AQA

Surname _____

Forename(s) _____

Centre Number _____

Candidate Number _____

Candidate Signature _____

I declare this is my own work.

GCSE

F

STATISTICS

Foundation Tier Paper 1

8382/1F

Wednesday 5 June 2024 Afternoon

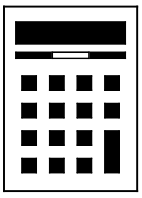
Time allowed: 1 hour 45 minutes

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**
- **a Diagram Booklet.**

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 **Work out the range of these values.**

3 6 6 6 8 9 11 15

Circle your answer below. [1 mark]

6 **7** **8** **12**

2 **Circle the percentage that CANNOT be a probability. [1 mark]**

0.01% **110%** **10%** **100%**

3 **Which of these is NOT a source of data?**

Circle your answer. [1 mark]

Observation **Simulation**

Census **Stratification**

4 **Spearman's rank correlation coefficients are calculated for four data sets.**

Which of these values represents a WEAK, NEGATIVE correlation?

Circle your answer. [1 mark]

–1 **0.02** **–0.9** **–0.4**

[Turn over]

4

5 There are 12 discs in a box.

COLOUR	Blue	Red	Green	White
NUMBER OF DISCS	2	3	3	4

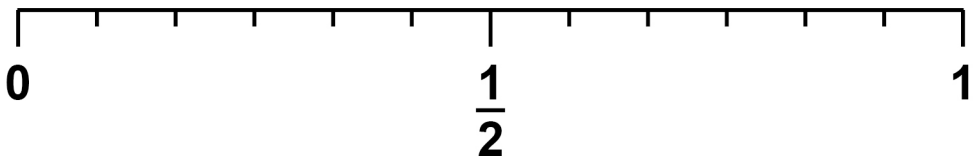
A disc is picked at random from the box.

5 (a) Which two colours have the SAME probability of being picked? [1 mark]

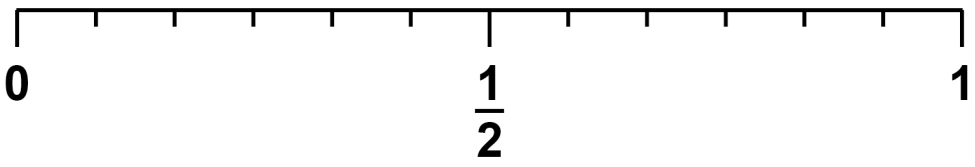
Answer

_____ and _____

5 (b) On the probability scale below, draw an arrow to mark the probability that the disc is blue.
[1 mark]



5 (c) **On the probability scale below, draw an arrow to mark the probability that the disc is pink.**
[1 mark]



5 (d) **A DIFFERENT box contains discs that are 5 different colours.**

Kim says,

"There are 5 different colours in the box. The probability of picking each colour must be $\frac{1}{5}$ "

Give a reason why she MAY NOT be correct.
[1 mark]

_____

_____

_____

[Turn over]

4

6 Ben records the numbers of cars and lorries passing his house for the same hour each day for one week in June.

The table is provided on page 2 of the Diagram Booklet.

6 (a) Write down the number of cars Ben records on Friday. [1 mark]

Answer _____

6 (b) Write down the day Ben records 5 more lorries than cars. [1 mark]

_____

_____

_____

Answer _____

6 (c) **How many cars and lorries did Ben record, in total, on Saturday and Sunday? [2 marks]**

Answer _____

6 (d) **Work out the fraction of the vehicles he records on Tuesday that are cars. [2 marks]**

Answer _____

[Turn over]

6 (e) **Compare the number of CARS recorded that Monday with those recorded that Saturday.**
[1 mark]

BLANK PAGE

[Turn over]

The composite bar chart, on the opposite page, represents the first five days for Ben's data.

6 (f) Complete the composite bar chart, including the key. [5 marks]

6 (g) Ben says,

"My data tell me how many cars will be using the road in DECEMBER."

