



Surname _____

Forename(s) _____

Centre Number _____

Candidate Number _____

Candidate Signature _____

I declare this is my own work.

GCSE

STATISTICS

F

Foundation Tier Paper 1

8382/1F

Monday 12 June 2023

Afternoon

Time allowed: 1 hour 45 minutes

At the top of the page, write your surname and forename(s), your centre number, your candidate number and add your signature.

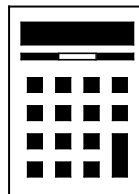
[Turn over]



MATERIALS

For this paper you must have:

- a calculator
- mathematical instruments.

**INSTRUCTIONS**

- Use black ink or black ball-point pen. Draw diagrams in pencil.
- Answer ALL questions.
- You must answer the questions in the spaces provided. Do not write on blank pages.
- If you need extra space for your answer(s), use the lined pages at the end of this book. Write the question number against your answer(s).
- Do all rough work in this book. Cross out any work you do not want to be marked.



INFORMATION

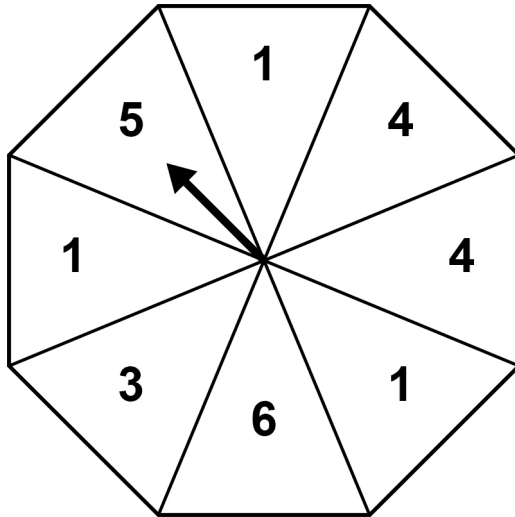
- The marks for questions are shown in brackets.
- The maximum mark for this paper is 80.
- You may ask for more answer paper and graph paper.
These must be tagged securely to this answer booklet.

DO NOT TURN OVER UNTIL TOLD TO DO SO



Answer ALL questions in the spaces provided.

1 Here is a fair spinner.



It is spun once.

What is the probability that it lands on a 1?

Circle your answer. [1 mark]

$$\frac{3}{8}$$

$$\frac{1}{5}$$

$$\frac{3}{5}$$

$$\frac{1}{8}$$

<div style="border-bottom: 1px solid black; height: 15px; width: 40px; margin: 0 auto;"></div> <div style="text-align: center; margin-top: 5px;">1</div>
--



2 Here are some data.

warm warm hot cold cold warm
hot hot warm cold hot warm

2 (a) Circle the word that best describes this type of data. [1 mark]

quantitative continuous

discrete qualitative

2 (b) Which of these diagrams would NOT be suitable to represent these data?

Circle your answer. [1 mark]

pie chart bar chart

stem-and-leaf pictogram

[Turn over]



- 3 A, B, C and D, below and on the opposite page, are scatter diagrams.

