

## Common Cents and Mass

Name \_\_\_\_\_ Date \_\_\_\_\_ Group \_\_\_\_\_ Period \_\_\_\_\_

We've collected them, saved them, received them as change when we purchased something, and lost some as well. Some are new with a bright, shiny luster, while others are quite old and have lost their shine. When we've held them in our hands, we take it for granted that except for some differences in their appearance, one penny is the same as another. In this investigation, we'll determine if that is true or not.

**Objectives:** To determine if the masses of clean pennies from different decades are the same or different. To gain practice with a triple beam balance while measuring the mass of the pennies.

**Materials:** 12 pennies from different decades, Triple Beam balance

### **Procedures:**

- 1- Observe the dates of the pennies in your group's plastic bag and arrange them by year.
- 2- Begin with the oldest penny in your group and write its year in the top left cell of the chart, with more recent pennies listed below it.
- 3- If you should get two pennies with the same year, list them both, since you need to measure all of the pennies for your group.
- 4- Write the years of all of the pennies in the chart **before** massing any of them.
- 5- Beginning with the oldest penny, determine its mass to the nearest 0.01g (1/100 of a gram). Record the mass in the table below. Be sure to record the mass with its correct year.
- 6- Once you finish massing a penny, place it back into the plastic bag so you don't mistakenly mass it again.
- 7- Do this for each of the pennies given to your group, taking turns with your partner so each of you gets to mass half of the pennies.
- 8- Once you have massed all of the pennies, seal the bag and return them to the teacher.

### **Your Observations:**

Penny Year	Mass to 0.01g	Penny Year	Mass to 0.01g	Penny Year	Mass to 0.01g
1-		5-		9-	
2-		6-		10-	
3-		7-		11-	
4-		8-		12-	

**Questions:**

1. What has happened to the mass of pennies **since** the 1970's?

2. After carefully analyzing all of your results, during what **one, specific** year did this change take place?

3. Since the pennies still look the same, how might this have been done by the U.S. Mint ? (The part of our government that makes our money) Your answer must be logical.

**Sources of Error** :Identify **two** things that people may have done incorrectly that would have caused them to get totally different answers from the rest of the class. These errors must be unique, in other words they have not been applicable in previous labs. They must be **new** sources of error. Be **specific** about what might have been done.