

Name _____

Period _____

Due date _____

How Much Water Fits on a Penny?

Have you ever noticed how drops of water form a sort of bubble on a flat surface? This is because molecules of water stick to themselves (cohesion) and to other materials (adhesion). In this laboratory activity, you will observe these 2 properties of water as you pipette it drop by drop onto a penny. You will then run an experiment to see the effect of adding soap to water and its ability to stick to pennies.



MATERIALS:

Penny	Plain water
Petri Dish	Soapy water
Pipette	Paper towel

PROCEDURE:

1. Make a prediction. Will more drops of plain water or soapy water stick to a penny?

2. Place a clean penny in the center of the petri dish and begin adding plain water to the penny drop by drop.
3. Count the number of drops that fit on the penny until the water runs off.
4. Record the number of drops in the data table below.
5. Pour the water back into the beaker and wipe the penny & petri dish dry. Repeat the trial 4 more times, using the same side of the penny, then calculate the average.
6. Now repeat Steps 2 through 5 above using the soapy water.
7. Thoroughly rinse off your penny and petri dish, then place them on the back table to dry.

Data:

Number of Drops on the Penny						
Trial	1	2	3	4	5	Average
Plain water						
Soapy Water						

ANALYSIS:

1. Which type of water had more drops stick? (circle one)

PLAIN WATER

SOAPY WATER

2. What was the independent variable in this investigation?

A. Type of water

B. Side of the penny

C. # of drops that stuck

_____ 3. What was the dependent variable in this investigation?

A. Type of water

B. Side of the penny

C. # of drops that stuck

4. What was one control in this investigation?

A. Type of water

B. Side of the penny

C. # of drops that stuck

4. Make a BAR GRAPH of your results using the AVERAGE number of plain & soapy drops of water.

REMEMBER TO:

- Give your graph a title (+1)
- Label the X-axis with the independent variable and the Y-axis with the dependent variable (+1)
- Use proper units (+1)
- Use most of the graph paper (+1)
- Make and color 2 neat bars, one for Plain Water and one for Soapy Water (+1)

[illegible]

REGENTS PRACTICE QUESTIONS

An experiment was carried out to determine whether drinking caffeinated soda increases pulse rate. The pulse rates of two groups of people at rest were measured. Group A was then given caffeinated soda and group B was given caffeine-free soda. One hour after drinking the soda, the pulse rates were measured. The participants in the experiment were all the same age, and they were all given the same amount of soda.

1. What is the dependent variable in this experiment?

- A) type of soda given to each group
- B) amount of soda given to each group
- C) pulse rate of each group
- D) age of participants in each group

A student conducted an experiment to determine if listening to different types of music would affect pulse rate. She thought that pulse rate would change with different types of music. Each person participating in her experiment listened to seven different selections of music for 30 seconds each. The pulse rates were taken after each 30-second interval of music. Based on her experiment, the student concluded that a person's pulse rate changed when listening to different types of music.

2. The component missing from this experiment is a

- A) prediction
- B) hypothesis
- C) control group
- D) research plan

3. In Texas, researchers gave a cholesterol-reducing drug to 2,335 people and an inactive substitute (placebo) to 2,081. Most of the volunteers were men who had normal cholesterol levels and no history of heart disease. After 5 years, 97 people getting the placebo had suffered heart attacks compared to only 57 people who had received the actual drug. The researchers are recommending that to help prevent heart attacks, all people (even those without high cholesterol) take these cholesterol-reducing drugs. In addition to the information above, what is another piece of information that the researchers must have before support for the recommendation can be justified?

- A) Were the eating habits of the two groups similar?
- B) How does a heart attack affect cholesterol levels?
- C) Did the heart attacks result in deaths?
- D) What chemical is in the placebo?

4. In an experiment, what should be the relationship between the control group and the experimental group?

- A) They should be different in size
- B) They should resemble each other in at least two respects
- C) They should not be similar in any respect
- D) They should be identical in all respects except one

5. A student is investigating the effect of different environmental factors on the growth of a certain species of bean plant over a period of 30 days. Which factor would *not* function as a variable in this investigation?

- A) species of bean plant
- B) soil moisture content
- C) amount of light
- D) atmospheric temperature

6. In an investigation designed to determine the effect of the amount of water on plant growth, two groups of equal-sized bean plants of the same species were grown under identical conditions, except for the amount of water they were given. One group was watered with 200 milliliters of water once a day, while the other group was watered with 400 milliliters of water once a day. After several days, the heights of the plants were measured. It was determined that the plants watered with 400 milliliters of water once a day showed more growth.

7. The variable in this investigation is the

- A) type of bean plants used in the experiment
- B) amount of water given the plants each day
- C) type of soil the bean plants were growing in
- D) group of bean plants watered with 200 ml of water



"Mr. Osborne, may I be excused? My brain is full."