Centre Number						Candidate Number				
Surname										
Other Names										
Candidate Signature										

For Examiner's Use	
Examiner's Initials	
Pages	Mark
2 – 3	
4 – 5	
6 – 7	
8 – 9	
10 – 11	
12 – 13	
14 – 15	
16 – 17	
18 – 19	
20 – 21	
22 – 23	
24 – 25	
26 – 27	
TOTAL	

General Certificate of Secondary Education
Foundation Tier
June 2012

Mathematics (Linear) 43652F

Paper 2

F

Wednesday 13 June 2012 9.00 am to 10.45 am

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

Time allowed
- 1 hour 45 minutes

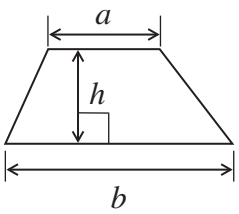
Instructions
- Use black ink or black ball-point pen. Draw diagrams in pencil.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
- Do all rough work in this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

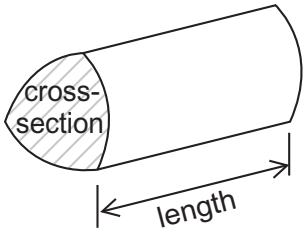
Advice
- In all calculations, show clearly how you work out your answer.

Formulae Sheet: Foundation Tier

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



Volume of prism = area of cross-section × length



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)*

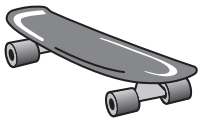
4

Turn over ▶

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)*

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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.....

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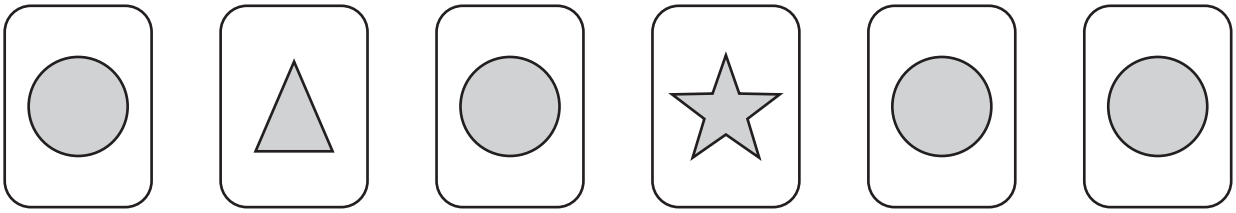
(2 marks)

Turn over for the next question

7

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.

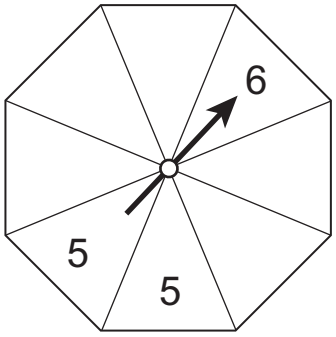
It is ..... that the card will have a circle on it.

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

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

(3 marks)

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)

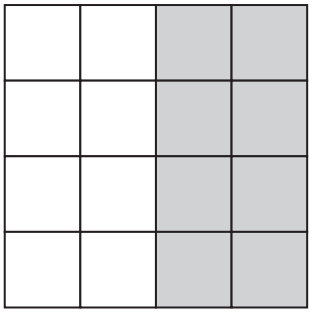
Turn over for the next question

6

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

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

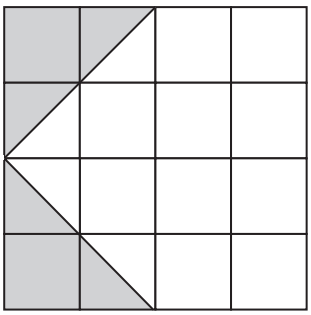
6 (a) Here is a square grid.



What percentage of the grid is shaded?

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

6 (b) Here is another square grid.

