



# Penny Lab Teacher Notes

In this activity, students use the scientific method to see how many drops of water fit on a penny and then in part 2 students change a variable to see how it affects the results.

Part 1 – In part 1 students use plain tap water to see how many drops of water will fit on a penny.

Teaching tips:

- You can have students work alone, in pairs, or in groups of 3 – 4.
- Make sure the students have their penny on a plate or small tray to keep the water contained.
- Have the students test their eye droppers a couple of times to make sure they can release the water drop by drop.

Part 2 - In part 2, students change one variable to see how their results change.

Teaching tips:

- Students should know that you change only **one** variable in an experiment
  - Ask students why you shouldn't change more than one variable - they should explain that if you change more than one variable, then you don't know which variable affected the experiment.
- Some ideas for changing variables: Hot and cold water, soapy water, salt water, distilled water, vinegar or other solution, etc. Have the different solutions prepared ahead of time so the students know what they can choose from.
- Explain that **controlled variables** are the part of the experiment that stay the same. Have students come up with examples of controlled variables for this experiment and record them on their sheets. This might include: Using the same penny, using the same side of the penny, using the same eye dropper, etc.
- Have the students repeat the experiment and then compare their data from part 2 and compare it to the data from part 1. Then they will write a conclusion using their data.
- Tie this into your curriculum if you do a unit on surface tension and hydrogen bonding.

## SCIENTIFIC METHOD

Name: \_\_\_\_\_



# Penny Lab - Part I

### QUESTION

How many drops of water will fit on a penny?

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### HYPOTHESIS

### MATERIALS

- Penny
- Eye Dropper
- Water
- Plate or tray

### OBSERVATIONS



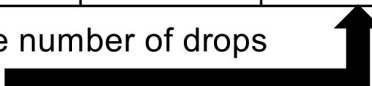
Draw the side view of your penny holding the water drops.

### PROCEDURE

1. Set your penny in the center of your plate.
2. Use your eye dropper to add drops one at a time to your penny.
3. Count how many drops the penny can hold before it spills over the edge.
4. Record your observations and data below.
5. Repeat 3 times.
6. Calculate the average number of drops that fit on the penny.

### DATA

	Test 1	Test 2	Test 3	Average
# of Drops				

To find your average, add the number of drops for each test and divide by 3. 

### CALCULATIONS

## SCIENTIFIC METHOD

Name: \_\_\_\_\_

# Penny Lab - Part 2

### QUESTION

You will choose change one variable in the experiment and see how that affects your results.

How does \_\_\_\_\_ affect the number of drops that fit on the penny

*Your changing Variable*

### HYPOTHESIS

### CONTROLLED VARIABLES

What will you keep the same in your experiment?

### PROCEDURE

Repeat the procedure from part 1 using your changing variable instead of water.

### DATA

My Changing Variable is: \_\_\_\_\_

Average number of drops from part 1: \_\_\_\_\_

	Test 1	Test 2	Test 3	Average
# of Drops				

To find your **average**, add the number of drops for each test and divide by 3.



### CONCLUSION

How did your changing variable affect the number of drops that fit on the penny?

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