Diagram A

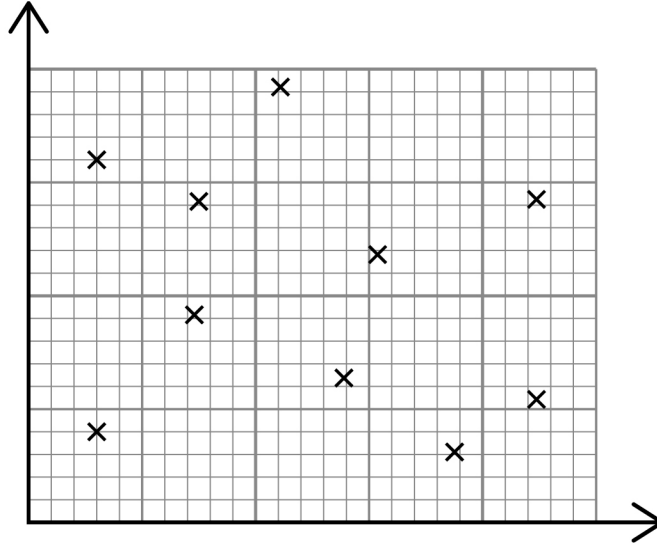


Diagram B

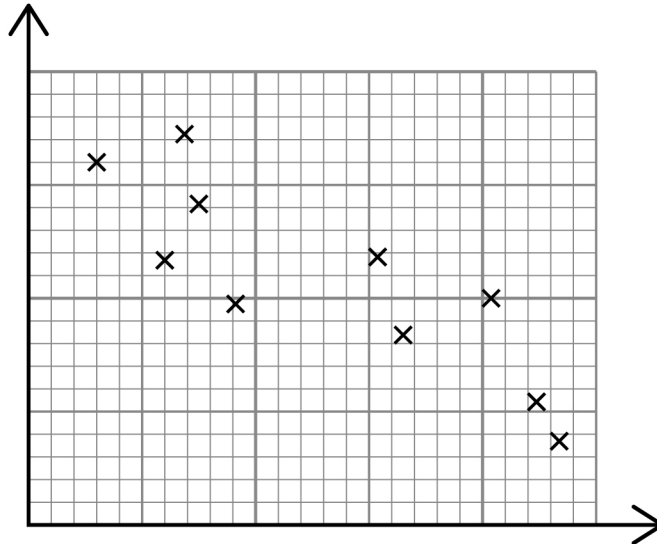


Diagram C

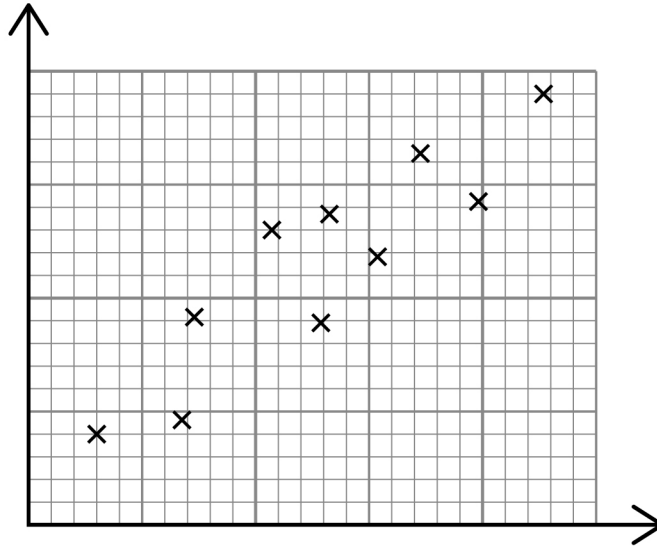
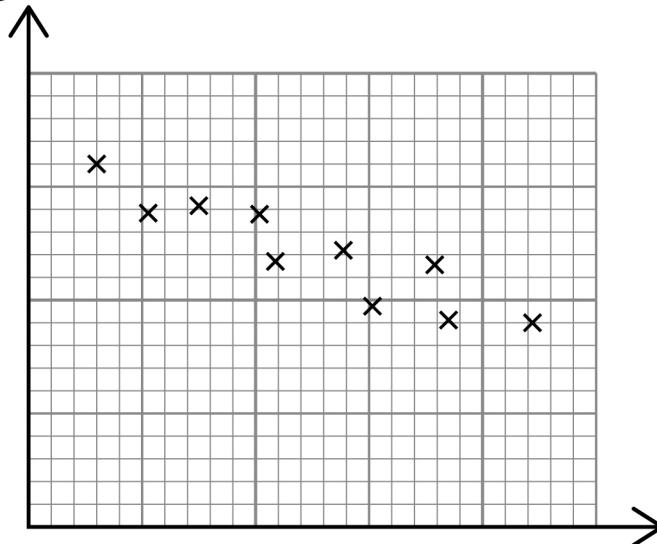


Diagram D



Which diagram shows **POSITIVE** correlation?

Circle your answer. [1 mark]

A

B

C

D

[Turn over]



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- 4 Mrs Banik wants to investigate how many hairstyling products students in her school use.**

She asks her Year 7 PE class.

- 4 (a) Suggest ONE way that Mrs Banik could improve her method for collecting the data.
[1 mark]**

[Turn over]



4 (b) The table shows her results.

NUMBER OF HAIRSTYLING PRODUCTS USED EACH DAY	0	1	2	3	4
FREQUENCY	7	12	6	5	2

4 (b) (i) Write down the mode for the number of hairstyling products used each day. [1 mark]

Answer _____

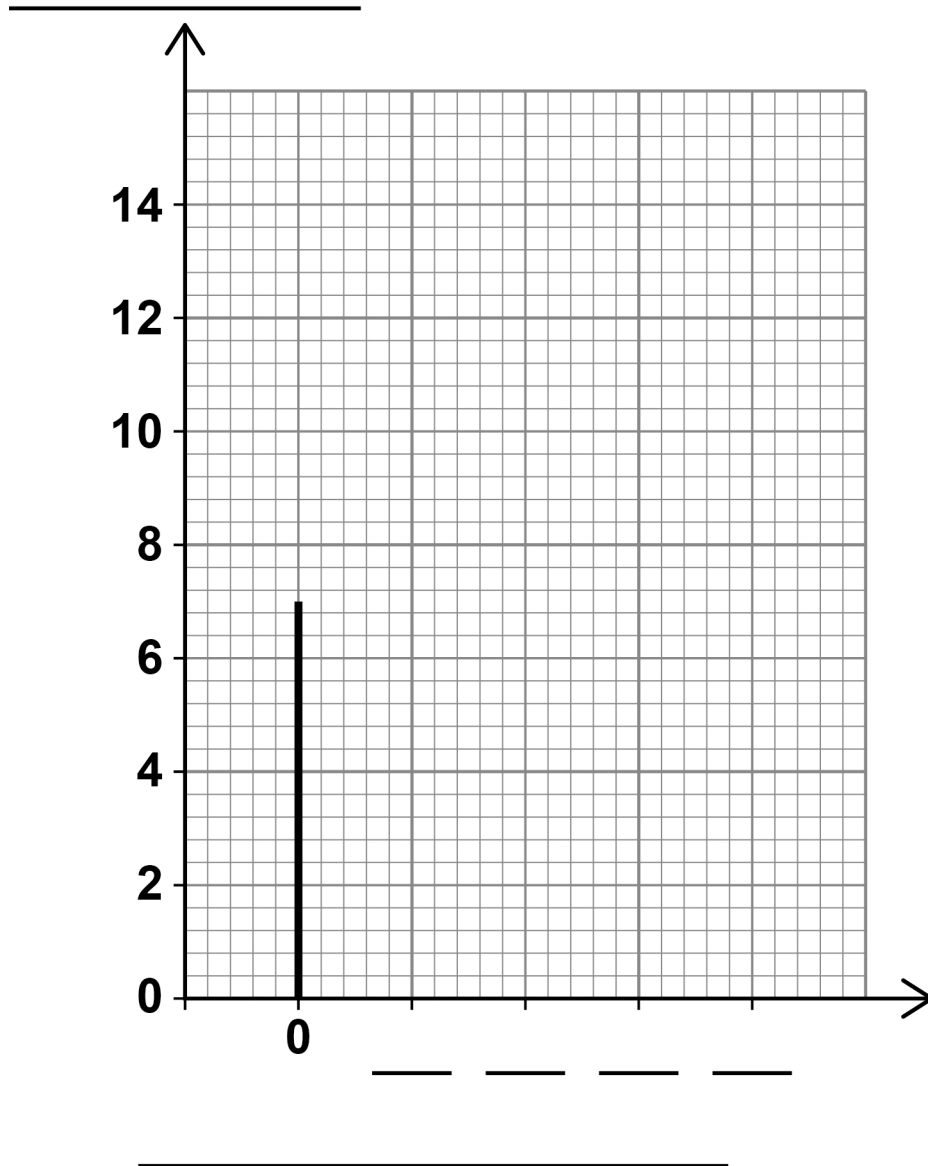
4 (b) (ii) What fraction of the class used MORE THAN 1 hairstyling product each day? [2 marks]

Answer _____



4 (b) (iii) Complete the bar line graph to show these results.

Remember to complete the labels. [4 marks]



[Turn over]



5 **Pria owns a café.**

She wants to begin offering soup at lunchtime.

Pria collects information about her customers' favourite soup.

The table shows her results.

