



Nickel, Quarter, and Dime

Subject: Math

Grade Level: 6-8th grade

Summary: Students will play a game to help them develop an appreciation for statistical methods as a powerful means for decision making.

BIG QUESTION

How can you use statistics to help you make decisions or answer questions?

TIMING

45 to 90 minutes

LEARNING OBJECTIVES

- Students will systematically collect, organize and describe data.
- They will construct, read and interpret a graph.
- They will make inferences and a convincing argument based on data analysis.

MATERIALS

- A currently circulating U.S. nickel, quarter and dime for each student
- Graph paper
- Colored pencils
- Paper
- Pencils

PROCEDURE

1. Introduce the game "Nickel, Quarter and Dime" to the students. Explain the rules of the game: Each player has a nickel, a quarter and a dime. On the count of three, each player places one of the three coins on the table. A quarter wins over a dime, a dime wins over a nickel, and a nickel wins over a quarter.
2. Divide the class into pairs and distribute the coins. Have each pair play the game 18 times and keep track of who wins.

U.S. Mint Coin Classroom Lesson Plan: Nickel, Quarter, and Dime

3. Have each pair construct a bar graph that shows the number of wins each player had.
4. Help the students determine the range, mode and mean for their set of data.
5. Compare the results as a class.
6. To determine whether the game is fair or not, have the students answer the following questions:
 - How many outcomes (combinations of coins) are possible? (9) Make a tree diagram of the possible outcomes (a win for A, for B or a tie).
 - How many ways could player A win? (3)
 - What is the probability that player A will win in any round? ($3/9=1/3$) Explain that probability means likelihood, arrived at by dividing favorable outcomes by possible outcomes.
 - How many ways could player B win? (3)
 - What is the probability that player B will win in any round? ($3/9=1/3$)
 - Is the game fair? Do both players have an equal probability of winning in any round? (yes)
7. Have the students write a paragraph explaining why or why not the game Nickel, Quarter and Dime is a fair game.

ASSESSMENT

Use the answers to the questions and their paragraph explaining whether the game is fair or not to assess whether the students have met the lesson objectives.

DIFFERENTIATE

Allow students to work independently or in larger groups.

RELATED

- U.S. Mint Coin Classroom free, online game [Coin Flip](#)

STANDARDS

This lesson is not associated with any Common Core standards.