PURPOSE:

Before 1982, pennies were made of copper alloy. After 1983, the outside coating of the pennies is copper and the inner core is different sort of metal. In this experiment, the student will use a graph to tell the density of pennies post-1983. Then use the density to identify the different metal used in the core.

MATERIALS:

- post- 1983 pennies (a total of 20 pennies)
- triple-beam balance
- 100-mL graduated cylinder
- ruler

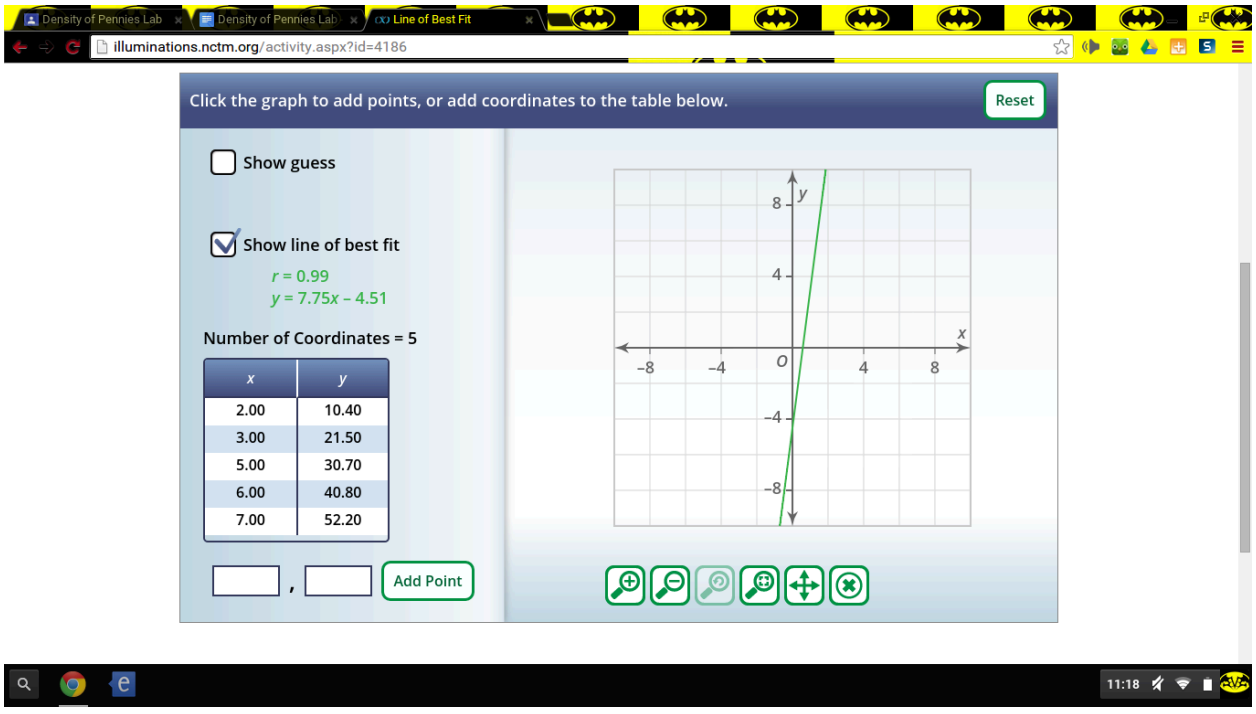
PROCEDURE:

1. count out 4 post-1983 pennies
2. stack up the 4 pennies, and measure the mass of the pennies. Record results
3. fill the graduated cylinder with 30-mL of water
4. take the pennies and carefully drop them into the graduated cylinder. Record volume.
5. add four more pennies and repeat process
6. continue to repeat the procedure, adding 4 pennies until all 20 pennies have been used.

DATA (TABLE):

# of Test	# of Pennies	MASS	VOLUME (without pennies)	VOLUME (with pennies)	VOLUME OF PENNIES
T-1	4	10.4 g	30-mL	32-mL	2-mL
T-2	8	21.5 g	30-mL	33-mL	3-mL
T-3	12	30.7 g	30-mL	35-mL	5-mL
T-4	16	40.8 g	30-mL	36-mL	6-mL
T-5	20	52.2 g	30-mL	37-mL	7-mL

ANALYSIS:



rise/run- Y(rise)= 9.2 X(run)= 2

slope= 4.6

CONCLUSION:

Because of the data that was collected, the metal that is in the core of post-1983 pennies, is the metal that has the same slope/density or close to the same slope/density of the analysis. This metal is Zinc.

The actual density of post-1983 pennies, is, 7.05g/cm^3 . The amount of pennies used could have been increased, the amount of water decreased, and the procedure could have been written more thoroughly, to fit the actual density of the post-1983 pennies.

The procedure used could have been exact if the previously mentioned fixations were made in the beginning, therefore there would have been more accuracy with the results found.