Relative frequency

6 questions | 15 marks

Equivalent correct methods earn the corresponding marks.

1. An event occurred 8 times in 40 trials. Find its relative frequency as a simplified fraction and decimal. [2 marks]

$\frac{8}{40} = \frac{1}{5}$.

One fifth is 0.2.

Answer: $\frac{1}{5} = 0.2$.

2. Use the supplied spinner record. Find the relative frequency of green. [2 marks]

Example results from 50 spinner trials

Colour	Frequency
Red	22
Blue	15
Green	13

Green occurred 13 times out of 50 trials.

Answer: $\frac{13}{50} = 0.26 = 26\%$.

3. Use the supplied record. Find the relative frequency of not blue. [2 marks]

Example results from 50 spinner trials

Colour	Frequency
Red	22
Blue	15
Green	13

Not blue means red or green: $22 + 13 = 35$.

Divide by 50.

Answer: $\frac{35}{50} = 0.7$.

4. A fair-coin model has heads probability 0.5. A 50-toss run has 28 heads. Find its relative frequency and its difference from 0.5. [3 marks]

$\frac{28}{50} = 0.56$.

$0.56 - 0.5 = 0.06$.

Answer: 0.56, which is 0.06 higher.

5. Comparable runs record 6 successes in 10 trials and 36 in 90 trials. Find the pooled relative frequency. [3 marks]

Total successes: $6 + 36 = 42$.

Total trials: $10 + 90 = 100$.

Divide pooled counts, rather than averaging the two percentages equally.

Answer: $\frac{42}{100} = 0.42$.

6. Must relative frequency move closer to the theoretical chance whenever one more trial is added? Explain. [3 marks]

A random next result may move the running proportion nearer or farther away.

Long-run stability does not mean improvement at every step.

Answer: No.