

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. For each of the following problems, write a hypothesis. The first one is done for you.

a. Problem: At which grade do middle school students carry the heaviest bookbags?

Hypothesis: *If students are in higher grades, then their backpacks will be heavier, because they have heavier textbooks.*

b. Problem: Which class is easier to pass, math or science?

Hypothesis: _____

c. Problem: What side of the school has the warmest classrooms?

Hypothesis: _____

d. Problem: Do more students drink milk or carbonated beverages at lunch?

Hypothesis: _____

2. Reread the definition of hypothesis, then decide which of the following hypotheses meet the definition. Explain why or why not, and rewrite those hypotheses that do not meet the definition.

a. Problem: Which acne products work?

Hypothesis: If a student uses an acne product, then he/she will do better, because the product contains antibacterial medicine.

b. Problem: Which are better, snowboards or skis?

Hypothesis: If you ask 100 visitors to a mountain resort whether they prefer snowboards or skis, then more will answer snowboards, because snowboards are more fun

c. Problem: Which brand of pain reliever cures a headache fastest?

Hypothesis: If you give a different brand, A, B, or C, to each of three people with the same kind of headache, then the one who got brand A will be cured fastest, because A contains the most medicine.

Challenge On a separate sheet of paper, describe how you might test one of your hypotheses from question 1 on page 17. Include materials, a general procedure, and the types of data you would gather.