

INQUIRY SKILL FOCUS AMI DAY 3- Hughes

Develop a Hypothesis

Suppose you and your neighbor are growing tomatoes. One day you notice that your neighbor's plants are much bigger than yours. What's causing the difference? How can you get your plants to grow as big as your neighbor's?

The question you asked about the tomato plants could lead you to develop a hypothesis. A **hypothesis** (plural: *hypotheses*) is a possible explanation for a set of observations or answer to a scientific question. Hypotheses are based on a person's observations and previous knowledge or experience.

In science, hypotheses must be testable. That means that researchers should be able to carry out an investigation and obtain evidence that shows whether the hypothesis is true or false. The way a hypothesis is written can outline a way to test it. Try to word each of your hypotheses in the form of an *If... then ...* statement.

Read the following three examples. Notice which of these predictions are testable. Also notice how they are worded.

Example 1: If I give my plants fertilizer, then they will grow as big as my neighbor's plants. (testable and properly worded)

Example 2: If I get lucky, then my plants will grow bigger. (not testable, because you can't control "getting lucky")

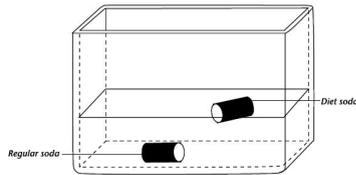
Example 3: My plants aren't growing bigger because I don't water them enough. (not worded properly)

TIPS FOR DEVELOPING HYPOTHESES

- Ideas for hypotheses often result from problems that have been identified or questions that have been raised. To help develop ideas for a hypothesis, write down several questions about the topic. Try to narrow the questions to one that can be investigated scientifically. Then write the hypothesis.
- Make sure the hypothesis can be tested through an investigation.
- Check the way you worded the hypothesis. Try to word the hypothesis *as an If... then . . .* statement.

Develop a Hypothesis

The day after a picnic, you look into the cooler. All of yesterday's ice has turned to water. Only two beverages are left. A can of diet soda is floating at the surface. A can of regular soda is resting at the bottom.



You pick up the two cans. You see that both drinks are made by the same company. Then you read the labels.



1. You think that something about the regular drink must have made it sink, while something about the diet drink made it float. Write down at least two possible factors that could have caused the events.

2. Suppose that the type of drink did *not* affect which can floated or sank. Maybe the cans themselves were different in some way. Maybe something besides soda got into one of the cans by mistake. Write down at least two possible factors that could have caused the events.

3. Write down any other possible explanations you can think of. Could the cooler have had any affect? Could something in the water be responsible? Could there be an object in the water that you can't see?

4. Review your answers to Question 1. Use one of your ideas to write a hypothesis explaining why one can floated and the other sank. (*Hint: Try to use the words If..., then....*)

5. Are both of your hypotheses testable? Write a brief description of how you could test each one. Mention any equipment you would need. (*Hint: You can open the cans and pour out the drinks as part of your tests.*)

Name _____ Date _____ Class _____

Develop a Hypothesis (*continued*)

Answer the following questions.