Day 1.5: Penny Composition

1. Using the data in the table below, calculate the percentage of zinc in a post-1982 penny.

Mass of Empty Beaker	177.00 g ~~140.28 g~~
Mass of Beaker with Pennies before reacting with HCl	249.41 g ~~190.33 g~~
Mass of Beaker with Pennies after reacting with HCl	234.56 g ~~180.05 g~~

Mass of Zn reacted = 249.41 g - 234.56 g
= 14.85 g Zn

Mass of pennies w/Zn (before rxn)
= 249.41 g - 177.00 g = 72.41 g Cu+Zn

$$\%\ Zn = \frac{\text{mass Zn}}{\text{mass Cu+Zn}} \times 100 = \frac{14.85\ g}{72.41\ g} = 20.51\%\ Zn$$

2. If the accepted value of zinc in a post-1982 penny is 97.5%, calculate the percent error for this experiment.

$$\%\ \text{error} = \left| \frac{\text{Accepted} - \text{Experimental}}{\text{Accepted}} \right| \times 100$$

$$= \left| \frac{97.5\% - 20.51\%}{97.5\%} \right| \times 100$$

$$= 79.0\%\ \text{error}$$