

Probability Problem Solving Practice

Show all working where possible and express your answers as fractions or decimals to two decimal places where appropriate.

Essential Questions

1. What is the difference between theoretical and experimental probability?
2. How can probability be used to make predictions in real-life situations?

Multiple Choice Questions

1. A single card is drawn at random from a standard deck of 52 cards. What is the probability of drawing a heart?
a) $\frac{1}{2}$ b) $\frac{1}{4}$ c) $\frac{1}{13}$ d) $\frac{1}{52}$
2. Two dice are rolled. What is the probability that the sum is 7?
a) $\frac{1}{12}$ b) $\frac{1}{6}$ c) $\frac{1}{9}$ d) $\frac{1}{36}$

Fill in the Blank Questions

1. The probability of an event that is certain to happen is _____.
2. If a coin is flipped once, the probability of getting tails is _____.

True/False Questions

1. True or False: The probability of any event is always between 0 and 1.
2. True or False: If two events are mutually exclusive, they can both happen at the same time.

Short Answer Questions

1. A bag contains 3 red balls and 5 blue balls. If a ball is picked at random, what is the probability it is blue?
2. In a class of 20 students, 12 are girls and 8 are boys. If one student is selected at random, what is the probability that the student is a boy?

Essay Question

1. A box contains 6 green, 4 yellow, and 5 orange sweets. If two sweets are drawn at random without replacement, what is the probability that both are green? Show all working and explain your reasoning.

Maths with Melissa

Answer Key

Essential Questions:

1. Theoretical probability is based on the possible outcomes in a perfect world, while experimental probability is based on actual results from experiments.
2. Probability helps to estimate the likelihood of future events, such as weather forecasts or risk assessments in business.

Multiple Choice Answers:

1. b) $\frac{1}{4}$
2. b) $\frac{1}{6}$

Fill in the Blank Answers:

1. 1
2. $\frac{1}{2}$ or 0.5

True/False Answers:

1. True
2. False – If two events are mutually exclusive, they cannot both happen at the same time.

Short Answer Answers:

1. Probability of blue: $\frac{5}{8}$
2. Probability of boy: $\frac{8}{20} = \frac{2}{5}$

Essay Question Sample Answer:

- Total number of sweets = $6 + 4 + 5 = 15$
- Probability first sweet is green: $\frac{6}{15}$
- Probability second sweet is green (after one green is taken): $\frac{5}{14}$
- Probability both are green: $\frac{6}{15} \times \frac{5}{14} = \frac{30}{210} = \frac{1}{7}$
- Therefore, the probability that both sweets are green is $\frac{1}{7}$.