

Introduction to Probability

Name: _____ **Date:** _____

LEARNING OBJECTIVE

The student will conduct a hands-on probability experiment, comparing experimental results to theoretical probability.

MATERIALS NEEDED

- One standard six-sided die (or two)
- a coin
- paper
- pencil

HANDS-ON ACTIVITY

1. Before rolling, calculate the theoretical probability of rolling each number (1-6) on a single die, and the theoretical probability of a coin landing heads.
2. Roll the die 30 times, tallying each result (1 through 6) in a table on your paper.
3. Flip the coin 30 times, tallying how many times it lands heads versus tails.
4. Calculate the experimental probability of each die outcome and the coin outcomes (number of times it happened divided by 30 total trials), expressed as a fraction and a percent.
5. Compare your experimental probabilities to the theoretical probabilities in a short written comparison.

QUESTIONS

1. **What is the theoretical probability of rolling a 4 on a single six-sided die, expressed as a fraction and a percent?**

2. **Out of your 30 die rolls, which number came up most often, and what was its experimental probability?**

3. **How did your experimental coin flip results (heads vs. tails out of 30) compare to the theoretical 50/50 probability?**

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4. **Why might experimental probability differ from theoretical probability, and what would likely happen to that difference if you rolled the die 300 times instead of 30?**
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