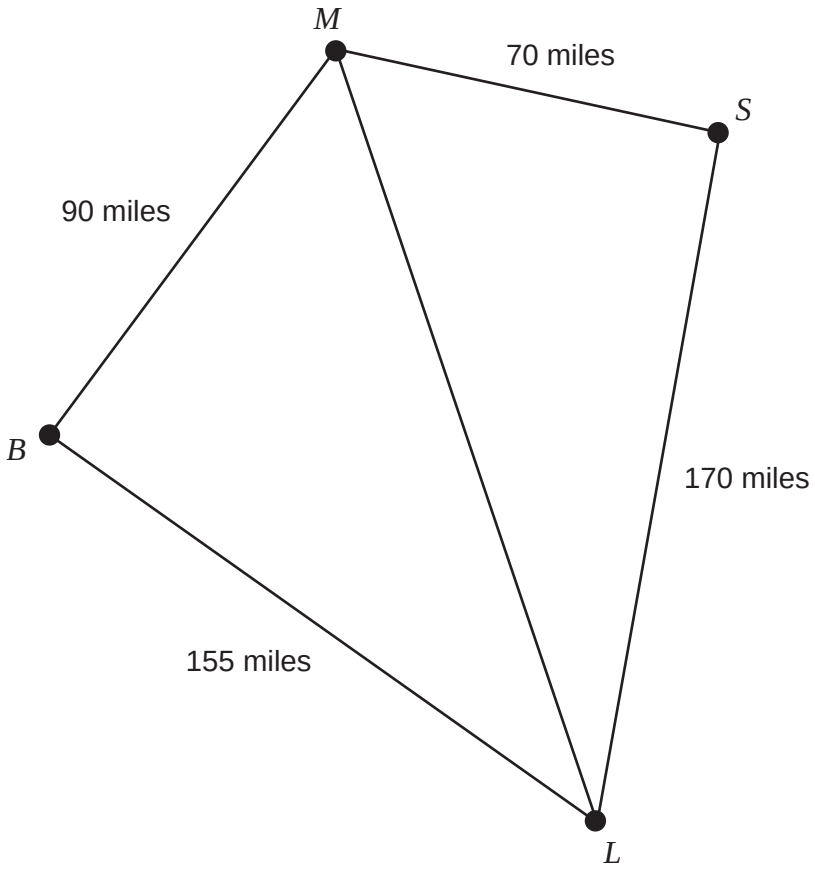
Answer ..... metres *(3 marks)*

Turn over for the next question

8

Do not write outside the box

9 The diagram shows distances between some towns.



Not drawn accurately

9 (a) A van travels from M to S and then from S to L.

Work out the total distance the van travels.

.....

Answer ..... miles *(1 mark)*

9 (b) The **direct** distance from M to L is three times the distance from M to S.

How much further does the van travel by **not** going directly from M to L?

.....

.....

.....

Answer ..... miles *(3 marks)*

Do not write outside the box

9 (c) Chris is going from M to B.
He travels 80% of the distance when his car breaks down.
A breakdown truck is halfway between M and B.

How far does the truck have to travel to reach Chris?

.....

.....

.....

Answer ..... miles *(4 marks)*

10 Use your calculator to work out $\sqrt{2201}$

10 (a) Write down your full calculator display.

Answer ..... *(1 mark)*

10 (b) Give your answer to the nearest 10.

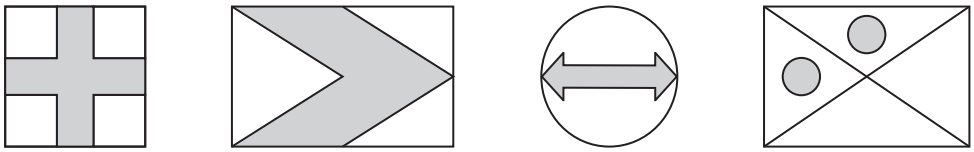
Answer ..... *(1 mark)*

Turn over for the next question

10

Do not write outside the box

11 Here are four diagrams.



A *B* *C* *D*

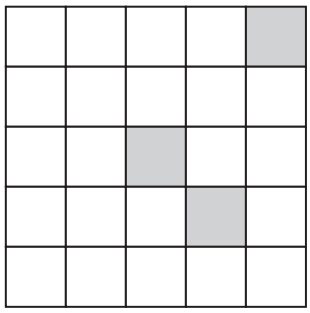
11 (a) Which **two** diagrams have more than one line of symmetry?

Answer ..... and ..... *(2 marks)*

11 (b) Which diagram has rotational symmetry of order 2?

Answer ..... *(1 mark)*

11 (c) Here is a square grid.

