

**LESSON  
6.5****Challenge Practice**

For use with the lesson “Compare Surveys, Experiments, and Observational Studies”

**In Exercises 1–5, use the following information to tell whether you would simply explore a correlation between the variables or try to determine a causal relationship between the variables. Explain your choice.**

When there is an association or relationship between variables in a study, the variables are *correlated*. When changes in one of the variables in a study cause changes in the other variable, there is a causal relationship between the variables.

1. The blood pressure and height of a person
2. The average daily temperature during the winter and the amount of heating oil purchased during the winter
3. The tread pattern on a car tire and its performance on snowy roads
4. The ounces of vegetables a person eats each day and the ounces of water a person drinks per day
5. The swimming speed and the shape of a fish

**In Exercises 6–8, two headlines for the same news article are given. Determine which headline most directly implies a causal relationship. Describe the implied causal relationship.**

6. **A.** Eating Snacks While Studying Improves Test Scores  
**B.** Eating Snacks Associated with Higher Test Scores
7. **A.** A Connection Between Muscle Pain and Anaerobic Exercise  
**B.** Anaerobic Exercise Leads to Muscle Pain
8. **A.** Work Longer Hours to Have a Higher Salary  
**B.** Working Longer Hours and Increased Salaries Related
9. When research studies are reported in mainstream media, the headline of a report may not correctly represent the findings of the study. In many cases, a causal relationship may be implied in a headline when the report only states a correlation between variables.
  - a. The headline of an article is “Doing Housework Lowers Cholesterol.” Does this headline imply a causal relationship? *Explain.*
  - b. The text below is the summary of the study that appears in the article from part (a). How does this text relate to the headline?

*A study of 1200 men and women, ages 40–65, finds a strong negative correlation between the hours per week a person spends doing housework and his or her cholesterol level.*
  - c. Provide a possible explanation for the association made in part (b), other than a causal relationship.