

**LessonTitle: Coin Probability****Alg Prob 2.1b****Utah State Core Standard and Indicators****Summary**

In this lesson, students toss coins and bottle caps to examine experimental and theoretical probability. Then they examine probability in a series of events by tossing different kinds of coins repeatedly.

**Enduring Understanding**

Probability is a part of our lives. We collect and organize data, and make conjectures based on our findings.

**Essential Questions**

What is probability and how do we use it in our lives?

**Skill Focus**

Experimental and theoretical probability

**Vocabulary Focus****Assessment****Materials****Launch**

“We talked about the meaning of probability and the difference between theoretical probability and experimental probability. Then we conducted a class experiment using a transparent spinner on the overhead projector.”

**Explore**

“The students worked in groups on the alphabet frequency, coin probability and free throw activities. Working in pairs, one student flipped the coin or bottle cap while the other student recorded the frequency. The free throw activity was easier to decide a win, lose or tie if the group picked a possible score to work with.”

**Summarize**

“The groups presented their results and we made a comparison chart on the board. Although the students complained about flipping the coin or bottle cap 100 times, they could see how a large sample gives a more reliable probability. They decided “landing up” and “landing down” are not equally likely with the bottle cap. We discussed how the section sizes on the spinner reflect the “make” or “miss” percentage.”

**Apply**

## Alg Prob 2.1b

## Coin Probability

### Activity I

1) Flip a coin 10 times and record results in the table. What are the theoretical and experimental probability for this experiment.

Theoretical Probability: P (heads)\_\_\_\_\_ P (tails) \_\_\_\_\_

Experimental Probability: P (heads)\_\_\_\_\_ P (tails) \_\_\_\_\_

Heads	Tails

2) Flip the coin 100 times and record results in the table. What are the theoretical and experimental probability for this experiment.

Theoretical Probability: P (heads)\_\_\_\_\_ P (tails) \_\_\_\_\_

Experimental Probability: P (heads)\_\_\_\_\_ P (tails) \_\_\_\_\_

Heads	Tails

3) Compare experiments 1 and 2. What are your observations? Which results are more reliable and why?

4) Toss a bottle cap or jar lid 100 times and record the number of times it lands “up” and the number of times it lands “down”. What is the theoretical and experimental probability for each?

Theoretical Probability: P (up)\_\_\_\_\_ P (down) \_\_\_\_\_

Experimental Probability: P (up)\_\_\_\_\_ P (down) \_\_\_\_\_

UP	Down

5) Are “landing up” and landing down” are equally likely? Explain your answer.

6) Based on your experiment, how many times would you expect the cap to land “up” in 1000 tosses? \_\_\_\_\_ “Down”? \_\_\_\_\_ Explain your answers.

