Expected frequencies

6 questions | 14 marks

Equivalent correct methods earn the corresponding marks.

1. An event has probability $1/5$. Find the expected frequency in 40 trials. [2 marks]

$40 \times 1/5 = 8$.

Answer: 8.

2. An ideal spinner is half red. Find the expected red count in 90 spins. [2 marks]

Red chance is $1/2$.

$90 \times 1/2 = 45$.

Answer: 45.

3. A bag has 3 green and 2 white equal-size counters. Each randomly chosen counter is returned and remixed. How many green results are expected in 50 draws? [3 marks]

Returning maintains chance $3/5$.

$50 \times 3/5 = 30$.

Answer: 30.

4. A fair die is rolled 60 times. How many results greater than 4 are expected? [2 marks]

The favourable faces are 5 and 6: chance 1/3.

$60 \times 1/3 = 20$.

Answer: 20.

5. An event has chance 1/4 and is repeated 10 times. Is an expected frequency of 2.5 a mistake? Explain. [2 marks]

$10 \times 1/4 = 2.5$.

A predicted average count can be fractional although actual counts are whole.

Answer: No.

6. A fair coin gave 31 heads in 50 tosses instead of the expected 25. Does that alone show the prediction calculation was wrong? [3 marks]

The expected count remains $50 \times 1/2 = 25$.

31 is one random observed count; expected does not mean guaranteed.

Answer: No.