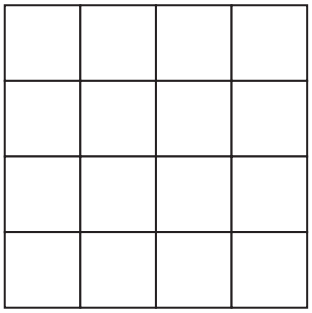


What fraction of the grid is shaded?
Give your answer in its simplest form.

.....

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

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



(1 mark)

Turn over for the next question

5

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.

.....

.....

.....

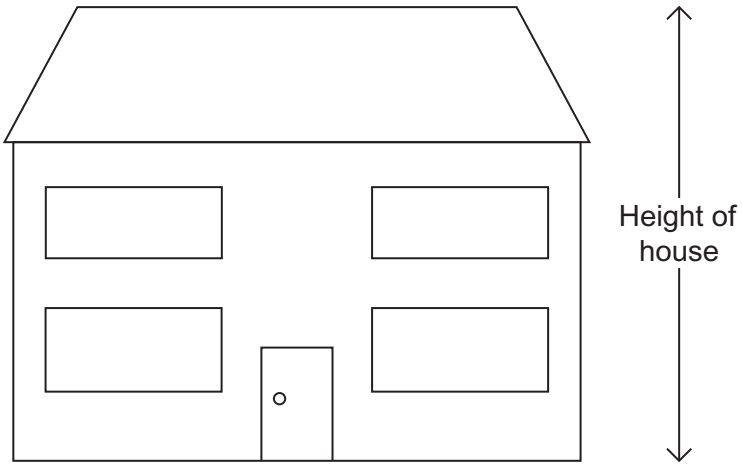
Answer 1 ..... , ... , ... , ... , ... , ...

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

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

(3 marks)

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.

.....

.....

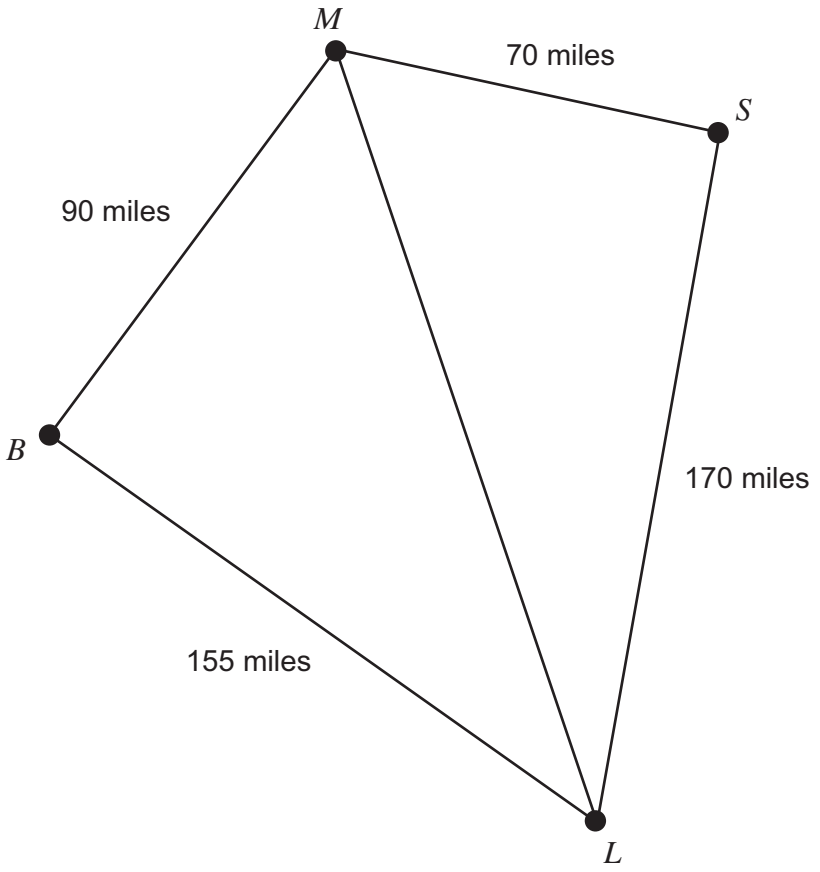
.....

