Worked answers | Probability

# Interpreting results

6 questions | 12 marks

Equivalent correct methods earn the corresponding marks.

**1.** A game has win probability 0.2. After four losses, what is the chance of the next independent win? [1 mark]

The unchanged independent trial has the same chance.

**Answer:** $0.2$

**2.** A device gives 48 successes in 150 trials. State the observed relative frequency. [1 mark]

$\frac{48}{150} = 0.32.$

**Answer:** $0.32$

**3.** Two reports give 18 and 25 successes but no trial totals. What is missing for a fair rate comparison? [2 marks]

Counts alone do not show proportions.

**Answer:** The number of trials in each experiment.

**4.** Two groups report 12 successes in 40 trials and 28 in 60. Find the combined estimate. [2 marks]

$12 + 28 = 40$ successes in $40 + 60 = 100$ trials.

**Answer:** $0.40$

**5.** A simulation replaces counters, but the real game keeps the first out. Can its result be used unchanged? [3 marks]

Without replacement, the remaining counts change.

Update the collection within each trial.

**Answer:** No; it models different second-draw probabilities.

**6.** A model probability is $\frac{1}{3}$. An experiment gives 31 successes in 90 trials. Write a conclusion with a limitation. [3 marks]

$\frac{31}{90} \approx 0.344$.

Compare with $0.333\ldots$ and recommend more correctly conducted trials rather than claiming proof.

**Answer:** The estimate is about 0.344, close to $\frac{1}{3}$; finite-sample variation remains.