FAVOURITE SOUP	NUMBER OF CUSTOMERS
Vegetable	12
Chicken	18
Tomato	20
Mushroom	8
Other	3


**5 (a) Write down TWO conclusions from Pria's results.
[2 marks]**






Conclusion 1 _____



Conclusion 2 _____

5 (b) Complete the pictogram, including the key, to show Pria's results. [4 marks]

KEY  represents _____ customers

Vegetable	
Chicken	
Tomato	    
Mushroom	
Other	

[Turn over]



- 5 (c) Pria wants to know how often her customers eat soup for lunch.**

She produces this questionnaire.

How often do you eat soup?

☐

1–2 times

☐

2–3 times

☐

4–5 times

☐

more than 5 times

- 5 (c) (i) Write down ONE problem with the question.
[1 mark]**



5(c)(ii) Write down TWO problems with the response section. [2 marks]

1 _____

2 _____

[Turn over]



Pria designs a more suitable questionnaire.

She gives it to the first 25 customers who enter her café for lunch one day.

5 (d) (i) Name this sampling method. [1 mark]

Answer _____

5 (d) (ii) Give ONE advantage of this sampling method. [1 mark]

5 (d) (iii) Give ONE disadvantage of this sampling method. [1 mark]



6 Nik wants to increase the number of subscribers to his online video channel.

He sets up a prize draw for people who share his channel on social media.

Nik thinks this will increase his number of subscribers.

**6 (a) His hypothesis is,
“Will more people subscribe to my channel?”**

**6 (a) (i) Give a reason why this is NOT a hypothesis.
[1 mark]**

6 (a) (ii) Write an appropriate hypothesis that Nik could use. [1 mark]

[Turn over]



These data show the number of new subscribers to Nik's channel for the first 14 days after the prize draw was set up.

170	400	1300	600	2400	1300	1300
3800	2400	4100	4100	3500	18800	4300

6(b) Nik's friend says,

"On average, the daily number of new subscribers during the 14 days is MORE THAN 3000"

Nik comments,

"It depends on which average you use."

Is Nik correct?

You MUST show your working. [4 marks]

[Turn over]

- 6 (c) (i) Give a reason why 18 800 appears to be an outlier. [1 mark]**

- 6 (c) (ii) Nik believes that 18 800 MUST have been incorrectly recorded.**

Suggest a possible reason why he might be wrong. [1 mark]



6 (c) (iii) Nik cleans his data by removing the value 18 800

Without doing any further calculations, explain how this will change each of the averages you calculated in PART (b). [2 marks]

[Turn over]



6 (d) Nik sees this graph on a website.

The graph is not reproduced here due to third-party copyright restrictions.



Comment, with a reason, whether the graph shows that,

- 6 (d) (i) online video revenue increased by about \$5 billion between 2013 and 2017, [2 marks]**

- 6 (d) (ii) more people watched online videos in 2020 than in 2019, [1 mark]**

[Turn over]



6 (d) (iii) online video revenue in 2022 will be greater than \$20 billion. [1 mark]

14



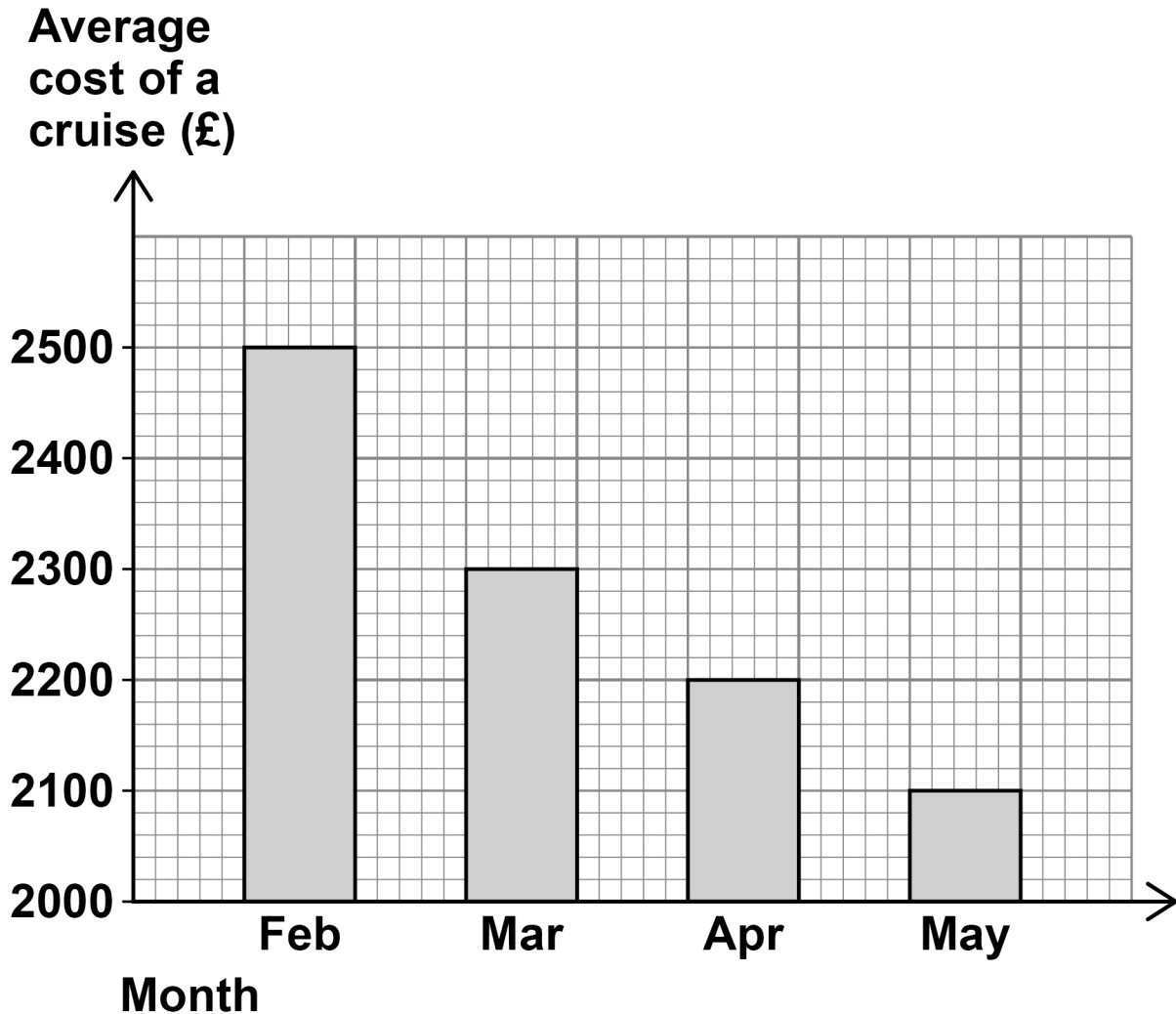
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[Turn over]



- 7 A travel company produced this graph to use in an advert.