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

Turn over for the next question

8

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)*

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)*

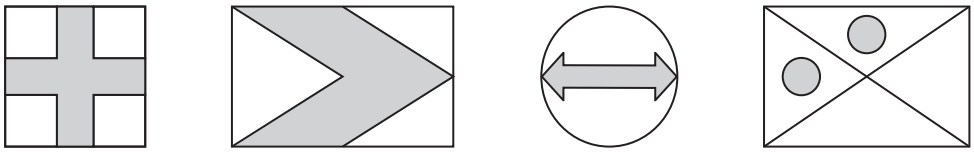
10 (b) Give your answer to the nearest 10.

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

Turn over for the next question

10

11 Here are four diagrams.



A *B* *C* *D*

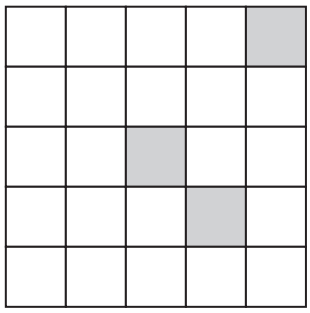
11 (a) Which **two** diagrams have more than one line of symmetry?

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

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

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

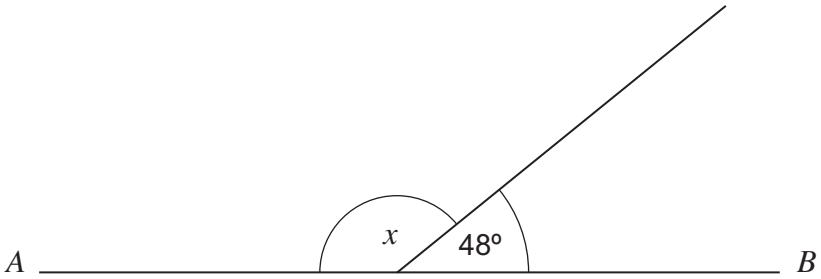
11 (c) Here is a square grid.



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

(1 mark)

12 (a) AB is a straight line.



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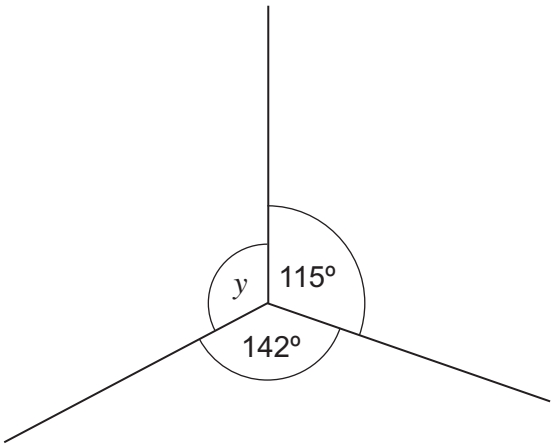
Work out the value of x.

.....

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

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



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Work out the value of y.

.....

.....

