

Relative Frequency

Please write clearly in block capitals

Forename:

Surname:

Materials

For this paper you must have:

- mathematical instruments



You *can* use a calculator.

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. Cross through any work you do not want to be marked.

Information

- The marks for questions are shown in brackets.
- You may ask for graph paper, tracing paper and more answer paper. These must be tagged securely to this answer book.

Advice

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

1 A spinner can land of one of three options: red, yellow and blue.

The spinner is biased.

The table below shows the probability that the spinner will land on red and blue.

Colour	Red	Yellow	Blue
Probability	0.53	x	0.21

1(a) Work out the probability that the spinner will land in the yellow segment.

[2 marks]

Answer _____

1(b) Pablo spins the spinner 1000 times.

Work out an estimate for the number of times the spinner will land on the red section.

[2 marks]

Answer _____

Turn over for next question

- 2** Ben is trying to find out how most of his classmates get to school.
He records the data he takes in the table below.

Means of Travel	Frequency
Bus	21
Car	8
Cycle	12
Walk	32
Train	2

Find the relative frequency of the following:

Give each answer to 3 decimal places.

- 2(a)** Travelling to school by means of a bus, train or car.

[2 marks]

Answer _____

- 2(b)** Travelling to school by means other than walking.

[2 marks]

Answer _____

Turn over for next question

- 3(a)** Charlotte has a packet of sweets. Her favourites are the red ones and the purple ones. The table below shows the probability of each different sweet being selected

Sweet Colour	Purple	Red	Orange	Green	Yellow
Probability	0.15	0.2	0.3	0.16	

- 3(a)** Work out the probability that the sweet charlotte pulls out of the packet is yellow.

[2 marks]

Answer _____

- 3(b)** There are 35 sweets in her one packet. What number of the sweets are expected to be one of her favourites?

[2 marks]

Answer _____

Turn over for next question

Turn over ►

4 Anna is playing a game called frustration.

Over the course of the game she rolls a dice 25 times and each result is shown below.

2 2 3 1 3 6 6 1
 2 4 2 4 6 2 2 5
 5 2 6 2 1 1 6 3 4

4(a) Complete the relative frequency table for this data.

[2 marks]

Result	1	2	3	4	5	6
Relative frequency	4					5

4(b) Do you believe this dice is biased.

Explain your answer

[2 marks]

4(c) Anna rolls the dice 500 times.

Using the relative frequency given, estimate the number of times that it will land on number six.

[1 mark]

Answer _____

Turn over for next question

Turn over ►

- 5 Charlotte wants to estimate the number of sweets in a large packet she has.
The table shows the number of each colour sweet in a small packet.

Sweet Colour	Purple	Red	Orange	Green	Yellow
Number	4	5	6	2	10

- 5(a) Write down the relative frequency of taking a purple sweet out of the small packet.

[2 marks]

Answer _____

- 5(b) Charlotte's large packet has 60 sweets.
She estimates that there will be 12 purple sweets in the large packet.
Evaluate Charlotte's prediction.

[1 mark]



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- 6** Tom, Sarah and Mark all roll a biased 5 sided die.
Their results are summarised in the table below.

Number	Number of results for that number		
	Tom	Sarah	Mark
1	1	10	20
2	0	3	8
3	3	11	18
4	1	7	15
5	1	5	14

- 6(a)** Calculate two different relative frequencies for the die landing on 4.

[2 marks]

Relative frequency 1: _____

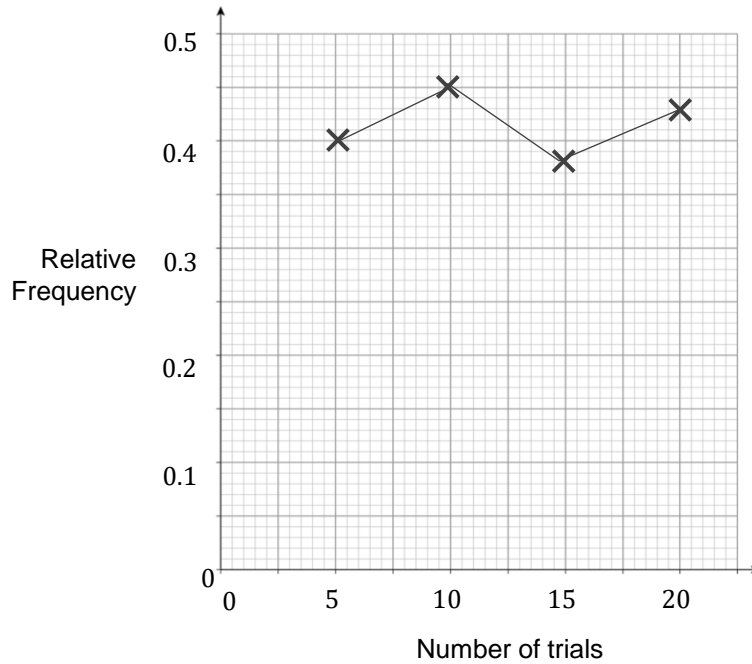
Relative frequency 2: _____

- 6(b)** Which person's data is likely to be closest to the actual relative frequency?
You must justify your answer.

[2 marks]

Turn over for next question

- 7** Thomas has a bag containing 200 different coloured marbles.
 He wants to find the probability of selecting a white marble.
 He does this by randomly selecting a marble out of the bag before replacing it.
 Thomas does this 20 times calculating a relative frequency after every five trials.



- 7(a)** Use the graph to find the number of white marbles Thomas found after the first 5 trials.

[2 marks]

Answer _____

- 7(b)** Estimate the number of white marbles contained within the bag
 Explain your answer.

[2 marks]

Answer _____