

**INTEGRATING MATHEMATICS****● Using Quantitative Statements to Solve Problems**

Many of the theories and principles of science can seem difficult when they are described in words. For example, to describe the process for calculating average speed, you might write: An object's **average speed** is **equal** to the **distance**, or **change in position** (the difference between the final position and the starting position) divided by the **change in time** (the difference between the final time and the starting time) during which the object was in motion.

The chance of confusion increases when scientists do not speak the same language. Even within the same language, a term may have several meanings. Therefore, scientists use equations, which are quantitative statements, to simplify their expressions of scientific principles and relationships.

Using an equation to describe how to find average speed, you could write:  $v = \Delta d / \Delta t$ . To solve the equation, you would substitute the quantities for the symbols. The table below shows the meaning of some symbols that scientists use to make quantitative statements.

Symbol	Defined meaning
$\Delta$	Change in
$d$	Distance
$t$	Time
$v$	Average speed
$n$	Any given quantity
$n_1 n_2$	Quantity 1 multiplied by quantity 2
$n_1 / n_2$	Quantity 1 divided by quantity 2

**Your Turn to Think**

*Refer to the table to complete the following exercises.*

1. Use the equation  $v = \Delta d / \Delta t$  to solve this problem: What was the average speed of a car that traveled 450 km during a 10-hour period?
2. Write an equation to express the following sentence: The **distance** traveled by a moving object is **equal** to its **average speed** multiplied by its **time in motion**.
3. Use the equation you wrote in item 2 to determine how many meters a skater traveled in 10 minutes if the skater traveled at an average of 400 m/min.
4. Write a sentence to explain this equation:  $t = \Delta d / \Delta v$ .