

# Drops of Water on the Head of a Penny

Students investigate the behavior of water drops on a penny, make and test predictions, and construct explanations for their observations.

## Materials Needed

Contact the DuPage Regional Office (Dr. Mary Biniewicz STEM Coordinator [mbiniewicz@dupageroe.org](mailto:mbiniewicz@dupageroe.org)) to obtain pipettes; also needed for each student, penny, water, toothpick (or the point of a pencil), dish soap, paper towels, an eyedropper (*if not using pipettes*).

## Procedure

### Part 1

1. Make a prediction: How many drops of water can you put on the head of a penny before the water spills? Record this number on a data table you design.
2. Using an eyedropper or pipette, carefully place a drop of water on the head of the penny. Keep counting as you add more drops.
3. When the water spills over, record the number of drops you added onto the penny into your data table. Dry off the penny.
4. Repeat steps #2 & 3 two more times.

### Questions

- How did the number of drops you actually were able to put on the head of the penny compare with your prediction?
- Was the number of drops the same for each trial? If not, what could account for the differences?
- What was the shape of the water just before the water spilled?
- Why do you think the water ends up in that shape?

### Part 2

1. Make a prediction: How many drops of water can you put on the tail side of the penny? Will it be the same as on the head side, or do you think it will be different? Record your prediction.
2. Repeat the **Part 1 Procedure**, steps 2 - 4, putting drops of water on the tail side of the penny.  
Record all data collected.

### Questions

- How did the drops on the tail side compare to the head side?
- If there was a difference, what could account for the difference?

### Part 3

Now, place drops of water on either the head or tail side. Touch the water with the tip of a toothpick or pencil tip that has been dipped into dish soap. What do you observe? Explain what happened and why you think that happened.

## **Teacher Notes**

Discuss the answers to the student questions posed for each part.

## **Extensions**

This simple experiment can be done testing different factors:

1. Use salt water and see how the shape and the number of drops compares to plain water.

Does the salty water react to the dish soap in the same way the plain water did?

2. Place drops of water on the head and tail sides of different coins – nickels, dimes, quarters, etc.

How does the number of drops compare to the size of the coins? What are the factors of the coins that allow you to put different numbers of drops on the coins?

How does the number of drops correlate with the area of the coins?

## **Resources**

<https://www.stevespanglerscience.com/lab/experiments/penny-drops/#:~:text=Hydrogen%20bonds%20are%20formed%20by,penny%20reach%20the%20penny's%20edge>

<https://www.boundlessbrilliance.org/brilliant-blog/2020/8/6/drops-on-a-penny>