

# Chapter 4 Review

## Checking Concepts

Choose the word or phrase that completes the sentence or answers the question.

1. A net force acting on a moving object causes the object to \_\_\_\_\_.  
a. fall                                      c. stop  
b. accelerate                              d. curve
2. \_\_\_\_\_ is the force of gravity on an object.  
a. Mass                                      c. Centripetal force  
b. Momentum                              d. Weight
3. Which of these opposes acceleration due to gravity?  
a. momentum                              c. reaction force  
b. air resistance                              d. terminal velocity
4. According to Newton's second law, \_\_\_\_\_ equals mass times acceleration.  
a. gravity                                      c. force  
b. momentum                                      d. weight
5. What force causes a leaf to fall more slowly than a penny?  
a. gravity                                      c. inertia  
b. momentum                                      d. air resistance
6. Which best illustrates Newton's third law?  
a. projectile motion                              c. rocket propulsion  
b. circular motion                                      d. centripetal force
7. The \_\_\_\_\_ velocity of a projectile is considered to be constant.  
a. horizontal                                      c. accelerated  
b. circular                                      d. vertical
8. An object in free-fall can be considered \_\_\_\_\_.  
a. moving horizontally                              c. motionless  
b. heavy                                      d. weightless
9. \_\_\_\_\_ is reached when air resistance and force due to gravity are equal.  
a. Negative acceleration  
b. Terminal velocity  
c. Centripetal acceleration  
d. Weightlessness
10. Which of the following does not affect the amount of air resistance that acts on an object?  
a. mass                                      c. shape  
b. size                                      d. speed

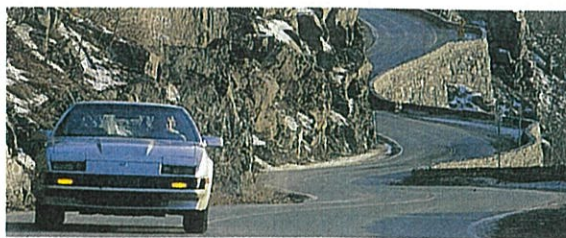
## Understanding Concepts

Answer the following questions in your Science Journal using complete sentences.

11. On Earth, why does an object of large mass weigh more than an object of smaller mass?
12. Explain why gravity does not cause a falling object of large mass to accelerate at a faster rate than a falling object of smaller mass.
13. If the forces in an action-reaction pair are equal in size and opposite in direction, why aren't they balanced forces?
14. A spaceship orbiting Earth is held in its orbit by Earth's gravity. Yet, astronauts in the spaceship are said to be weightless. Explain.
15. Explain why a marble moves in a straight line as it rolls across the table but follows a curved path once it rolls off the table.

## Thinking Critically

16. What force is exerted on a 1000-kg car accelerating at a rate of  $15 \text{ m/s}^2$ ?
17. The motion of a 12-kg object is opposed by a 30-N force of friction. At what rate does friction slow the object down?
18. You are asked to design a winding mountain road. What force must you try to increase in designing this road? How might you do this?



19. A 4-kg bowling ball rolling at  $6 \text{ m/s}$  collides head-on with an identical, motionless bowling ball. If the first ball is moving forward at  $2 \text{ m/s}$  right after the collision, what is the speed and direction of the second ball?