Worked answers | Probability

Equally likely versus unequal outcomes

6 questions | 12 marks

Equivalent correct methods earn the corresponding marks.

1. A fair six-sided die is rolled. Are its face numbers equally likely? State the assumption. [2 marks]

Fair means no face is favoured.

Each face then has chance $\frac{1}{6}$.

Answer: Yes, because the die is fair.

2. A counter is chosen at random from a bag with two red and six blue equal-size counters. Which colour is more likely, and how many times as likely? [2 marks]

Compare six blue opportunities with two red opportunities.

$6 \div 2 = 3$.

Answer: Blue is three times as likely.

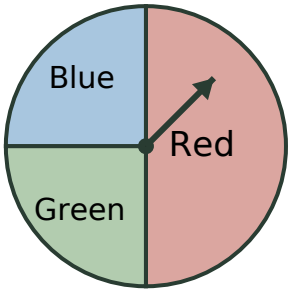
3. An ideal spinner is half orange and half purple. Are the colours equally likely? Explain. [2 marks]

The colours occupy equal half-circles.

Each colour has chance $\frac{1}{2}$.

Answer: Yes.

4. Use the spinner shown. Which two colours have equal chances? [2 marks]



Red: one half

Blue: one quarter

Green: one quarter

Each direction is equally likely.

Each colour occupies a quarter of the circle.

The sectors have the same angle.

Answer: Blue and green.

5. Four equal spinner sectors are labelled A, A, A and B. Are A and B equally likely? Explain. [2 marks]

Each sector is equally likely.

Three sectors give A and one gives B.

Answer: No. A has chance $\frac{3}{4}$ and B has chance $\frac{1}{4}$.

6. A student looks into a bag and chooses a favourite colour. Can you use the equal-counter random-selection model? Explain. [2 marks]

Deliberately choosing can favour particular counters.

Mix and choose without looking before using that model.

Answer: No.