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

7

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)*

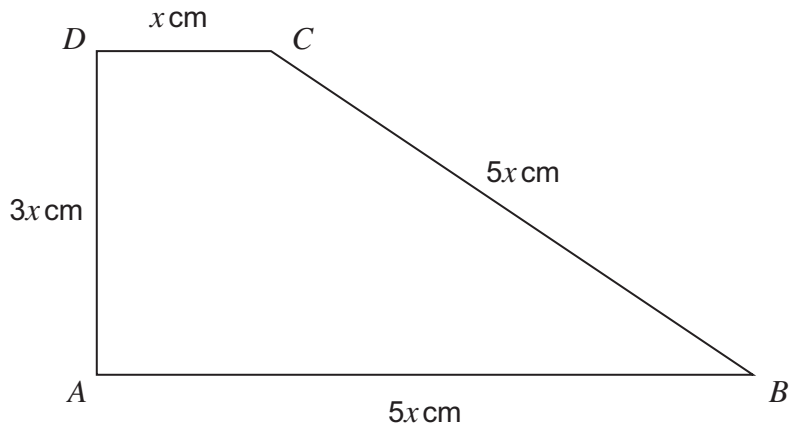
14 (c) Solve $2y - 5 = 12$

.....

.....

y = ... *(2 marks)*

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

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)*

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?

.....

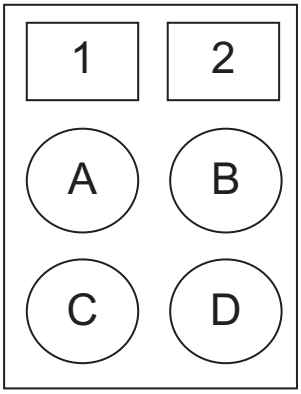
.....

.....

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

8

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)

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

Hire Deal	**Best Cars**
No charge for mileage	£44 each day
Normal price £78 each day	15p for each mile
Offer Now $\frac{1}{3}$ off	

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

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

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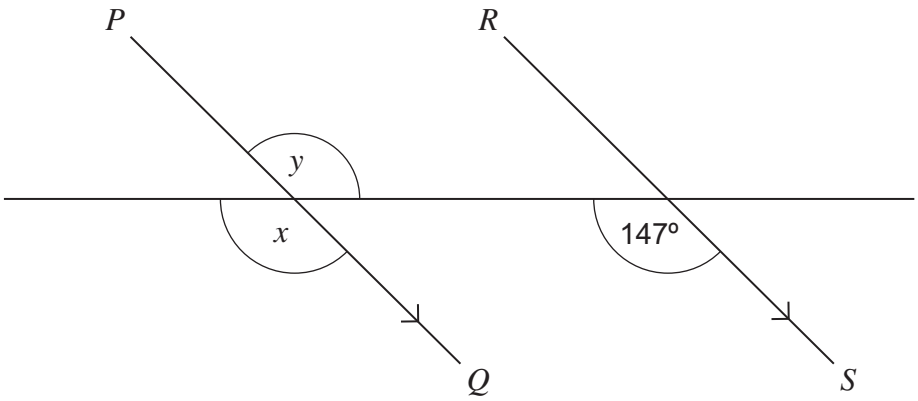

21 (a) Write down the value of x.
Give a reason for your answer.

Answer .....degrees

Reason .....

(2 marks)

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

Answer .....degrees

Reason .....

(2 marks)

***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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.....

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.....

.....

(5 marks)

Turn over for the next question

9

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

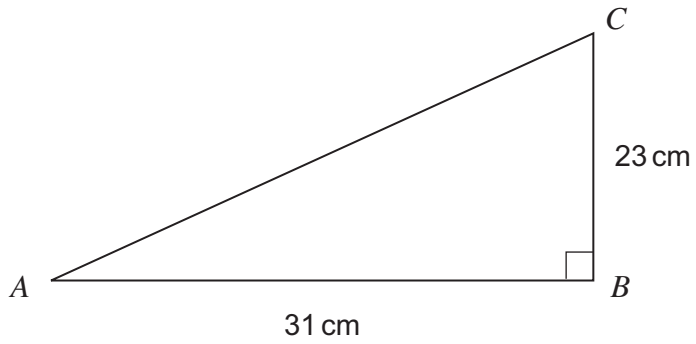
$$x^3 - 3x = 45$$

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)*

24 Work out the length AC.



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

Turn over for the next question

7

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.

