

# WHAT IS A RELATIONSHIP?

You know what a relationship in a family is. It's when you are connected to someone by birth, marriage or adoption. A scientific relationship is also a connection. It is a connection between things because they always change TOGETHER (linked changes). In this lesson you will learn about VARIABLES that change together.

## THE MAIN SCIENTIFIC IDEA

TWO VARIABLES ARE RELATED IF ONE OF THEM CHANGES WHENEVER THE OTHER ONE CHANGES.

If a change in one variable affects the other variable, then the two variables are related to one another. For example, the greater the volume of water in a beaker, the greater the mass of the water and beaker. The two variables, volume and mass, are related because one of them always changes whenever the other one does.

If a change in one variable does not affect the other one, then the two variables are not related.

**DIRECTIONS:** In each of the situations below write the word RELATED or UNRELATED in the space provided. RELATED means that there is a relationship between the variables. UNRELATED means that there is not a relationship between the variables.

1. The quantity of air blown into a balloon and the size of the balloon.

\_\_\_\_\_

2. The quantity of air blown into a steel box and the volume of the box. \_\_\_\_\_

3. The speed of a car and the time that it takes to go one mile. \_\_\_\_\_

4. The distance a car travels and the number of tires on the car. \_\_\_\_\_

5. The distance a car travels and the amount of gasoline used. \_\_\_\_\_

YOU SHOULD NOW UNDERSTAND THE FOLLOWING IDEA: Two variables are related if one of them changes whenever the other one changes.

**NEW IDEA:** You now have one more idea to learn. Relationships between variables that change together may be classified into two kinds: DIRECT relationship or INDIRECT relationship.

**DIRECT RELATIONSHIP:** When one variable increases the other variable increases.

**INDIRECT RELATIONSHIP:** When one variable decreases the other variable increases.

Name \_\_\_\_\_ Date \_\_\_\_\_ Period \_\_\_\_\_

## RELATIONSHIPS BETWEEN CHANGES

**EXPLORATION ACTIVITY:** Answer the following questions in the space provided.

1. You put a pot of cold water on the stove and turn on the heat until the water is just about to boil. Before the water starts to boil,...

A. What happens to its temperature as more and more heat is added to the water?

B. Is the amount of heat added to the water and the water's temperature related to each other, that is, is there a connection between them?

2. Your family car is at the top of a long hill. You have the brake in the "off" position. The car slowly starts to roll down the hill.

A. As the car moves down the hill, what happens to its speed?

B. What is the connection between how far down the hill the car has moved and its speed?

C. Is there a relationship (connection) between the speed of the car and its distance from the top of the hill?

3. It is raining steadily outside your house. There is a bucket standing in the rain. What is the relationship between the height of the water in the bucket and how long it rains?

4. It is late autumn. The leaves are beginning to come down from the trees. A strong wind starts blowing the leaves down. How is the number of leaves left on the trees related to how long the wind blows that day?

5. You blow up a large balloon and hold it between your fingers. You slowly begin to let the air out of the balloon. What is the relationship between the size of the balloon and the amount of air released from the balloon?