

HYPOTHESIZING

Forming Hypotheses

While an inference is a tentative explanation based on observations and prior knowledge, a **hypothesis** is a tentative explanation for an observation or scientific problem written in a special way that leads to further investigation. You can write a hypothesis in the form of an “If . . . , then . . . , because . . .” statement. Keep in mind these important points about hypotheses:

- The results of an experiment cannot prove that a hypothesis is correct. Rather, the results either support or do not support the hypothesis.
- You can gain valuable information even when your results do not support your hypothesis.
- In science, a hypothesis is supported only after many scientists have conducted many experiments and produced consistent results.

1. Use the “If . . . , then . . . , because . . .” format to write hypotheses about the following scientific problems. The first one is done for you.

a. Problem: How does fertilizer help tomato plants produce more tomatoes?

Hypothesis: If fertilizer is added to plants, then the plants will produce more tomatoes, because fertilizer helps plants grow.

b. Problem: Which produces higher grades on science tests, studying with music on, or studying with quiet conditions?

Hypothesis: _____

c. Problem: What is the relationship between the number of ducks living on ponds and the amount of bacteria in the pond water?

Hypothesis: _____

d. Problem: How do vitamin C supplements help prevent colds?

Hypothesis: _____

2. While walking around a park, you observe that two juniper bushes at the end of a long row of juniper bushes are turning brown. You notice that they sit beside a clogged and dripping drinking fountain. You also notice that the ground around the drinking fountain is muddy. You remember when you once killed a houseplant by overwatering it. What is happening with these bushes? Write a scientific problem and a hypothesis.

3. Now think of an observation that led you to make an inference. Write a scientific problem, then write a hypothesis to match the problem. Remember to write your hypothesis in an "If . . . , then . . . , because . . ." format so that it lends itself to investigation.

a. Description of the scenario: _____

b. State the scientific problem: _____

c. Write the hypothesis: _____

Challenge How might you test your hypothesis? Be sure to include the materials you would need, the steps you would take, and the types of data you would collect.