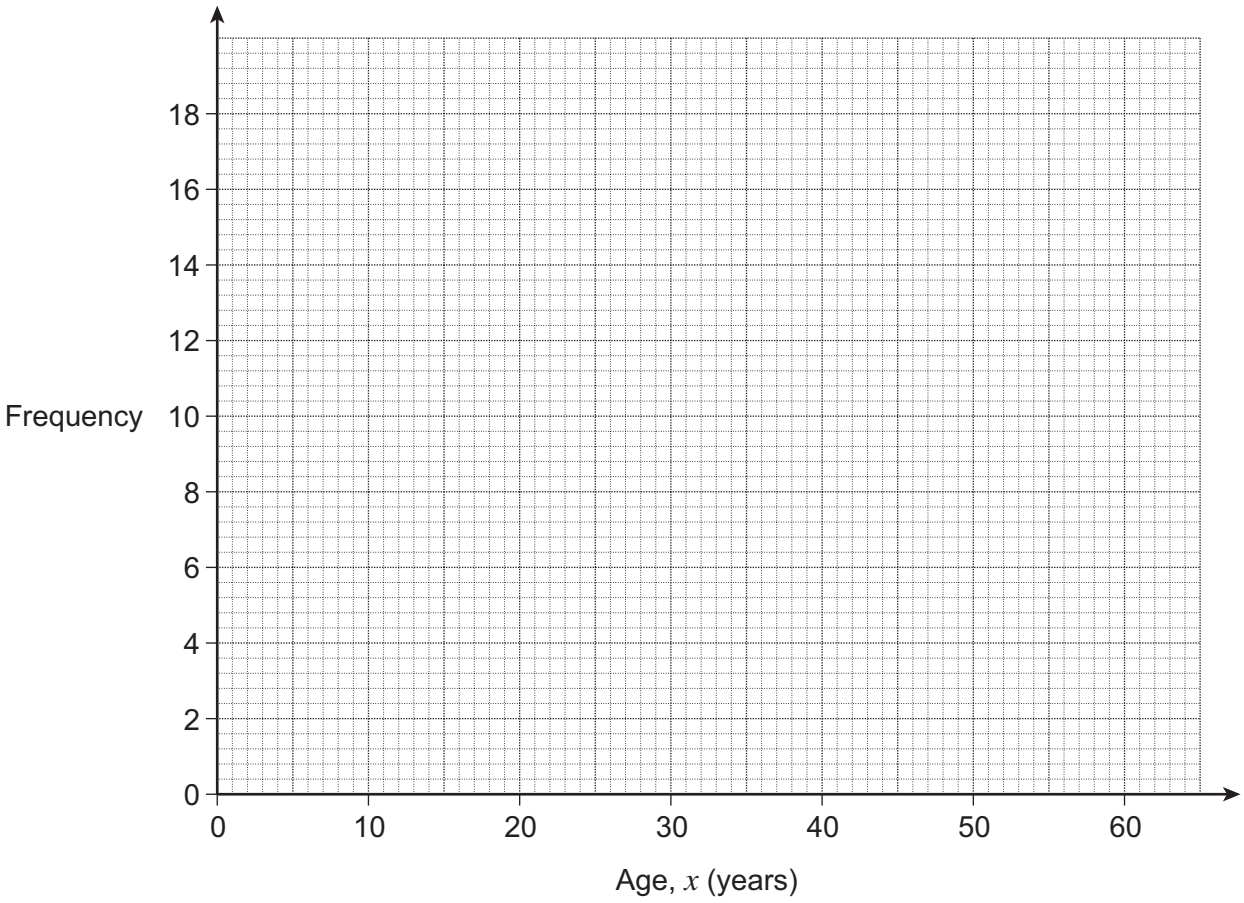
$-2 < 2y \leqslant 6$ $-2 \leqslant 2y \leqslant 6$ $-2 \leqslant 2y < 6$

(1 mark)

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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ANSWER IN THE SPACES PROVIDED