Give two reasons why Ben might NOT be correct. [2 marks]

1 _____

_____

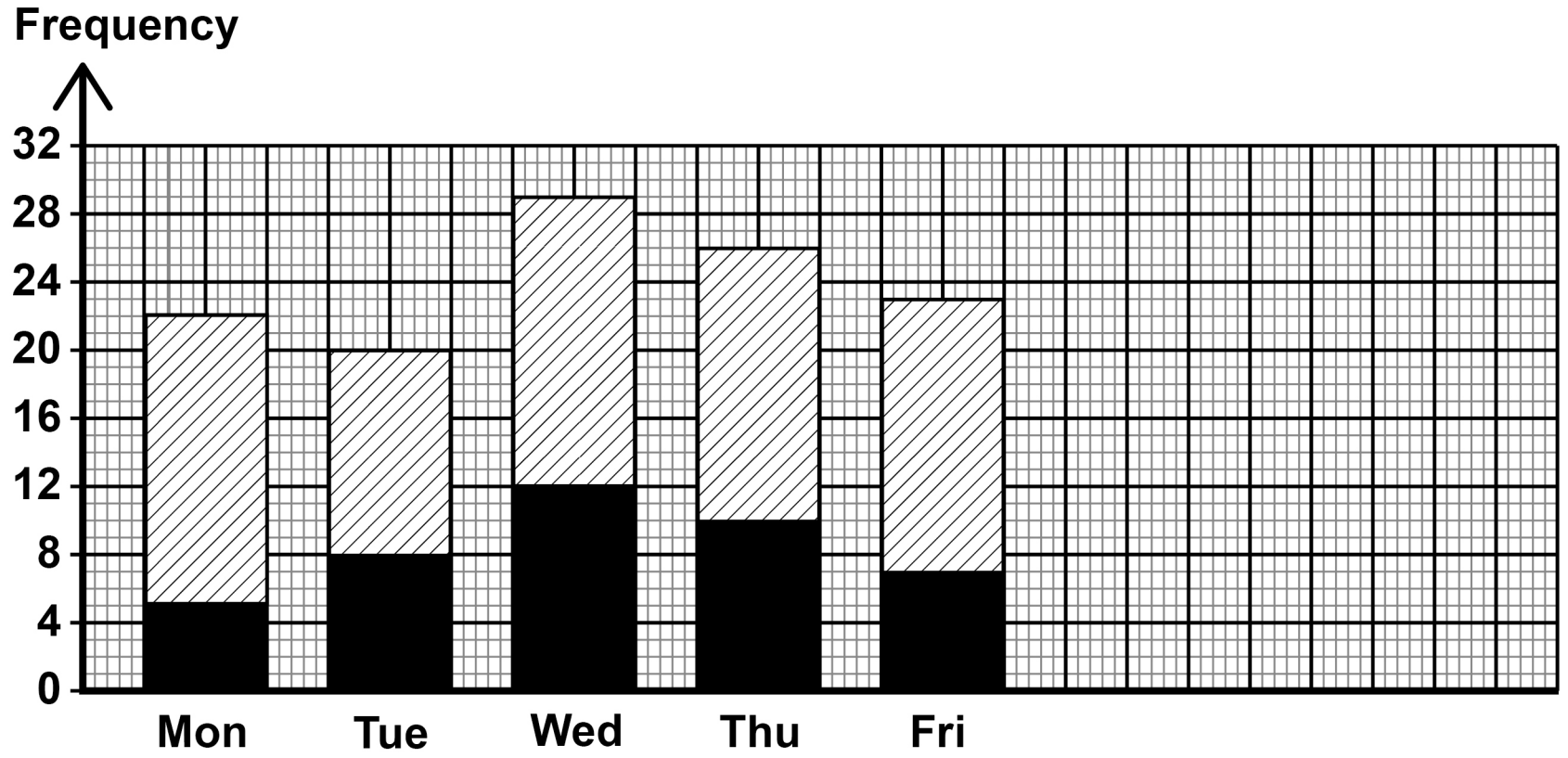
_____

2 _____

_____

_____

12


Frequency
32
28
24
20
16
12
8
4
0
Mon
Tue
Wed
Thu
Fri
Day
KEY:
Lorries
Cars

7 **Tia is studying the population of Brazil.**

7 (a) **She finds some information and rounds the values to the nearest 5 million.**

Her results are shown in the table, provided on page 3 of the Diagram Booklet.

7 (a) (i) **Write down ONE advantage of rounding the population figures. [1 mark]**

7 (a) (ii) **Write down ONE disadvantage of rounding the population figures. [1 mark]**

7 (b) **Briefly describe the trend in the population of Brazil from 1980 to 2020.**

Tick (✓) a box. [1 mark]

☐ **The population is increasing.**

☐ **The population is decreasing.**

☐ **The population stays the same.**

[Turn over]

7 (c) (i) **Tia used the information to draw a vertical line graph, provided on page 4 of the Diagram Booklet.**

Write down TWO criticisms of the vertical line graph. [2 marks]

Criticism 1 _____

_____

_____

_____

Criticism 2 _____

_____

_____

_____

7 (c) (ii) **Tia wants to estimate the population in Brazil in 2005.**

Are the data suitable for this estimation?

