

## Relative Frequency

Video 248 on Corbettmaths

Examples



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Workout

Question 1: An ordinary coin is thrown 50 times.  
Barry says "I am going to get heads 25 times and tails 25 times."  
Explain why he could be wrong.

Question 2: A coin is thrown 30 times.  
The coin lands on tails 20 times.  
What is the relative frequency of the coin landing on tails?

Question 3: A dice is rolled 50 times.  
It lands on six 37 times.  
(a) Write down the relative frequency of the dice landing on a six.  
  
Robyn says "the dice is biased towards landing on a six."  
(b) Do you think the dice is biased? Explain your answer.

Question 4: Jessica wants to test if a coin is biased.  
She throws the coin 24 times.  
T T H H T H H H T H T T  
T H H T T H H T H H H T

(a) Complete the relative frequency table.

|                    |       |       |
|--------------------|-------|-------|
|                    | Heads | Tails |
| Relative frequency |       |       |

(b) Do you think the coin is biased? Explain your answer.

Question 5: A biased dice is rolled is rolled 30 times.



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

(a) Complete the relative frequency table

|                    |   |   |   |   |   |   |
|--------------------|---|---|---|---|---|---|
| Number             | 1 | 2 | 3 | 4 | 5 | 6 |
| Relative Frequency |   |   |   |   |   |   |

(b) Do you think the dice is biased? Explain your answer.

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Question 6: Esme takes the bus to university 40 times during a term.  
The relative frequency of the bus being late is 0.3.  
How many times was the bus late?

Question 7: Katie rolls a dice 100 times.  
The table shows the results

|           |    |   |    |    |    |   |
|-----------|----|---|----|----|----|---|
| Number    | 1  | 2 | 3  | 4  | 5  | 6 |
| Frequency | 22 | 9 | 14 | 31 | 19 | 5 |

Work out the relative frequency of throwing:

- (a) An even number            (b) A square number            (c) A prime number  
(d) A cube number            (e) A multiple of 3            (f) A factor of 18

Question 8: A spinner lands of white, black, red or orange.  
The relative frequencies after 300 spins are shown in the table below.

|                    |       |       |     |        |
|--------------------|-------|-------|-----|--------|
| Colour             | White | Black | Red | Orange |
| Relative Frequency | 0.25  | 0.4   | 0.2 | 0.15   |

- (a) How many times did the spinner land on white?  
(b) How many times did the spinner land on red?  
(c) How many more times did the spinner land on black than orange?

Question 9: Martin and Laura want to estimate how many green jelly beans are in a tub of 600 jelly beans.  
A trial consists of taking a jelly bean at random, noting the colour and replacing the jelly bean into the tub.

|        |                  |                                    |
|--------|------------------|------------------------------------|
|        | Number of trials | Number of green jelly beans chosen |
| Martin | 30               | 4                                  |
| Laura  | 150              | 12                                 |

- (a) Write down the relative frequency of Martin taking a green jelly bean.  
(b) Write down the relative frequency of Laura taking a green jelly bean.  
(c) Whose experiment gives the more reliable estimate of the number of green jelly beans in the tub? Give a reason for your answer.  
(d) How many green jelly beans do you expect to be in tub altogether?

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### Apply

Question 1: Leo plants and grows 50 flowers.  
The table shows information about the colours.

(a) Copy and complete the table.

Altogether, Leo grows 125 flowers.

| Colour             | Red  | Yellow | White |
|--------------------|------|--------|-------|
| Frequency          | 16   |        | 28    |
| Relative Frequency | 0.32 |        |       |