AVERAGE COST OF A CRUISE



- 7 (a) (i) Give a reason why this graph is misleading. [1 mark]

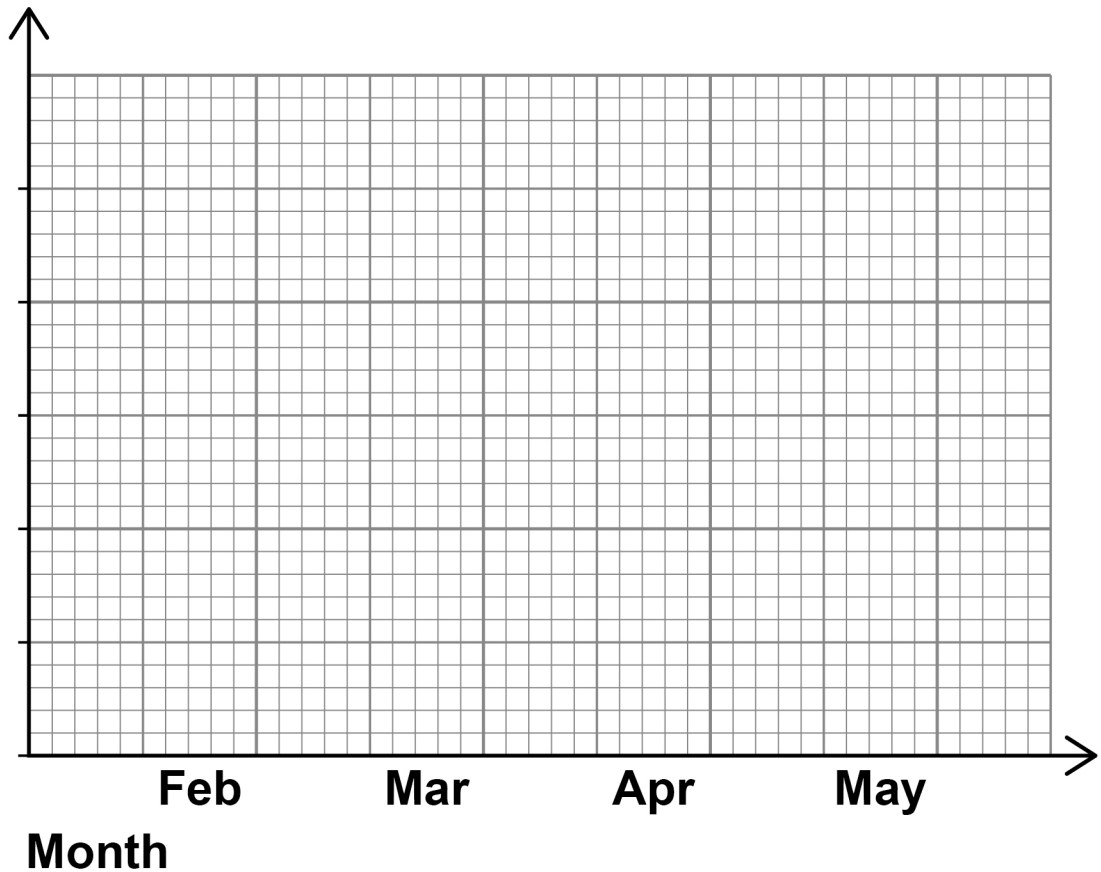


- 7 (a) (ii) On the grid below, draw a graph that,
- shows the same information
 - is NOT misleading.

[2 marks]

AVERAGE COST OF A CRUISE

Average
cost of a
cruise (£)



[Turn over]

