Acceleration (pages 320–325)

What Is Acceleration? (pages 320–321)

Key Concept: **In science, acceleration refers to increasing speed, decreasing speed, or changing direction.**

- Remember that velocity is speed and direction. **Acceleration** is the rate at which velocity changes.
- Objects accelerate when they speed up. A car that goes faster is accelerating.
- Objects accelerate when they slow down. A rolling ball that slows down is accelerating.
- Objects accelerate when they change direction. A bus that turns a corner is accelerating.

Answer the following questions. Use your textbook and the ideas above.

1. The rate at which velocity changes is

   _____.

2. Circle the letter of each example of acceleration.
   - **a.** A ball speeds up as it rolls down a hill.
   - **b.** A car slows down as it comes to a stop sign.
   - **c.** A biker goes around a curved track without changing speed.

3. Is the following sentence true or false? A bus stopped at a red light is accelerating. _____

Name _____ Date _____ Class _____

Calculating Acceleration (pages 322–323)

Key Concept: **To determine the acceleration of an object moving in a straight line, you must calculate the change in speed per unit of time.**

- You can find the acceleration of an object moving in a straight line.
- To find acceleration, you need to know three things:
  1. You need to know the starting speed.
  2. You need to know the ending speed.
  3. You need to know how long it took for the object to change speeds.
- The formula for acceleration is:

$$\text{Acceleration} = \frac{\text{Final speed} - \text{Initial speed}}{\text{Time}}$$

- The unit for acceleration is meters per second per second, or m/s^2.

Answer the following questions. Use your textbook and the ideas above.

4. Read the words in the box. Use the words to fill in the blanks in the formula for acceleration.

Final speed	Time	Distance

$$\text{Acceleration} = \frac{\textbf{a.}\ \_\_\_\_\_ - \text{Initial speed}}{\textbf{b.}\ \_\_\_\_\_}$$

5. Is the following sentence true or false? Acceleration is measured in meters per second per second.

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