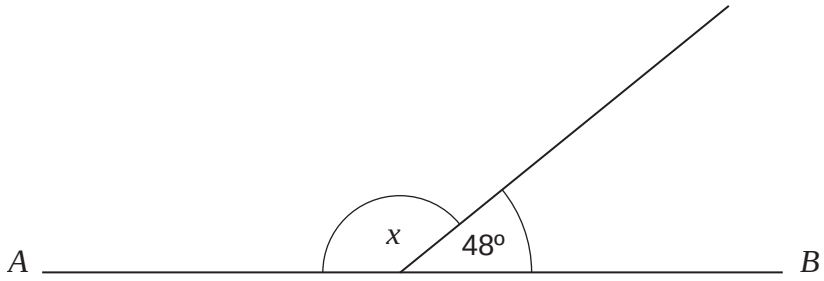


Shade **two** more squares to make this grid have rotational symmetry of order 2.

(1 mark)

Do not write outside the box

12 (a) AB is a straight line.



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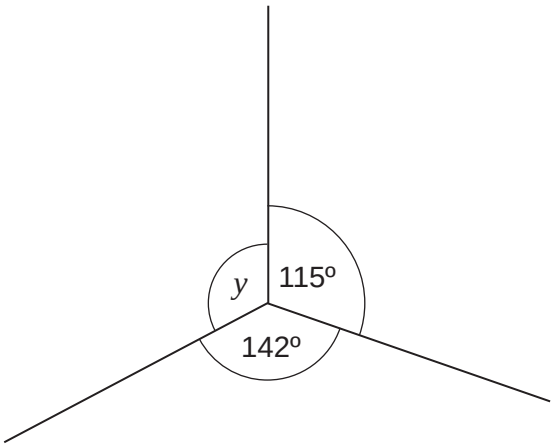
Work out the value of x.

.....

Answer ..... degrees *(1 mark)*

12 (b) The diagram shows three angles at a point.



Not drawn accurately

Work out the value of y.

.....

.....

Answer ..... degrees *(2 marks)*

7

Do not write outside the box

13 Circle the most suitable measurement for each of the following.

The amount an apple weighs.

1 gram 10 grams 100 grams

The amount of water in a full kettle.

2 litres 20 litres 200 litres

The height of a bus.

5 metres 50 metres 500 metres

(3 marks)

14 (a) Solve $3w = 18$

.....

$w =$ ..... *(1 mark)*

14 (b) Solve $\frac{x}{4} = 15$

.....

$x =$ ..... *(1 mark)*

14 (c) Solve $2y - 5 = 12$

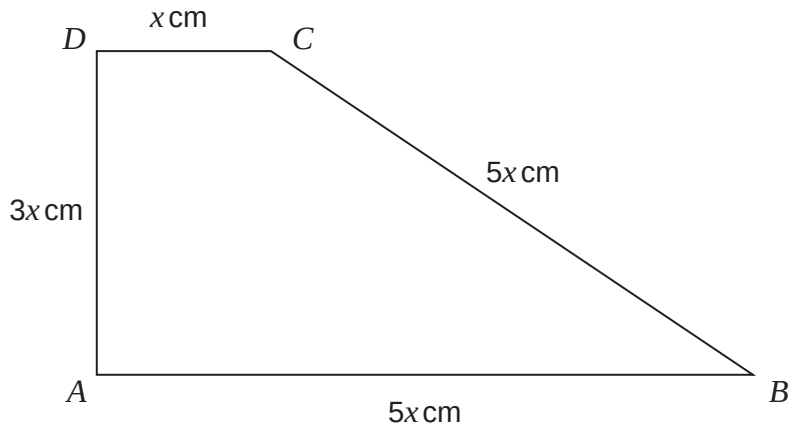
.....

.....

$y =$ ..... *(2 marks)*

Do not write outside the box

15 The diagram shows a trapezium.



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15 (a) Write down the length of AB when $x = 6.2$

.....

Answer ..... cm *(2 marks)*

15 (b) Work out the perimeter when $x = 7$

.....

.....

Answer ..... cm *(3 marks)*

Turn over for the next question

12

Do not write outside the box

16 A group of 15 footballers ran a race.
The stem-and-leaf diagram shows their times.

Key 6 | 5 represents 6.5 seconds

6	5	5	7	9		
7	2	3	4	4	4	8
8	0	1	3	3		
9	1					

16 (a) How many took less than 7.5 seconds?

Answer ..... *(1 mark)*

16 (b) Work out the median.

.....

Answer ..... seconds *(1 mark)*

16 (c) Work out the range.

.....

Answer ..... seconds *(1 mark)*

Do not write outside the box

16 (d) A group of athletes ran the same race.
The table shows information about their times.

Median (seconds)	Range (seconds)
7.1	1.5

Compare the times of the athletes and the footballers.

Comparison 1 .....

.....

.....

Comparison 2 .....

.....

.....

(2 marks)

17 Andy thinks of a number.

He multiplies it by 4
He then subtracts 6
His answer is 7.2

What number did he think of?