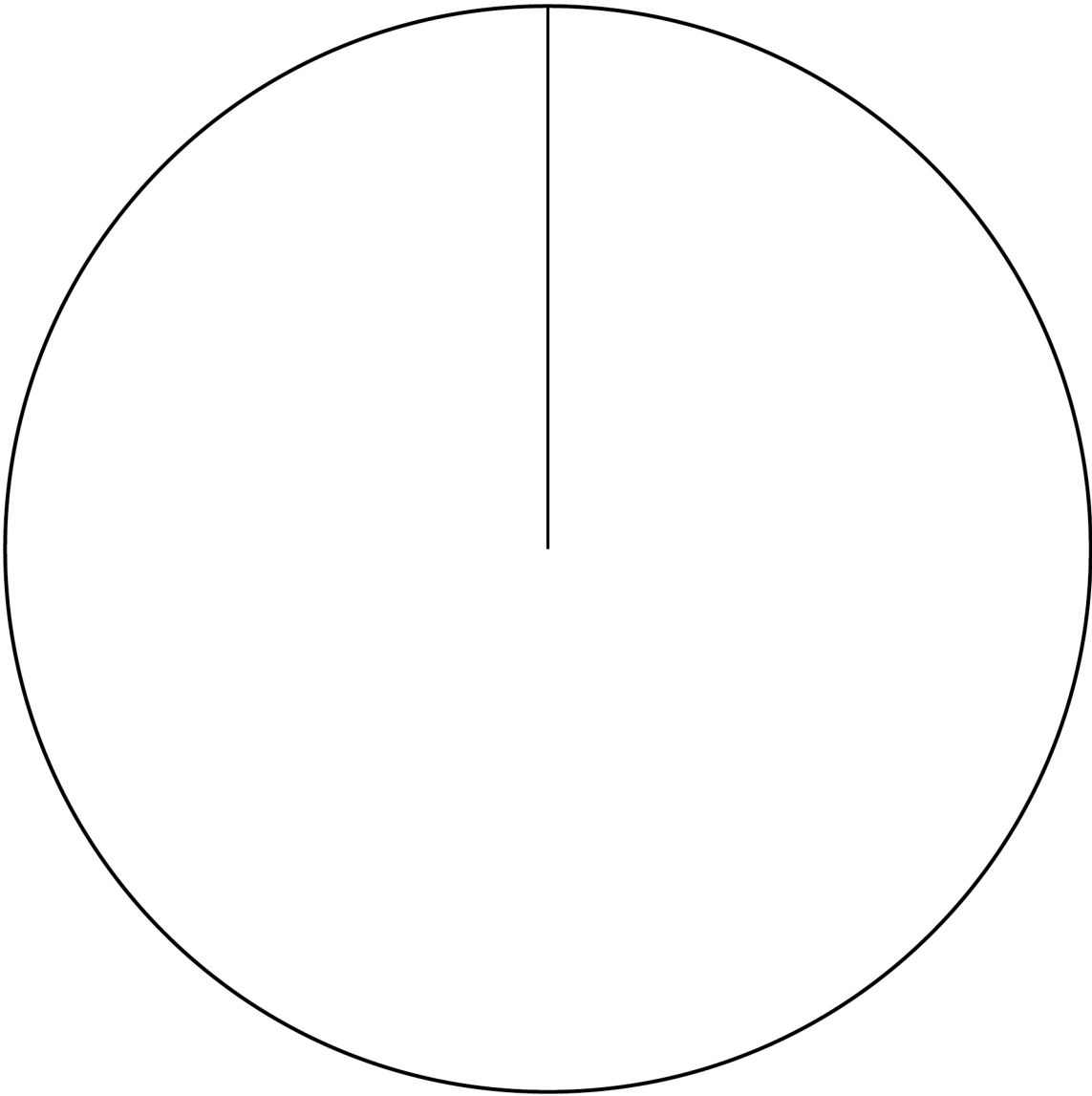


- 7 (b) The table shows the number of each type of holiday the travel company sold last week.

HOLIDAY TYPE	Ski	Cruise	Beach	Adventure
FREQUENCY	5	34	34	17

- 7 (b) (i) On the opposite page, draw a fully labelled pie chart to illustrate the data in the table.
[4 marks]





[Turn over]



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- 7 (b) (ii) The travel company plan to use the pie chart on their social media page.

They want their customers to see,
the most popular holiday they sell
AND

the number of holidays they sell.

Does the pie chart show this information?

Tick (✓) a box.

☐ Yes

☐ No

You must give a reason for your answer.
[1 mark]

[Turn over]



- 7 (b) (iii) The travel company claim the information in the table shows that they will sell 5 ski holidays every week.

Why is this NOT a sensible claim? [1 mark]

9



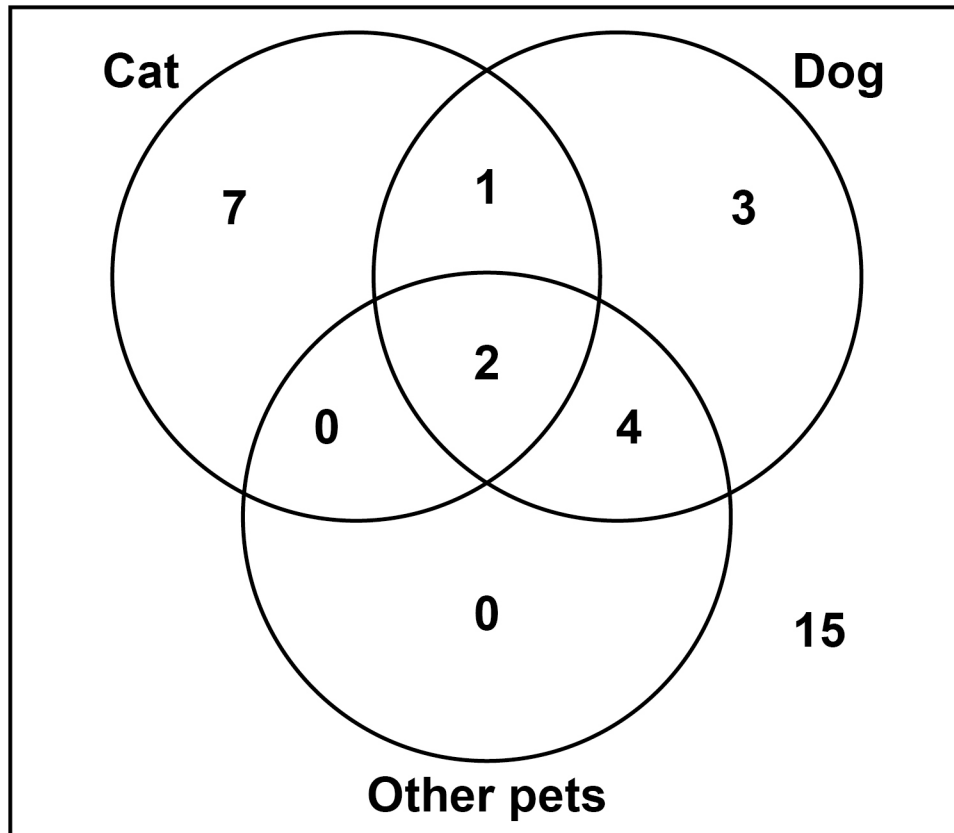
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[Turn over]



- 8 Rachael asked all her friends what types of pets they have.

The results are shown in the diagram.



- 8 (a) Rachael says,
 “More of my friends have cats than have dogs.”

Is Rachael correct?

Tick (✓) a box.

☐

Yes

☐

No



Show working to support your answer. [2 marks]

8 (b) Rachael chooses one of her friends at random.

**Work out the probability that this friend has
AT LEAST one type of pet. [2 marks]**

Answer _____

[Turn over]



- 8 (c) Rachael now chooses at random one of her friends who has a cat.

Work out the probability that this friend **ALSO** has a dog. [2 marks]

Answer

<hr/>
6

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[Turn over]



- 9** The table shows Chan's annual salary from 2017 to 2020.

YEAR	SALARY (£)	SALARY INDEX NUMBER
2017	21 000	100
2018	21 420	102
2019	22 890	109
2020	23 310	

- 9 (a)** Using 2017 as the base year, calculate the salary index number for 2020.