Tick (✓) a box.

☐ **Yes**

☐ **No**

Give a reason for your answer. [1 mark]

_____

_____

_____

[Turn over]

7 (d) **The population pyramid, provided on page 5 of the Diagram Booklet, shows information about the ages of people in Brazil in 2020.**

7 (d) (i) **In 2020, what percentage of the population of Brazil was female aged 50–59? [1 mark]**

Answer _____ **%**

7 (d) (ii) **In 2020, which age group in Brazil had the GREATEST percentage of males? [1 mark]**

Answer _____

7 (d) (iii) **Tia says,**

"There are MORE males than females aged 60 and over."

Does the population pyramid, on page 5 of the Diagram Booklet, support this statement?

Tick (✓) a box.

☐ **Yes**

☐ **No**

Give a reason for your answer. [2 marks]

_____

_____

_____

_____

[Turn over]

10

8 Xander and Leah want to investigate the time it takes students to complete a course.

They each decide to collect their own sample of students.

8 (a) The table, provided on page 6 of the Diagram Booklet, shows information about Xander's data.

8 (a) (i) How many students in Xander's sample took more than 40 hours to complete the course? [1 mark]

Answer _____

8 (a) (ii) Which class interval contains the median for Xander's data?

Circle your answer below. [1 mark]

$0 < t \leqslant 10$ $10 < t \leqslant 20$

$20 < t \leqslant 30$ $30 < t \leqslant 40$

8 (b) **Leah rounds the times for her sample of 34 students to the nearest hour.**

The stem-and-leaf diagram, provided on page 7 of the Diagram Booklet, shows the data.

Write down the number of students who took more than 44 hours. [1 mark]

Answer _____

[Turn over]

3

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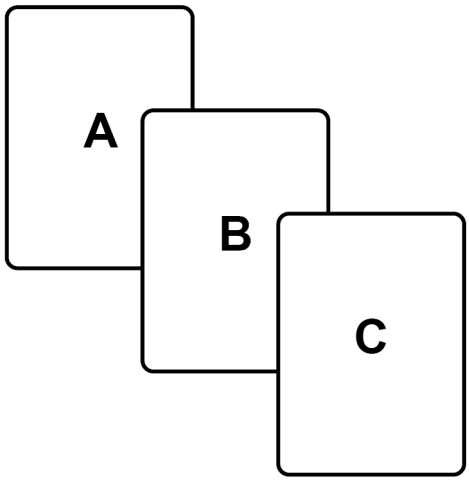
9 **Jem has designed a game to raise money for charity.**

