# 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]

$8/40 = 1/5$.

One fifth is 0.2.

**Answer:** $1/5 = 0.2$.

**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:** $13/50 = 0.26 = 26\%$.

**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:** $35/50 = 0.7$.

**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]

$28/50 = 0.56$.

$0.56 - 0.5 = 0.06$.

**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:** $42/100 = 0.42$.

**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.