Write your answer in the table above. [2 marks]

- 9 (b) Using 2017 as the base year, the salary index number for the year 2021 is 116

Work out Chan's salary in 2021. [2 marks]

Answer £

[Turn over]

<hr/>
4



- 10 Mrs Kay teaches woodwork classes for small groups of students.

She takes a sample of 20 classes.

The table shows information about how many students attended the classes.

NUMBER OF STUDENTS, x , IN THE CLASS	NUMBER OF CLASSES
1	1
2	3
3	5
4	9
5	2

- 10 (a) Complete the cumulative frequency table for these data. [1 mark]

NUMBER OF STUDENTS, x , IN THE CLASS	CUMULATIVE FREQUENCY
$x \leq 1$	1
$x \leq 2$	4
$x \leq 3$	
$x \leq 4$	
$x \leq 5$	

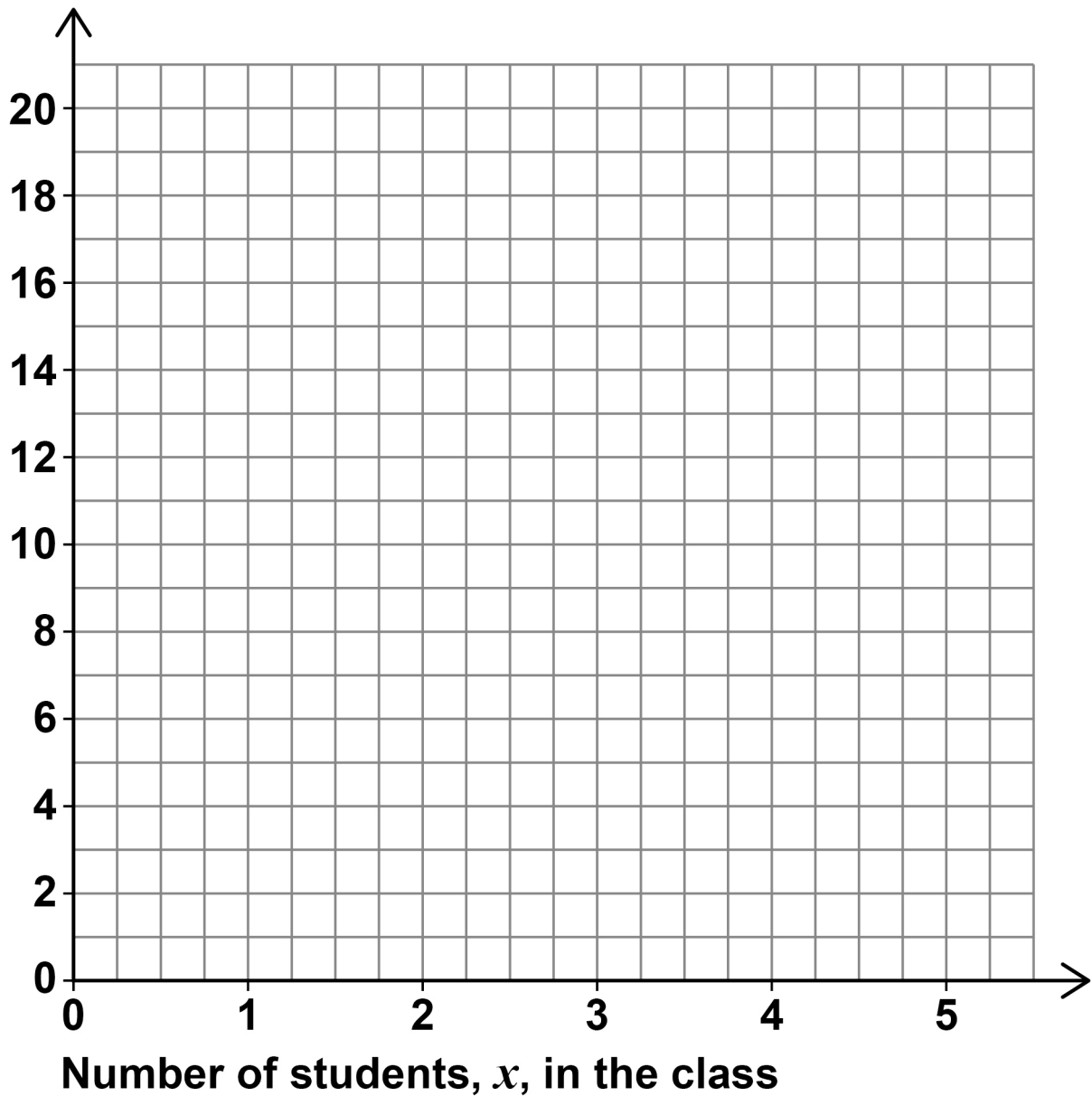
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- 10 (b) Draw a cumulative frequency STEP polygon to represent the data. [2 marks]

Cumulative
frequency



[Turn over]



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10 (c) Mrs Kay says,

“The median number of students in my classes
is MORE THAN 3”

Is Mrs Kay correct?

Tick (✓) a box.

☐

Yes

☐

No

Give a reason for your answer. [1 mark]

[Turn over]