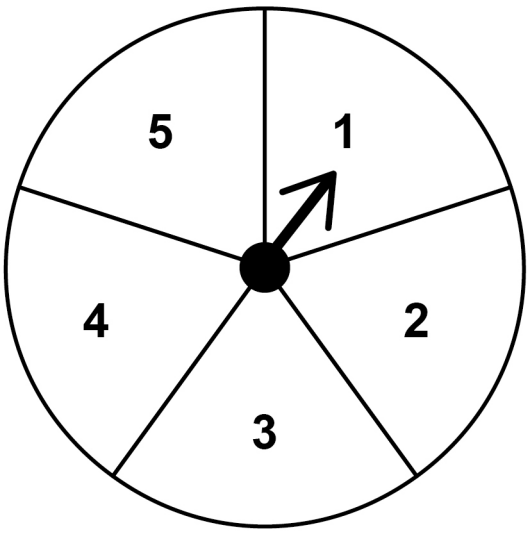
To play the game

you turn over, at random, one of three cards labelled A, B and C

AND

you spin a fair spinner numbered 1 to 5

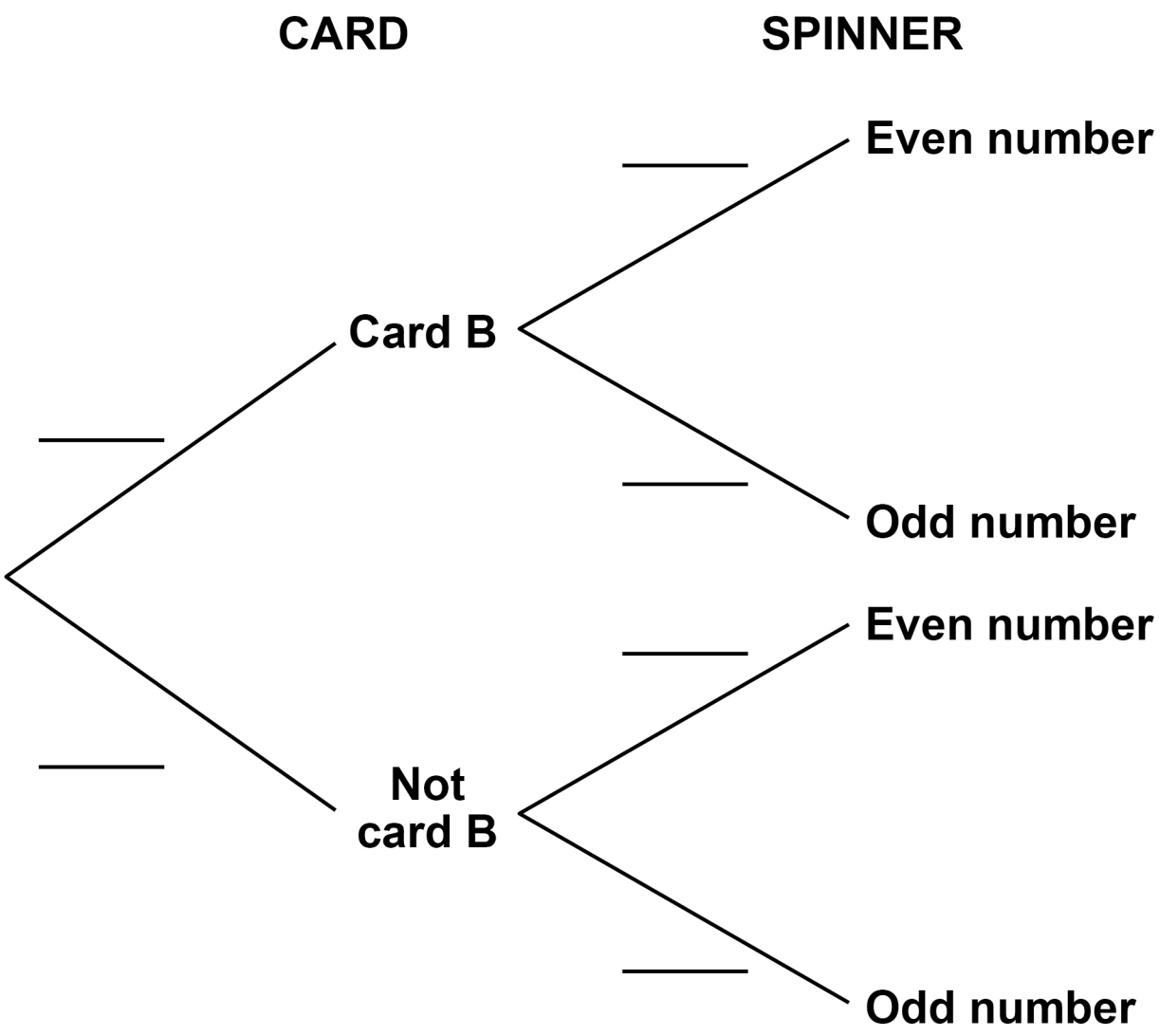




[Turn over]

9 (a) **The tree diagram shows some of the probabilities.**

Complete the tree diagram. [2 marks]



9 (b) (i) **Jem plays the game.**

Calculate the probability that he picks card B AND spins an even number. [2 marks]

Answer _____

[Turn over]

9 (b) (ii) **Each player will pay £2 to play the game.**

They win £4 if they pick card B AND spin an even number.

300 people play the game.

Use your answer to part (b)(i) to work out how much money Jem should expect to raise.
[3 marks]

