crackmaths

132. Understanding Experimental Probability and Relative Frequency

Practice Questions

1. What is experimental probability, and how is it different from theoretical probability?
2. A coin is flipped 100 times, landing on heads 55 times. What is the experimental probability of heads?
3. A die is rolled 200 times, landing on a 4 exactly 30 times. Find the experimental probability of rolling a 4.
4. A spinner lands on red 40 times out of 200 spins. Find the relative frequency of landing on red.
5. A student records 10 successful basketball shots out of 25 attempts. Find the probability of scoring.
6. A survey shows that 8 out of 20 students prefer tea over coffee. What is the experimental probability of a student preferring tea?
7. A card is drawn 500 times from a deck, and the ace of spades appears 20 times. What is the probability of drawing an ace of spades?
8. A machine produces 1,000 bolts, and 50 are defective. What is the probability of selecting a defective bolt?
9. A weather station records rain on 120 days out of 365. What is the probability that it rains on a random day?
10. A footballer scores 15 goals in 50 shots. What is their probability of scoring a goal?

Scenario Questions

1. A carnival game records 30 wins in 150 attempts. What is the probability of winning?
2. A train arrives on time 280 days out of 365. What is the probability that the train arrives late?
3. A factory tests 500 bulbs, and 15 are faulty. Find the probability of selecting a faulty bulb.
4. A lottery machine selects numbers, and 1 out of 1000 draws results in a jackpot win. What is the probability of winning?
5. A basketball player makes 45 free throws out of 60. What is the probability of making a free throw?
6. A shop records sales of apples: 250 sold out of 500 total fruits. What is the probability of a fruit being an apple?
7. A doctor tests a medicine on 400 patients, and 320 improve. What is the probability that the treatment is successful?
8. A football team wins 22 matches out of 38. What is the probability that they win a match?
9. A traffic survey records red cars: 120 red cars out of 600 total cars. What is the probability of a car being red?
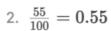10. A coin lands on heads 47 times out of 100 flips. What is the probability of tails?

132. Understanding Experimental Probability and Relative Frequency

Practice Questions

Answers

1. **Experimental probability** is based on actual experiments or observations, while **theoretical probability** is based on theoretical calculations.

2. $\frac{55}{100} = 0.55$

3. $\frac{30}{200} = 0.15$

4. $\frac{40}{200} = 0.2$

5. $\frac{10}{25} = 0.4$

6. $\frac{8}{20} = 0.4$

7. $\frac{20}{500} = 0.04$

8. $\frac{50}{1000} = 0.05$

9. $\frac{120}{365} \approx 0.329$

10. $\frac{15}{50} = 0.3$

Scenario Questions

1. $\frac{30}{150} = 0.2$

2. $\frac{85}{365} \approx 0.233$

3. $\frac{15}{500} = 0.03$

4. $\frac{1}{1000} = 0.001$

5. $\frac{45}{60} = 0.75$

6. $\frac{250}{500} = 0.5$

7. $\frac{320}{400} = 0.8$

8. $\frac{22}{38} \approx 0.579$

9. $\frac{120}{600} = 0.2$

10. $\frac{53}{100} = 0.53$