



Determine the following: (Use the data table and graph)

1. The year the change was made \_\_\_\_\_

2. Average mass of newer pennies \_\_\_\_\_

3. Average mass of the older pennies \_\_\_\_\_

After your group has finished all the questions above bring an old and new penny to Mr. Hugick for a demonstration. You make (and draw) observations as she adds HCl (hydrochloric acid) to an old and new penny.

**OBSERVATIONS:** (include labeled diagrams)

a) old penny: **year** \_\_\_\_\_

b) new penny: **year** \_\_\_\_\_



Write a Conclusion based on these observations (on lab report form)

• APPLICATION: Suggest a method to check your conclusion (be specific) ??????

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## The Composition of the Cent.

Following is a brief chronology of the metal composition of the cent coin:

- The composition was pure copper from 1793 to 1837.
- From 1837 to 1857, the cent was made of bronze (95 percent copper, five percent tin and zinc).
- From 1857, the cent was 88 percent copper and 12 percent nickel, giving the coin a whitish appearance.
- The cent was again bronze (95 percent copper, five percent tin and zinc) from 1864 to 1962.

(Note: In 1943 the composition was changed to zinc-coated steel. This change was only for the year 1943 and was due to the critical use of copper for the war effort.)

- In 1962 the tin content, which was quite small, was removed, making the metal composition of the cent 95 percent copper, 5 percent zinc.
- The alloy remained 95 percent copper, 5 percent zinc until 1982, when the composition was changed to 97.5 percent zinc, 2.5 percent copper (copper-plated zinc). Cents of both compositions appeared in that year.