Answer £ _____

7

10 Jesse looks online at how the cost to send a 100g standard letter in the UK has changed.

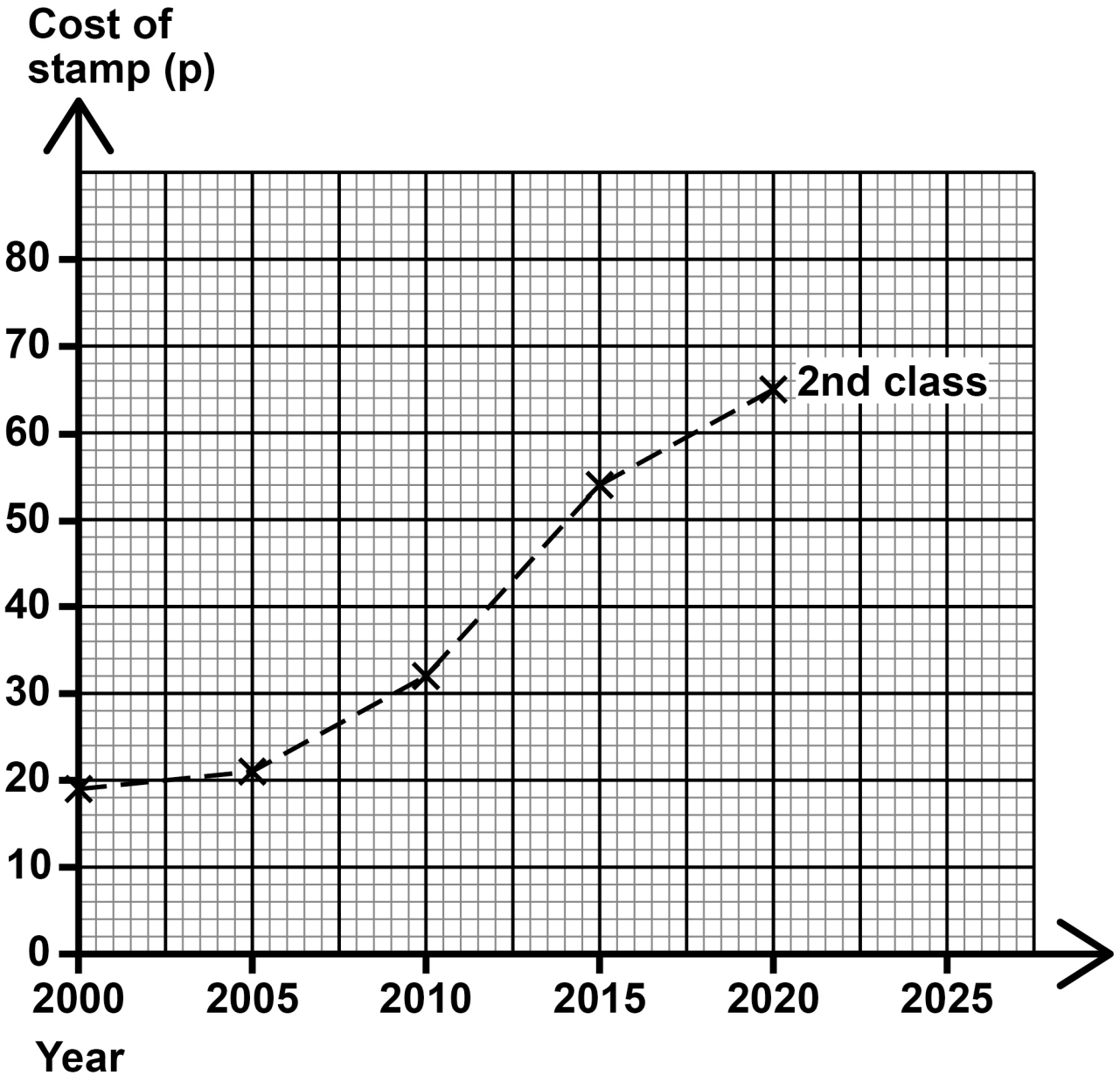
The table, provided on page 8 of the Diagram Booklet, shows the data found.

10 (a) Tick (✓) to show if each statement is true or false. [3 marks]

	TRUE	FALSE
The data in the table are primary data.	☐	☐
The data in the table are quantitative data.	☐	☐
The data in the table are continuous data.	☐	☐

[Turn over]

Jesse has drawn a time series graph to show the cost of a 2nd class stamp.



10 (b) **During which five-year period did the cost of a 2ND CLASS stamp increase the most?**

Tick (✓) a box.

☐ **2000 to 2005**

☐ **2005 to 2010**

☐ **2010 to 2015**

☐ **2015 to 2020**

How can you see this on the time series graph? [2 marks]

10 (c) **Draw a time series graph to show the cost of a 1ST CLASS stamp from 2000 to 2020 on the same grid, on page 28. [3 marks]**

10 (d) **Jesse works out to the nearest 1% that,**

from 2000 to 2020 the cost of a 1st class stamp has increased by 181%

Show that the cost of a 2nd class stamp has increased by a GREATER percentage.
[2 marks]

10

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[Turn over]

11 **Tom has a dog-walking business.**

The equal-width histogram, provided on page 9 of the Diagram Booklet, represents the masses of the dogs he walks on Monday.

