NAME DATE CLASS

Chapter 3

STUDY GUIDE

Use with Text Pages 64–71

Motion and Speed

In each of the following statements, a term has been scrambled. Unscramble the term and write it on the line provided.

_____ 1. When something moves, it changes *iitsopon.*

_____ 2. *Otoinm* can be described as a change in position.

_____ 3. Speed is the *etra fo neahgc* in position.

_____ 4. *Sttananuoseni eedps* is the rate of motion at any given instant.

_____ 5. A speed that doesn't vary is called a *tntnsoca dspee.*

_____ 6. The total distance traveled divided by the total time of travel is called the *evraage pesed.*

_____ 7. A *miet-nasidtce* graph makes it possible to "see" the motion of an object over a period of time.

Now find each unscrambled term in the hidden word puzzle below. The terms can be written horizontally, vertically, or diagonally and forward or backward. Circle each term as you find it.

H Z I P L Q E F O N T Q S B D
C O N S T A N T S P E E D Z B
P B S R F P A Z A C G Y B F X
M O T I O N O A C E B X G D A
R O A M G T O S Z R H A G F Y
G O N N E I N H I A X F B Z D
G T T Q H M O L B T B X C B A
L Y A Z M E G S O E I I E I S
T C N Y P D B B I O M O A C X
M P E L P I I F M F B D N J J
Q C O C I S M I Q C I K P C X
O F U B N T P M C H P O M B A
C P S P O A F P F A O S N N G
E L S F C N C C N N D V A O E
F L P O J C J G A G D G I S T
D E E P S E G A R E V A E O S
G S E F B N L O O N Q T H P Q
Z R D G K C D N B G C E A L R

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Use with Text Pages 72–75

• Velocity and Acceleration

Use the terms below to fill in the blanks.

acceleration	direction	meters per second squared (m/s^2)	slowing down
$a = \frac{v_f - v_i}{t} = \frac{\Delta v}{t}$	divide	meters per second (m/s)	subtract
	increasing speed	positive	time interval
	negative	seconds(s)	velocity change

Speed is the rate of motion of an object. _____ describes an object's speed and direction. The velocity of an object can _____ even if the speed of the object remains constant. This would occur if the _____ of the object's motion changes.

The rate of change of velocity is called _____. The size of an acceleration depends on both the change in velocity and the _____ of the change.

To calculate acceleration, _____ the change in velocity by the time interval. To find the change in velocity, _____ the initial velocity (v_i) from the final velocity (v_f). The equation for average acceleration is _____. Final velocity will be less than initial velocity if an object is _____, and acceleration will have a _____ value. Final velocity will be greater than initial velocity if an object is _____, and acceleration will have a _____ value.

The units for velocity are _____. The unit for time is _____. Therefore, the units for acceleration are _____.

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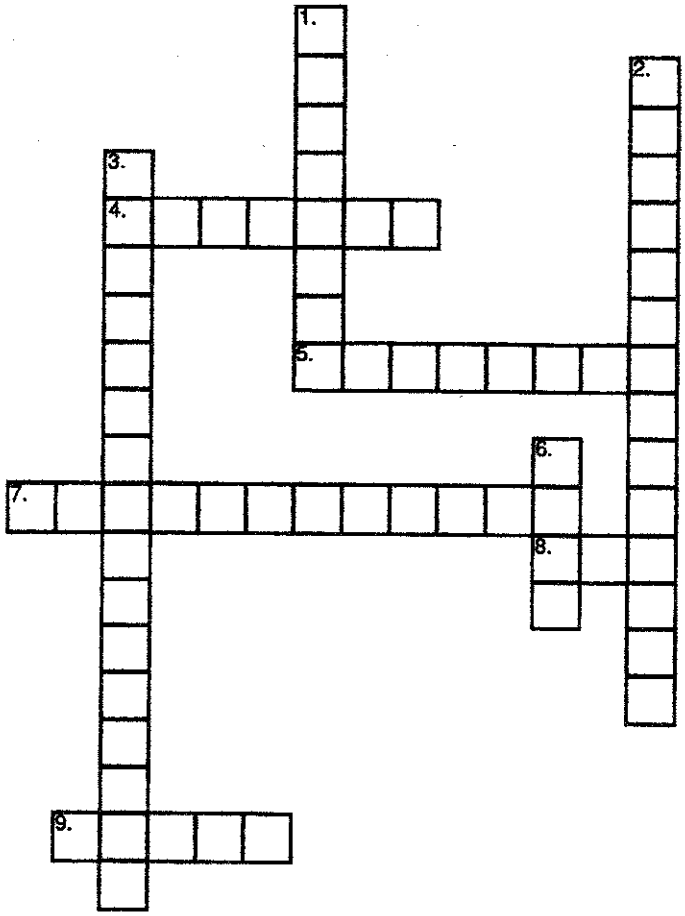
Use with Text Pages 78–82

Connecting Motion with Forces

Solve the following crossword puzzle using the clues provided.



Across

4. the tendency of an object to resist any change in its motion

5. If this acts on an object, the object will change speed, change direction, or both. (2 words)

7. another name for Newton's first law of motion (3 words)

8. a title before Isaac Newton's name

9. a push or pull that one body exerts on another body

Down

1. the force that opposes motion between two surfaces that are touching each other

2. forces that are equal in size and opposite in direction (2 words)

3. Newton's law that says, "an object at rest stays at rest unless a net force acts on it" and, "an object moving at constant velocity continues at that velocity unless a net force acts on it." (4 words)

6. The more of this an object has, the greater the object's inertia.

Chapter 3

STUDY GUIDE

Use with Text Pages 83–86

Gravity—A Familiar Force

In the blank at the left, write the letter of the term that correctly completes each statement.

_____ 1. Every object in the universe exerts a force on every other object. This force is called ____.
a. friction **b.** gravity

_____ 2. The measure of the force of gravity on an object is the object's ____.
a. weight **b.** inertia

_____ 3. The amount of gravitational force between two objects depends on their ____.
a. color and density **b.** mass and distance

_____ 4. Weight is measured in units called ____.
a. Newtons **b.** seconds

_____ 5. The greater an object's ____, the stronger the gravitational force on it.
a. mass **b.** velocity

_____ 6. Mass is measured in units called ____.
a. meters and kilometers **b.** grams and kilograms

_____ 7. A scale uses the principle of ____ to measure how much something weighs.
a. acceleration **b.** balanced forces

_____ 8. Earth exerts a stronger gravitational force than the moon because ____ has more mass.
a. the moon **b.** Earth

_____ 9. The masses of your hand and your notebook are quite small, so the force of attraction between them is ____.
a. strong **b.** weak

_____ 10. An object transported from the surface of Earth to the surface of the moon has its weight ____.
a. increased **b.** decreased

_____ 11. ____ doesn't change with changes in gravity.
a. mass **b.** weight

_____ 12. The ____ mass an object has, the more that object weighs.
a. more **b.** less

_____ 13. On Earth gravity exerts a(n) ____ force on your body.
a. upward **b.** downward