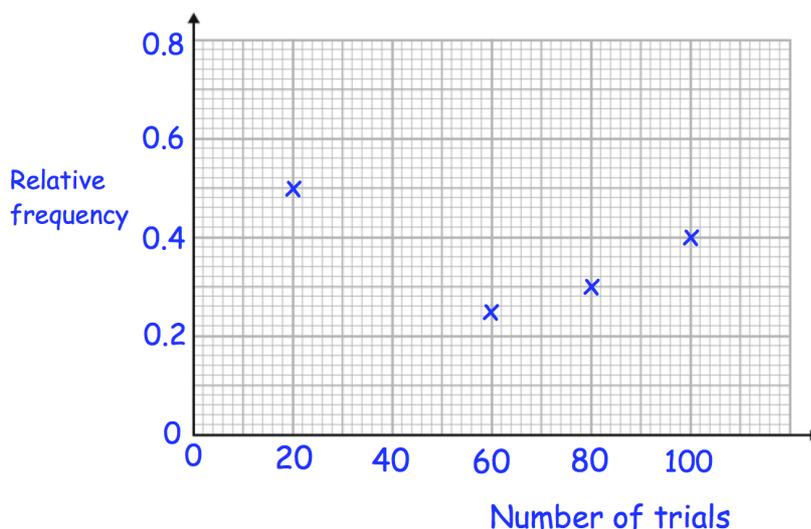
(b) How many flowers would you expect to be yellow?

Question 2: Four students have each written a 2000 word essay.  
The spellings are checked for all four students.  
The relative frequencies of a spelling mistake for the 4 students are:

| Student            | Alan  | Beryl | Connie | Diego |
|--------------------|-------|-------|--------|-------|
| Relative Frequency | 0.032 | 0.01  | 0.009  | 0.017 |

Work out the mean number of spelling mistakes made by the four students.

Question 3: There are 70 sweets in a jar.  
In a trial, a sweet is chosen at random and then replaced.  
The graph shows the relative frequency of a blue sweet.



In the first forty trials, twelve blue sweets were chosen.

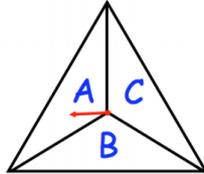
- (a) Plot this result on the graph.
- (b) How many blue sweets were chose after 60 trials.
- (c) Which is the best estimate, from the graph, of the probability of choosing a blue sweet?
- (d) Use your answer to estimate the number of blue sweets in the jar

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Question 4: A coin lands on heads 300 times.  
The relative frequency of heads is 0.6  
Work out the number of times the coin was flipped.

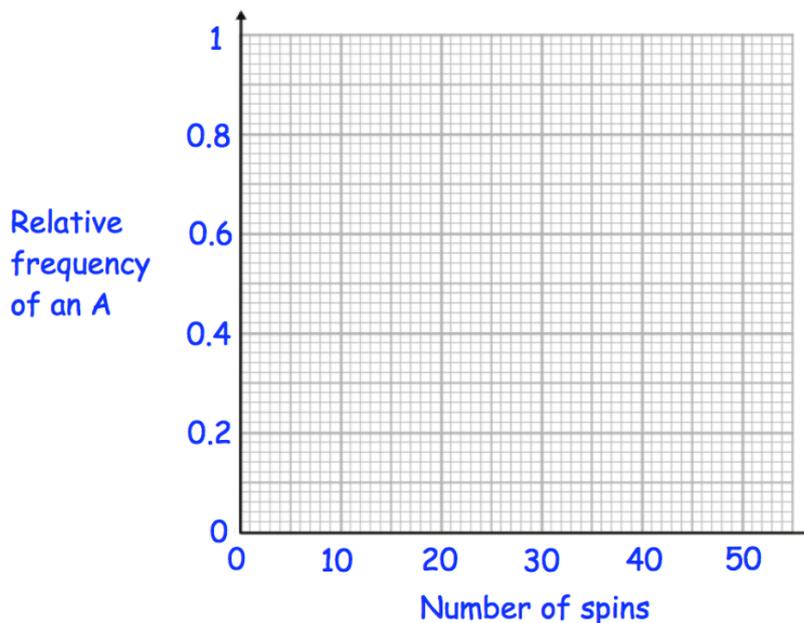
Question 5: A three sided spinner is labelled A, B and C.



The spinner is spun and the frequency of the letter A is recorded every 10 spins.  
The table below shows this information.

|                   |    |    |    |    |
|-------------------|----|----|----|----|
| Spins             | 10 | 20 | 30 | 40 |
| Frequency of an A | 6  | 14 | 18 | 26 |

(a) Plot the relative frequencies on the graph below.



(b) Jacob says the relative frequency after 50 spins is 0.8.  
Explain why Jacob must be wrong.

Answers



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