11 (a) **Complete the grouped frequency table for these dogs. [2 marks]**

Mass, m (kg)	Frequency
$5 \leqslant m < 10$	6
	3
$15 \leqslant m < 20$	

11 (b) **Tom says,**

"One of these dogs has a mass of 5 kg."

Give one reason why Tom might NOT be correct. [1 mark]

_____

_____

_____

11 (c) **Calculate the percentage of these dogs that have a mass less than 15 kg. [2 marks]**

_____

_____

_____

_____

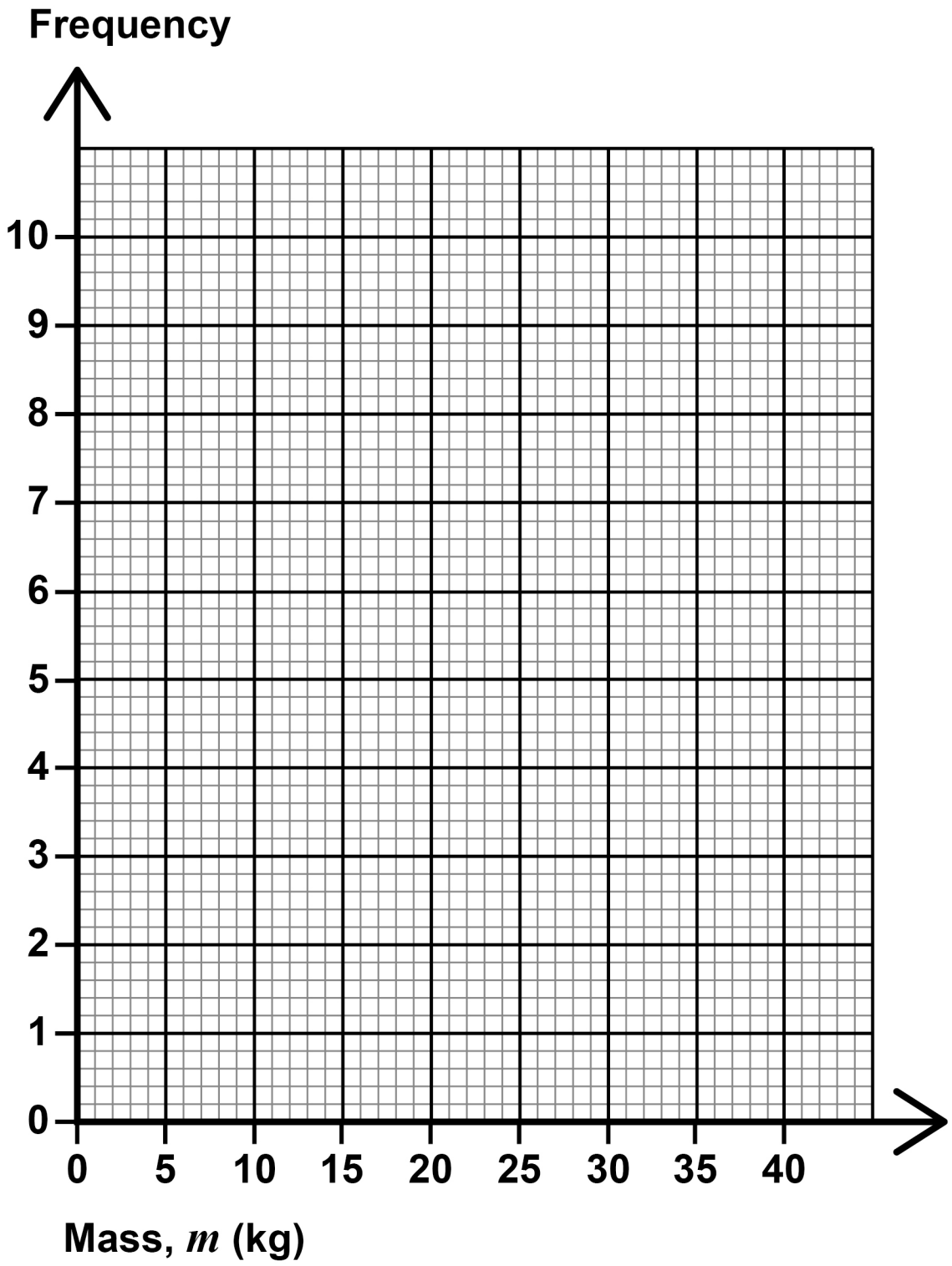
Answer _____ **%**

[Turn over]

11 (d) **This table shows information about the masses of the dogs Tom walks on Tuesday.**

Mass, m (kg)	Frequency
$0 \leqslant m < 10$	7
$10 \leqslant m < 20$	8
$20 \leqslant m < 30$	5
$30 \leqslant m < 40$	1

On the opposite page, draw an equal-width histogram for this information. [2 marks]



[Turn over]

7

12 Alex asks a group of friends how many times they exercised last month.

Here are the data.