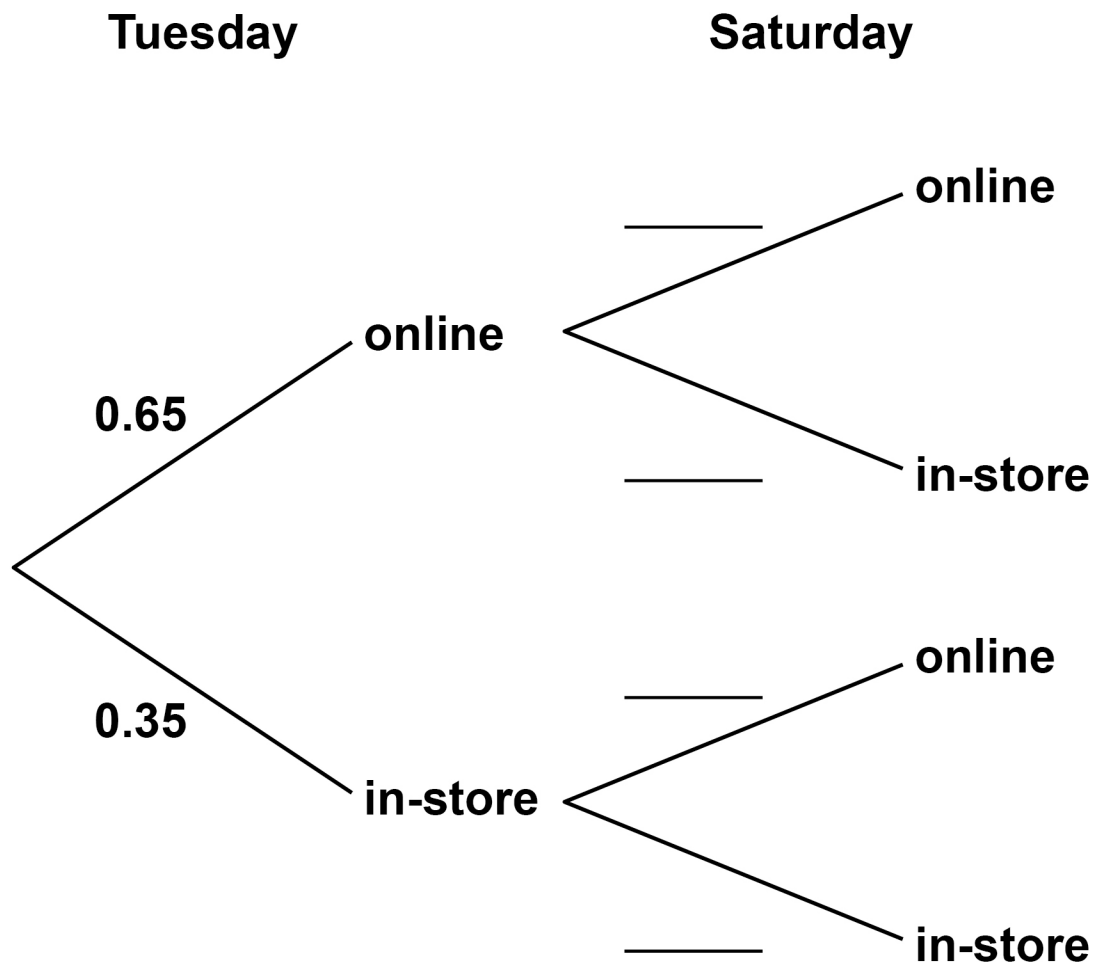
4



- 11 Ryan shops for groceries every Tuesday and Saturday.

He only shops either online or in-store.

The tree diagram shows some of the probabilities.



If Ryan shops online on Tuesday, the probability he shops **ONLINE** on Saturday is 0.2

If Ryan shops in-store on Tuesday, the probability he shops **ONLINE** on Saturday is 0.4

- 11 (a) Complete the tree diagram to show the probabilities for Saturday. [2 marks]
- 11 (b) Work out the probability that Ryan will shop for groceries online **AT LEAST ONCE** next week. [3 marks]

Answer _____

[Turn over]

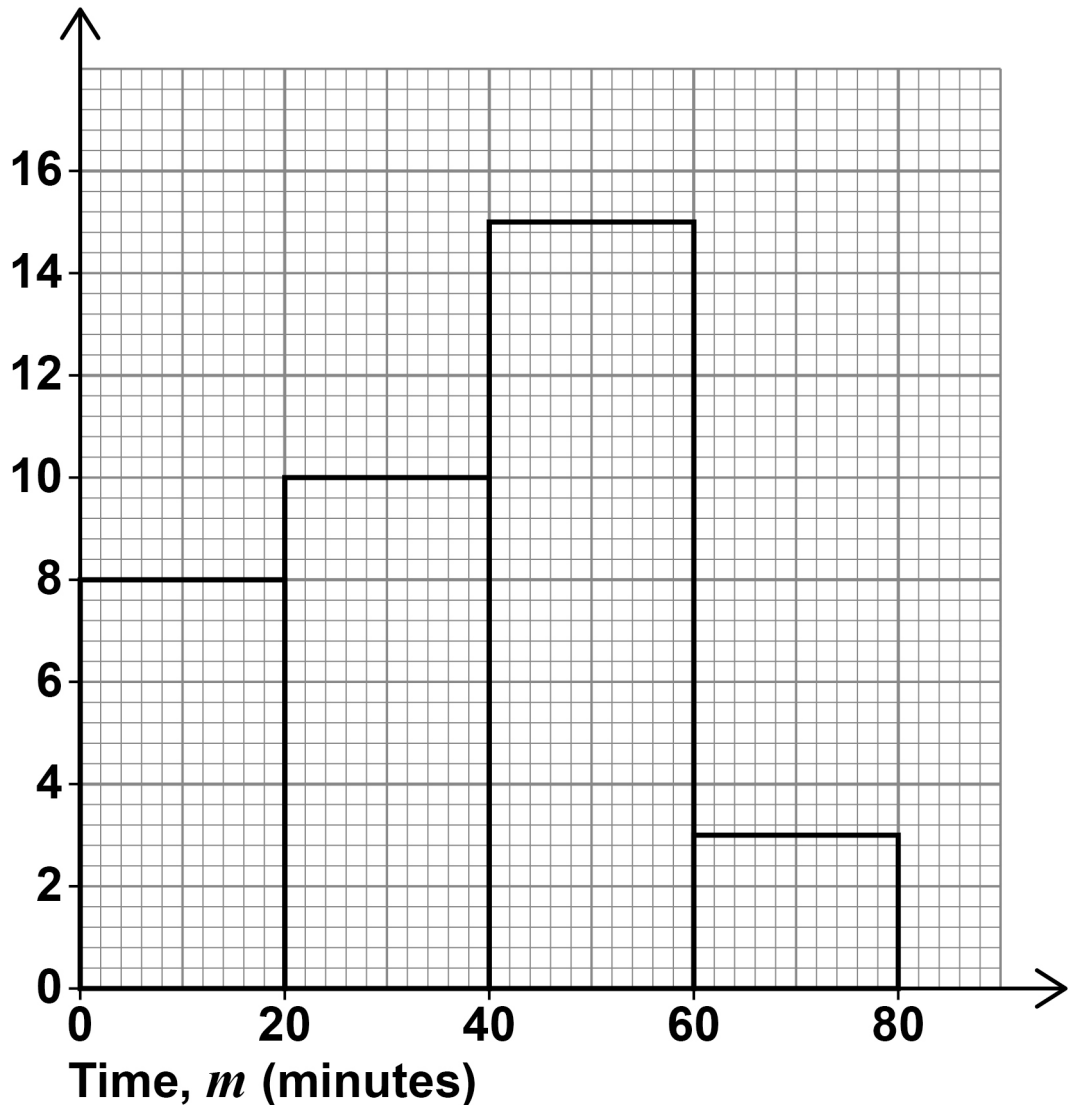
5



- 12 Erika records the time, m , in minutes, that it takes her to complete each piece of homework set during a term.

