Name: _____ Date: _____ Period: _____

Acceleration
Research Guide

Directions: Research the following questions about the main topic. You can use your textbook, or you can use resources found online. If you use online resources, make sure the validate the sources before obtaining information from the sources.

What is <u>acceleration</u>? (Reference page 27)

<u>Acceleration</u> is _____
_____

Write a 2-sentence description of an example of acceleration you experience in your life:
_____
_____
_____

What are the 3 ways an object can accelerate? (Reference page 28)

List three ways an object can change acceleration. Draw an image that represents each way an object can accelerate.

1.	2.	3.

How do you calculate acceleration? What are the units used to describe acceleration? (Reference page 29)

Acceleration Equation: _____

Abbreviated Equation: _____

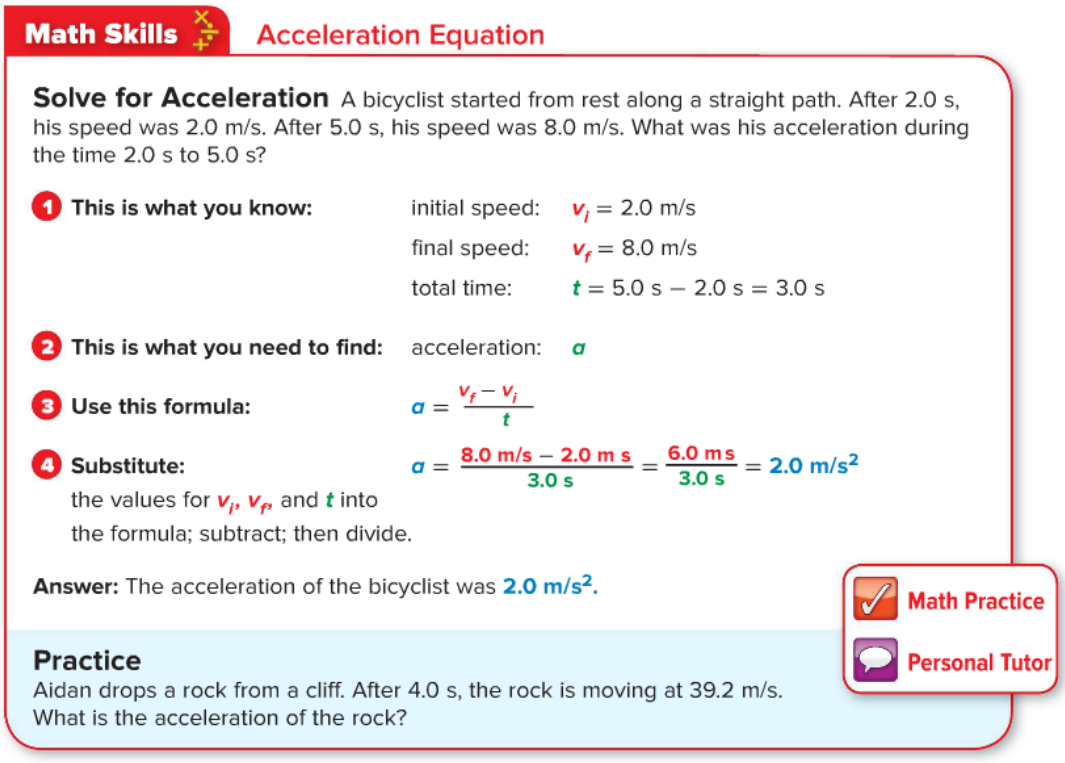
Units of Acceleration:

Acceleration is measured in _____

Initial velocity is represented with _____

Final velocity is represented with _____

Note: SI Unit stands for the International System of Units



Math Skills Acceleration Equation

Solve for Acceleration A bicyclist started from rest along a straight path. After 2.0 s, his speed was 2.0 m/s. After 5.0 s, his speed was 8.0 m/s. What was his acceleration during the time 2.0 s to 5.0 s?

1. **This is what you know:**
   - initial speed: $v_i = 2.0$ m/s
   - final speed: $v_f = 8.0$ m/s
   - total time: $t = 5.0\text{ s} - 2.0\text{ s} = 3.0\text{ s}$
2. **This is what you need to find:** acceleration: a
3. **Use this formula:** $a = \frac{v_f - v_i}{t}$
4. **Substitute:** the values for v_i, v_f, and t into the formula; subtract; then divide.

$$a = \frac{8.0\text{ m/s} - 2.0\text{ m s}}{3.0\text{ s}} = \frac{6.0\text{ m s}}{3.0\text{ s}} = 2.0\text{ m/s}^2$$

Answer: The acceleration of the bicyclist was 2.0 m/s^2.

Math Practice

Personal Tutor

Practice

Aidan drops a rock from a cliff. After 4.0 s, the rock is moving at 39.2 m/s. What is the acceleration of the rock?

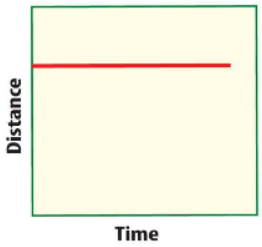
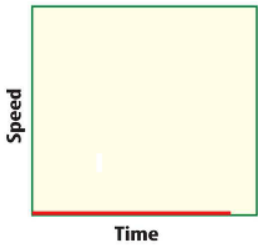
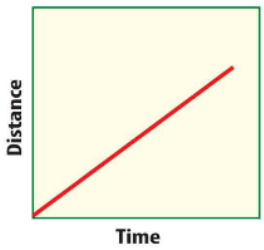
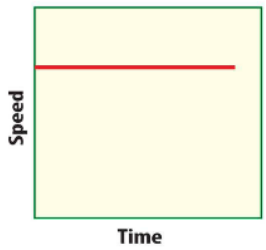
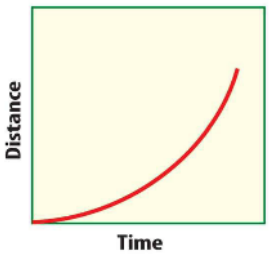
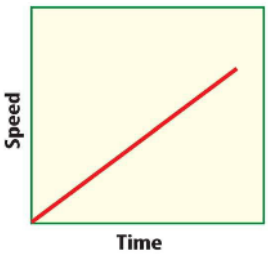
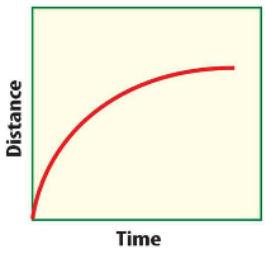
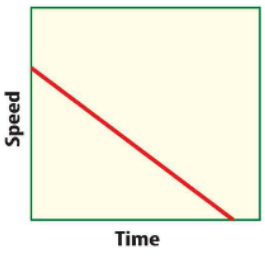
Practice Work Space: (Complete the practice problem listed above. Be sure to show all of your work)

What is the difference between a distance-time graph and a speed-time graph?

(Reference pages 30 – 32)

What does a speed-time graph show? _____

_____

Type of Motion	Distance-Time Graph	Speed-Time Graph
Object at Rest <u>Description</u>:	 The object's distance from the reference point does not change.	 The speed is zero and does not change.
Constant Speed <u>Description</u>:	 The distance increases at a steady rate over time.	 The object's speed does not change.
Speeding Up <u>Description</u>:	 As the distance increases, the rate of increase gets larger over time.	 The speed of the object increases at a steady rate over time.
Slowing Down <u>Description</u>:	 As the distance increases, the rate of increase gets smaller over time.	 The speed of the object decreases at a steady rate over time.