0 0 1 2 3 6 7

8 29 30

12 (a) Complete the table for the data. [2 marks]

Mode	
Median	4.5
Mean	

12 (b) (i) **Is the mode suitable to represent the data?**

Tick (✓) a box.

☐ **Yes**

☐ **No**

Give a reason for your answer. [1 mark]

_____

_____

_____

_____

_____

_____

[Turn over]

12 (b)(ii) Is the median suitable to represent the data?

Tick (✓) a box.

☐ **Yes**

☐ **No**

Give a reason for your answer. [1 mark]

12 (b) (iii) Is the mean suitable to represent the data?

Tick (✓) a box.

☐ **Yes**

☐ **No**

Give a reason for your answer. [1 mark]

_____

_____

_____

_____

_____

_____

[Turn over]

5

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13 All Year 7 students in two schools take the same French test.

Sanjit wants to know if students in school A or school B score better.

13 (a) Write down a suitable hypothesis that Sanjit could use. [1 mark]

13 (b) Describe fully the population for Sanjit's investigation. [1 mark]

13 (c) **Sanjit considers the following two methods for collecting scores from a sample of 19 students in school A.**

METHOD A

Ask the first 19 Year 7 students who arrive in the playground.

METHOD B

Give each student in Year 7 a unique number.

Generate 19 different random numbers.

Use the 19 students whose numbers match the ones generated.

State the name of each method and give one advantage of that method. [4 marks]

METHOD A

Name _____

_____

Advantage _____

_____

_____

_____

METHOD B

Name _____

_____

Advantage _____

_____

_____

_____

[Turn over]

13 (d) Sanjit collects the test scores from a sample of 19 Year 7 students in SCHOOL A.

Here are his data.