.....

.....

.....

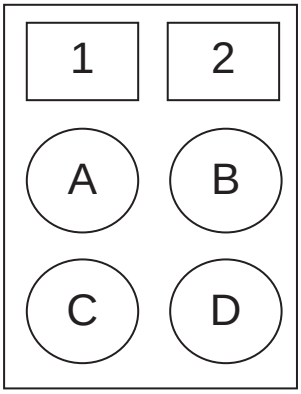
Answer ..... *(3 marks)*

8

Turn over ▶

Do not write outside the box

18 The diagram shows a door lock.



The code is a number followed by a letter.
Steve enters a code at random.

Work out the probability that he has entered the correct code.

.....

.....

.....

Answer ..... *(3 marks)*

19 Ellie drives 169 miles from Sheffield to London.

She drives at an average speed of 65 miles per hour.
She leaves Sheffield at 6:30 am.

Does she arrive in London before 9:00 am?
You **must** show your working.

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(4 marks)

Do not write outside the box

20 (a) Ben sees these adverts to hire the same car.

Hire Deal
No charge for mileage
Normal price £78 each day
Offer Now $\frac{1}{3}$ off

Best Cars
£44 each day
15p for each mile

Ben wants to hire the car for 10 days.
He expects to drive 600 miles.

Should he choose Hire Deal or Best Cars to get the cheaper deal?
You **must** show your working.

.....

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.....

.....

Answer ..... *(6 marks)*

20 (b) Another company uses this formula to work out the cost of hiring a car.

$$C = 15(3n + 8)$$

C is the cost in pounds
n is the number of days of hiring the car.

Becky hires a car for 13 days.

How much does she pay?

.....

.....

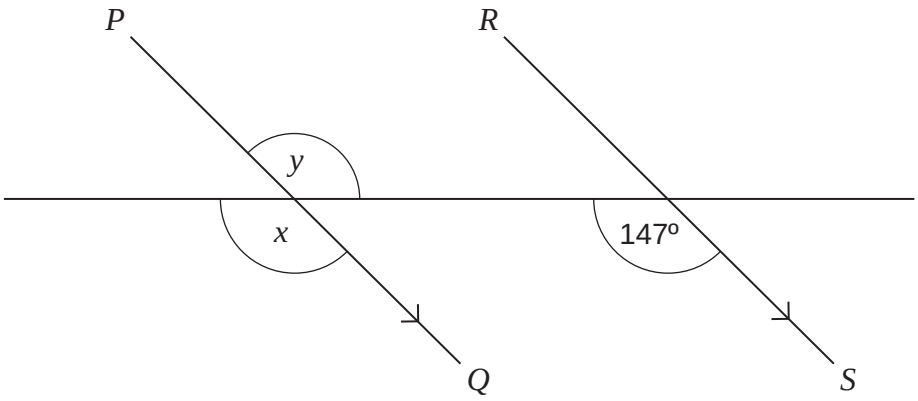
Answer £ ..... *(2 marks)*

15

Do not write outside the box

***21** PQ and RS are parallel.

Not drawn accurately



21 (a) Write down the value of x.
Give a reason for your answer.

Answer .....degrees

Reason .....

(2 marks)

21 (b) Write down the value of y.
Give a reason for your answer.

Answer .....degrees

Reason .....

(2 marks)

Do not write outside the box

***22** A school only has pupils in Year 7, Year 8 and Year 9.

The table shows information about pupil absence on one day.

	Year 7	Year 8	Year 9
Number of pupils in year group	380	400	420
Number of pupils absent	28	32	36

The target for daily attendance is 93% or more for the whole school.

Did the school meet the target that day?

.....

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.....

.....

(5 marks)

Turn over for the next question

9

Do not write outside the box

***23** Use trial and improvement to find a solution to the equation

$$x^3 - 3x = 45$$

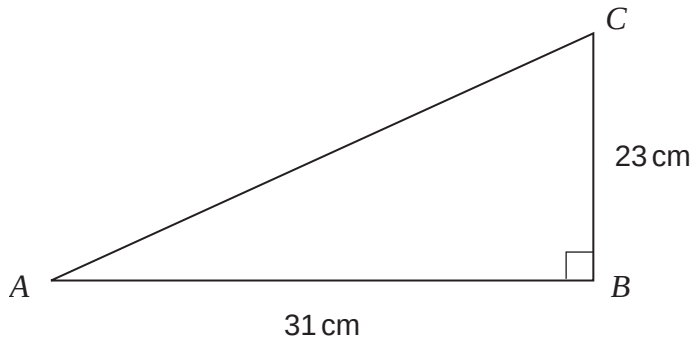
The first step is shown in the table.
Give your solution to 1 decimal place.

x	$x^3 - 3x$	**Comment**
3	18	Too small

x = ... *(4 marks)*

Do not write outside the box

24 Work out the length AC.



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Answer ..... cm *(3 marks)*

Turn over for the next question

7

Do not write outside the box

25 A gym owner wants to know the number of hours that people exercise.

Write a question that he can use in his survey.
Include a response section.

