Probability topic test

12 questions | 20 marks | 30 minutes

Possible outcomes, likelihood, repeated trials and observed results.

Equivalent correct methods earn the corresponding marks.

1. List every possible top number of a normal six-sided die. [1 mark]

List each available face label once.

Answer: 1, 2, 3, 4, 5, 6.

2. List the possible colour outcomes from the supplied bag. [1 mark]

Six same-sized counters in a bag; choose without looking

Colour	Number of counters
Red	3
Blue	2
Green	1

These are the three colours present.

Answer: Red, blue, green.

3. The bag has six counters. Does that mean six different colour outcomes? Explain. [2 marks]

Six same-sized counters in a bag; choose without looking

Colour	Number of counters
Red	3
Blue	2
Green	1

Several counters share the same colour.

Answer: No. There are only three different colour outcomes.

4. Which colour is most likely when one counter is selected without looking? [1 mark]

Six same-sized counters in a bag; choose without looking

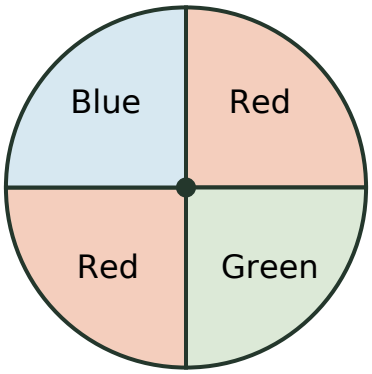
Colour	Number of counters
Red	3
Blue	2
Green	1

Red has 3 counters, more than blue 2 or green 1.

Answer: Red.

5. Which two colours have equal chances on the supplied fair spinner? [1 mark]

Four equal sectors



Assume each sector is equally likely.

Each occupies one of the four equal sectors.

Answer: Blue and green.

6. A pupil says red is certain because it has the most counters. Explain why that is wrong. [2 marks]

Six same-sized counters in a bag; choose without looking

Colour	Number of counters
Red	3
Blue	2
Green	1

Certain would mean every possible result is red.

Answer: Blue or green can also be selected, so red is not certain.

7. A coin experiment records 9 heads and 11 tails. How many trials are recorded? [1 mark]

$9 + 11 = 20$.

Answer: 20.

8. There are 24 recorded spins: 7 blue, 5 green and the rest red. Find the red frequency. [2 marks]

$7 + 5 = 12$ non-red results.

$24 - 12 = 12$ red results.

Answer: 12.

9. A bag has 5 red and 3 blue same-sized counters. How many blue counters should be added to make the two colours equally likely? [2 marks]

$5 - 3 = 2$.

The bag then has 5 red and 5 blue counters.

Answer: 2 blue counters.

10. You want ten trials with an unchanged bag. What should happen after each counter is selected and its colour recorded? [2 marks]

This restores the same contents for each trial.

Answer: Return the counter and mix before choosing again.

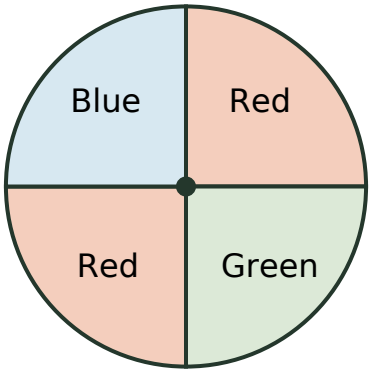
11. One group gets 2 successes in 5 trials. Another gets 8 in 20. Compare the observed shares. [2 marks]

Multiply 2 and 5 by four to obtain 8 and 20.

Answer: They are equal.

12. A game uses the supplied fair spinner. A player wins on red and loses on blue or green. [3 marks]

Four equal sectors



Assume each sector is equally likely.

(a) How many equal sectors give a win? [1 mark]

There are two red sectors.

Answer: 2.

(b) Are winning and losing equally likely? Explain using the sectors. [2 marks]

Count blue and green together: $1 + 1 = 2$ losing sectors.

The win and loss groups have the same size.

Answer: Yes. Two equal sectors win and two equal sectors lose.