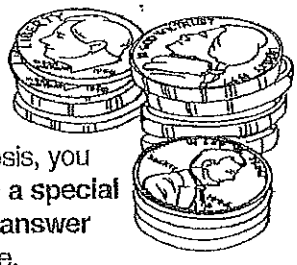
Name _____

Step 3: Form a Hypothesis (Part 1)



After developing a research question, identifying the variables, and researching information about the variables, it's time to develop a hypothesis. In writing a hypothesis, you are trying to answer your research question before you experiment. **A hypothesis is a special type of prediction that is a possible explanation for a set of observations or an answer to a scientific question.** Just like a research question, a hypothesis must be testable.

A hypothesis is not a fact, but merely one possible way to explain a group of observations. While a hypothesis is made prior to completing the experiment, it is more than just a guess about what will happen. It should express a logical explanation based on prior observations and research.

Suppose you were asked this research question: "How many drops of water will fit on the head of a penny?" If you don't have much experience dropping water on a penny, it would be difficult to create a hypothesis. It's likely you would be randomly guessing at the answer.

1. Predict (Random Guess): How many drops of water do you think can fit on the head of a penny? _____

Turn a penny heads-up and count the drops of water squeezed from an eyedropper without spilling over.

2. How many drops actually fit on the head of the penny? _____

Since you now have some experience with putting water on a coin, you will be better suited to form a hypothesis for this research question: "How many drops of water will fit on the head of a nickel?"

3. Write your hypothesis: _____
4. Which do you think is more accurate: your hypothesis about water on a nickel (#3) or your prediction about water on a penny (#1)? Explain.

   _____

   _____

5. What factors did you consider when writing your hypothesis about water on a nickel?

   _____

   _____

Turn a nickel heads-up and count the drops of water squeezed from an eyedropper without spilling over.

6. How many drops actually fit on the head of a nickel? _____
7. How did your results (#6) compare to your hypothesis (#3)? _____
8. Was your hypothesis for the nickel test more or less accurate than your prediction for the penny test? Why?

   _____

   _____

Here's one more research question: "How many drops of water will fit on the head of a dime?"

9. Write your hypothesis: _____

Turn a dime heads-up and count the drops of water squeezed from an eyedropper without spilling over.

10. How many drops actually fit on the head of a dime? _____
11. How did your dime results (#10) compare to your hypothesis (#9)? _____
12. Which hypothesis (penny, nickel, or dime) was most accurate? _____

Name _____

Step 3: Form a Hypothesis (Part 2)

A hypothesis does not just predict what will happen in an experiment, but it specifically tells how one variable (IV) might affect another variable (DV). A hypothesis can be written in a specific way to express this relationship between the independent and dependent variables. (Remember that a hypothesis is a guess about the results; it does not have to be correct.)

A hypothesis can be written as an "If...then..." statement. When the variables are added into the hypothesis, the format becomes "If IV, then DV." Think of it like this: "If I change the IV, then I think the result (DV) will be _____." *Don't forget that the hypothesis is your prediction about what will happen, so you will have to add your own words and thoughts into this format!*

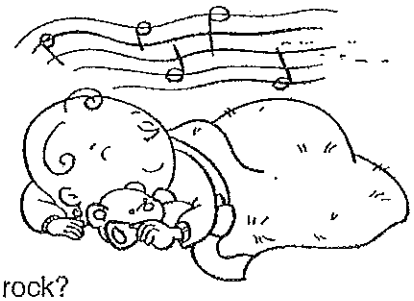
Example:

Research Question: Does salt water freeze faster than fresh water?

IV: Type of water DV: Time water takes to freeze

Possible Hypothesis: If I test salt water and fresh water, then fresh water will freeze faster.

A good way to make sure that your hypothesis is written correctly is to circle the words "If" and "then" in the hypothesis and underline the IV and the DV.



Identify the independent and dependent variables in each experiment described below. Then write a hypothesis. Circle "if" and "then" in your hypothesis and underline the IV and DV.

1. Which type of music quiets a crying baby faster: jazz, classical, or rock?

   IV: _____ DV: _____

   Hypothesis: _____

2. Does the color of the recycling bins, red or blue, affect the number of cans recycled at school?

   IV: _____ DV: _____

   Hypothesis: _____

3. Does the temperature of water affect how quickly food coloring spreads through it?

   IV: _____ DV: _____

   Hypothesis: _____

4. Is the number of eggs a chicken lays affected by the hours of daylight?

   IV: _____ DV: _____

   Hypothesis: _____

5. Will a rubber band or string hold more weight without breaking?

   IV: _____ DV: _____

   Hypothesis: _____

6. Which type of gum contains the most sugar: Brand A, Brand B, or Brand C?

   IV: _____ DV: _____

   Hypothesis: _____