#### A PENNY's Secret

Title: A Penny's Secret

Level: **K-12** Day/Time:

Acdemic Expectations
Core Content for Assessment:

## **Objective:**

To introduce students to the economic factors involved in the mineral industry that influence the minting of coins.

## **Background Information:**

The price of copper rose to over \$1.33 per pound in 1980, making the cost of minting a penny more than its monetary value. The U. S. Mint began developing a zinc core penny with a copper coating. The new penny looked identical to the previous coins but it was cheaper to produce. While the new penny was the exact same size as the old one, it weighed less because zinc is slightly less dense than copper. The change from copper to zinc took place in 1982. The mint was also experimenting with the size of the date so there are actually 7 different types of pennies dated 1982. For this reason the heavy pennies in the exercise will be dated 1980-82. The lighter pennies will be from 1982-85.

#### Materials:

At least 10 pennies per group minted between 1980 and 1985. Make sure you have some 1982 and 1982D.

Rulers

1" x 4" poster board or card stock paper

### **Activity:**

- 1. Have the students read the background story or read it to them.
- 2. Fold the poster board in half to form a "V" to ask as the fulcrum for the ruler.
- 3. Balance the ruler on the poster board on a level desk. Note the balance point of the ruler.
- 4. Place a 1984 penny flush with one end of the ruler. Using the ruler as a see saw, put the other pennies, one at a time, flush with the other end. Make two piles of weighed pennies, those heavier than the 1984 and those about the same or less.

### **Evaluation:**

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What did the students learn about the dates of the pennies in each pile? Were there pennies from the same year in each pile? What can they determine about the weight difference? What do they conclude happened in 1982?

# Follow-up Activities:

Have the students experiment with other coins like dimes and quarters. Do the old coins weight more or less than the new sandwich type?

If you have access to a lab room with a fume hood you may want to remove the copper and expose the zinc penny by soaking some new pennies in nitric acid. This can also be done outside but must be closely supervised.

Make Copper Cheese Coins:

6 oz. Jar of pasteurized cheese spread 1/4 cup butter flavored shortening 2/3 cup flour

Mix all ingredients together and on wax paper roll into a long log, about one inch in diameter. Refrigerate for 2 hours. Slice dough 1/2" think and place orungreased cookie sheet. Bake at 375° for 12 to 15 minutes. You might want to sterilize some coins and make imprints in the dough before baking.

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