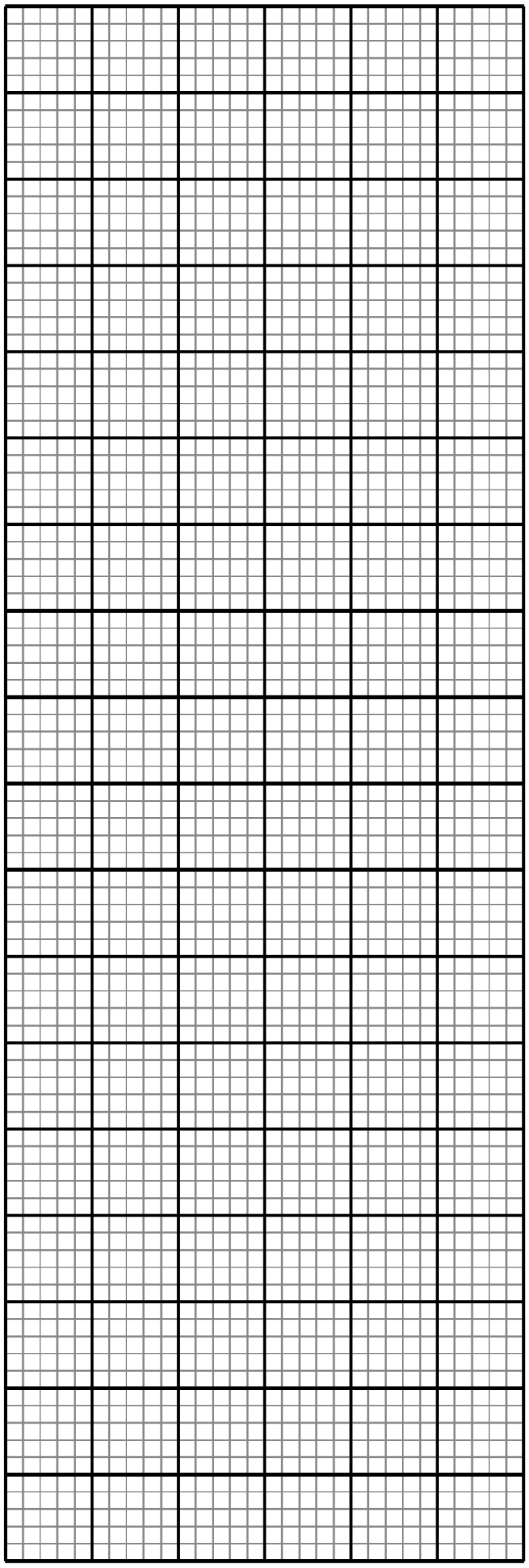
5 8 9 9 10 11 13 14 14 15

18 19 23 24 26 31 35 37 42

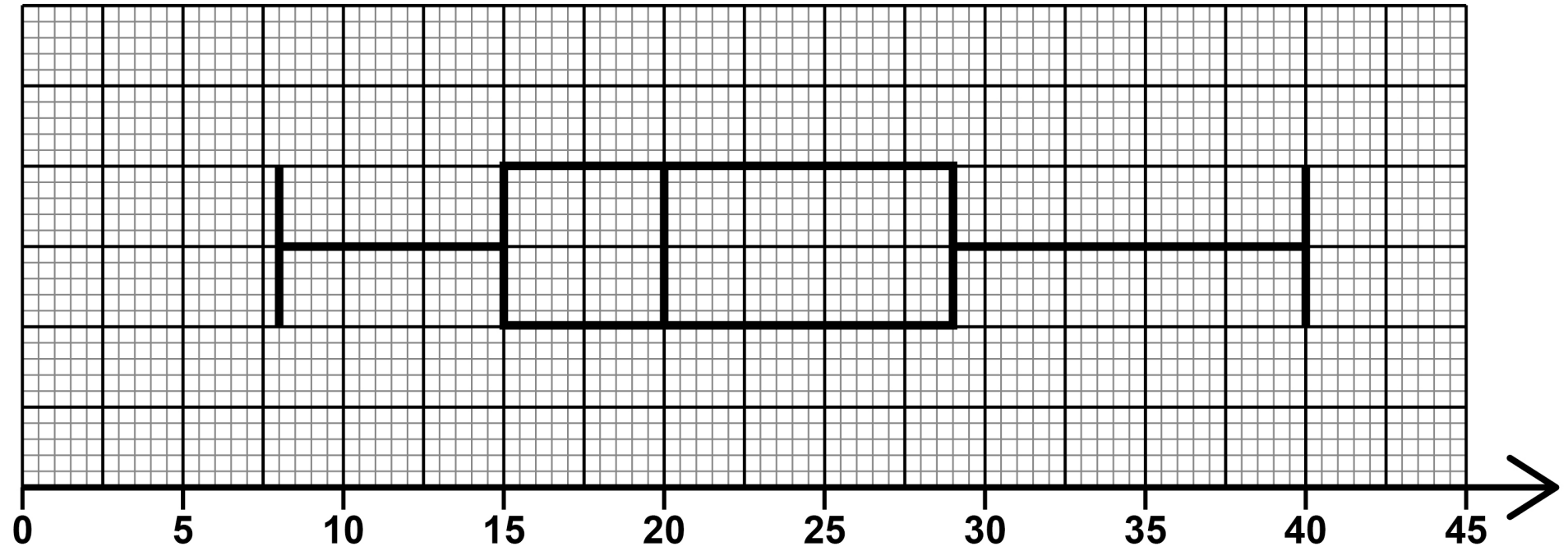
On the opposite page, draw a box plot to represent these data.

You may use the table to help. [6 marks]

LOWER QUARTILE	
MEDIAN	
UPPER QUARTILE	



Sanjit draws this box plot to show the test scores for his sample of 19 students from SCHOOL B.



13 (e) (i) Use the box plot to write down the median test score for SCHOOL B.
[1 mark]

Answer _____

13 (e) (ii) **Compare statistically the median scores for SCHOOL A and SCHOOL B.**
[1 mark]

13 (f) (i) **Use the box plot to calculate the interquartile range for SCHOOL B.**
[1 mark]

Answer _____

[Turn over]

13 (f) (ii) **Compare statistically the interquartile ranges for SCHOOL A and SCHOOL B. [1 mark]**

END OF QUESTIONS

16

Additional page, if required.

Write the question numbers in the left-hand margin.

Additional page, if required.

Write the question numbers in the left-hand margin.

Additional page, if required.

Write the question numbers in the left-hand margin.

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For Examiner's Use	
Question	Mark
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6	
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11	
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