Her results are represented in the diagram.

Frequency



By calculating an estimate of the mean, work out whether Erika takes, on average, between 30 and 40 minutes to complete each piece of homework.

You may use the table below to help you.
[5 marks]

[Turn over]

<hr/> 5



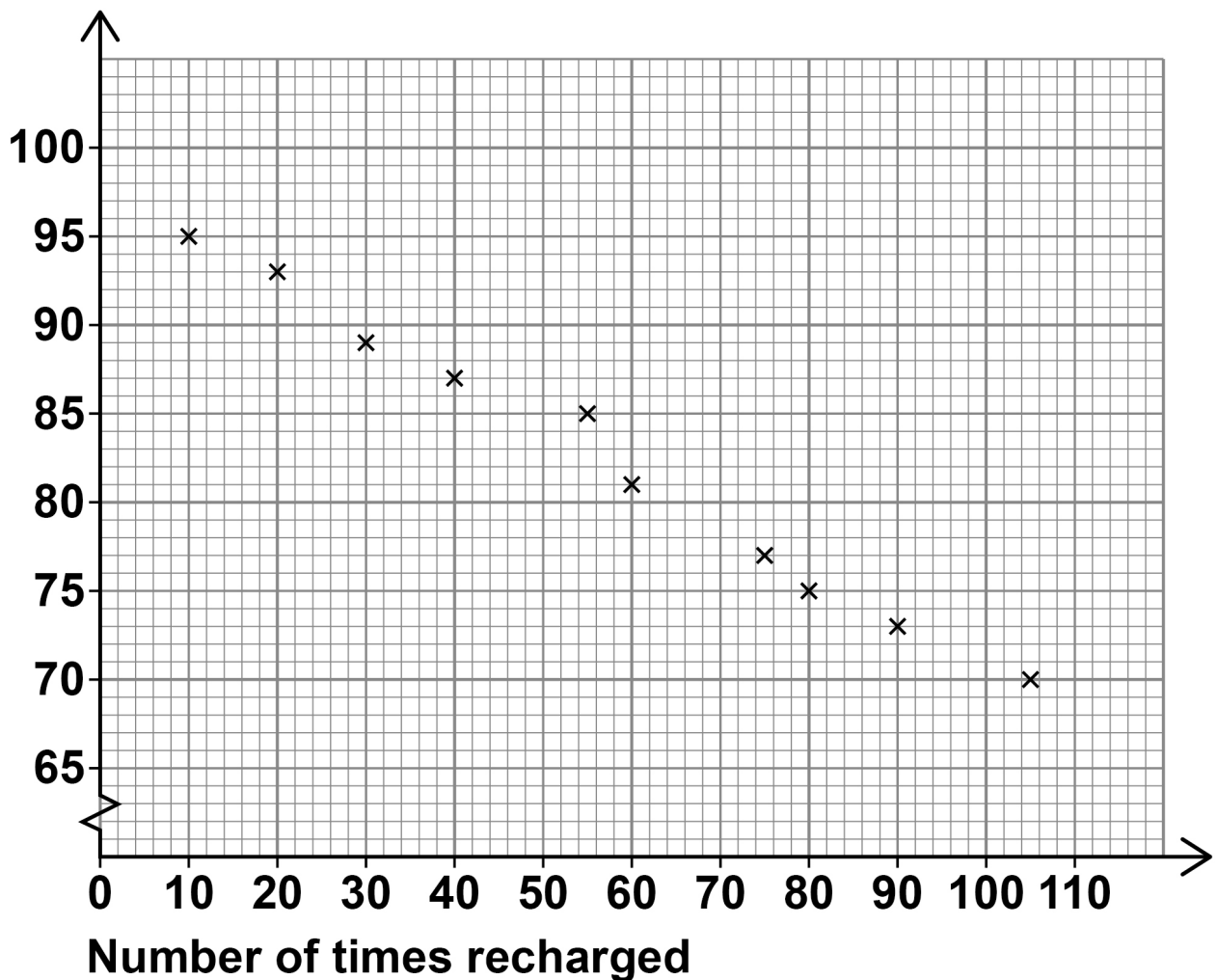
13 Raj is investigating rechargeable batteries.

Battery capacity is a measure of how much power can be stored in a battery.

Rechargeable batteries lose some of their capacity each time they are recharged.

The scatter graph shows information for 10 different rechargeable batteries.

Percentage
of original
capacity
remaining



- 13 (a) The coordinates for the double mean point for these data are $(a, 82.5)$

Work out the value of a . [2 marks]

Answer

- 13 (b) Using your answer to PART (a) draw a line of best fit on the scatter graph. [2 marks]

[Turn over]



- 13 (c) Raj uses the scatter graph to predict the percentage of original capacity remaining in a battery after it has been recharged 70 times.**

Will his prediction be accurate?

Tick (✓) a box.

☐

Yes

☐

No

☐

Cannot tell

Give a reason for your answer. [2 marks]

—
6



- 14** Chris thinks that weeds are spreading on a football field.

He samples the number of weeds per square metre in different places on the field.

He chooses 5 places along one side of the field.

- 14 (a)** Write down TWO ways in which Chris could make his sample more representative.
[2 marks]

1 _____

2 _____

[Turn over]



- 14 (b) After collecting his first sample Chris treats the field to remove the weeds.**

The next day, he collects a second sample to see if the treatment has had an effect.

Chris counts the weeds in several places, chosen at random.

**Write down ONE way in which Chris can improve how he collects his second sample.
[1 mark]**

END OF QUESTIONS

3



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Write the question numbers in the left-hand margin.

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Additional page, if required.

Write the question numbers in the left-hand margin.

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Additional page, if required.

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For Examiner's Use	
Question	Mark
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13	
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TOTAL	

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