.....

.....

(2 marks)

26 (a) Solve the inequality $3x - 5 \geqslant 16$

.....

.....

Answer ..... *(2 marks)*

26 (b) The values –1, 0, 1, 2 and 3 satisfy **one** of the inequalities below.

Circle the correct inequality.

$-2 < 2y \leqslant 6$ $-2 \leqslant 2y \leqslant 6$ $-2 \leqslant 2y < 6$

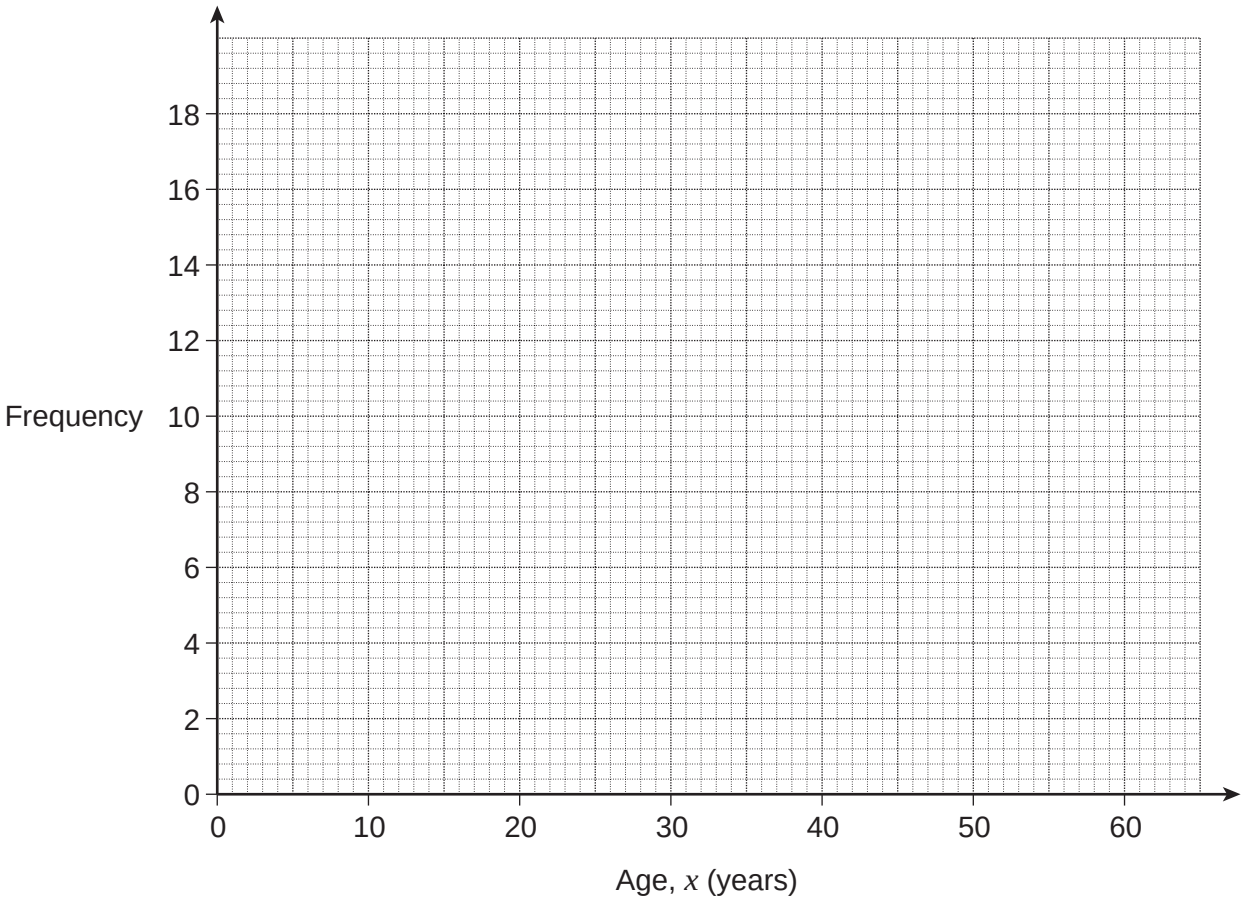
(1 mark)

Do not write outside the box

27 The table shows information about the ages of people in a club.

Age, x (years)	$20 < x \leqslant 30$	$30 < x \leqslant 40$	$40 < x \leqslant 50$	$50 < x \leqslant 60$
Frequency	4	8	17	12

Draw a frequency polygon to represent the data.



(2 marks)

END OF QUESTIONS

7

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