Conducting single-stage experiments

6 questions | 16 marks

Equivalent correct methods earn the corresponding marks.

1. Describe one trial when testing the colour results of a spinner. [2 marks]

State both the action and the recorded result.

Choose a boundary rule in advance.

Answer: Spin once and record the colour where the pointer stops.

2. An experiment records 9 red, 7 blue and 8 green results. How many valid trials are recorded? [2 marks]

Add every frequency: $9 + 7 + 8 = 24$.

Answer: 24.

3. Why should a counter be returned and the bag remixed when each draw is meant to have the original probabilities? [3 marks]

Replacement restores the numbers of each colour.

Mix and choose without looking to avoid deliberate selection.

Answer: Returning restores the contents; remixing helps keep selection random.

4. Use the coin table. State the observed and fair-model expected tails counts. [2 marks]

Example record of 20 coin tosses

Result	Frequency
Heads	12
Tails	8

Read 8 tails from the table.

Expected tails are $20 \times 1/2 = 10$.

Answer: 8 observed; 10 expected.

5. A student only records heads and ignores tails. Explain why the record is incomplete. [3 marks]

Every valid trial must be recorded.

Ignoring results prevents a valid comparison of heads with all tosses.

Answer: You cannot check the total trials or the tails count.

6. Plan 40 draws from a bag of 2 red and 3 blue equal-size counters. Include selection, replacement, recording and expected reds. [4 marks]

Returning maintains red chance 2/5.

All recorded frequencies should total 40.

$40 \times 2/5 = 16$.

Answer: Draw without looking; record colour; replace and mix; repeat for 40 valid draws; expect 16 red.