

# STUDY GUIDE

# Chapter 3

## Projectile and Circular Motion

Determine whether the italicized term makes each statement true or false. If the statement is true, write the word "true" in the blank. If the statement is false, write in the blank the term that makes the statement true.

- \_\_\_\_\_ 1. Anything that is thrown or shot through the air is called a *projectile*.
- \_\_\_\_\_ 2. Because of Earth's gravitational pull and their own inertia, projectiles travel in a *straight* path.
- \_\_\_\_\_ 3. Motion parallel to Earth's surface is *vertical* motion.
- \_\_\_\_\_ 4. Motion perpendicular to Earth's surface is *vertical* motion.
- \_\_\_\_\_ 5. Objects fall toward Earth at a rate of  $9.8 \text{ m/s}^2$  because of *centripetal* force.
- \_\_\_\_\_ 6. Acceleration is a change in *motion*.
- \_\_\_\_\_ 7. The word centripetal means "toward the *outside*."
- \_\_\_\_\_ 8. Acceleration toward the center of a curved or circular path is called *gravitational* acceleration
- \_\_\_\_\_ 9. Centripetal force is a force that causes a moving object to move in *curved or circular* path.
- \_\_\_\_\_ 10. An orbiting space shuttle and its contents are in *freefall* around Earth,
- \_\_\_\_\_ 11. A change in the speed or direction of an object is called *inertia*.

Answer the following questions with complete sentences.

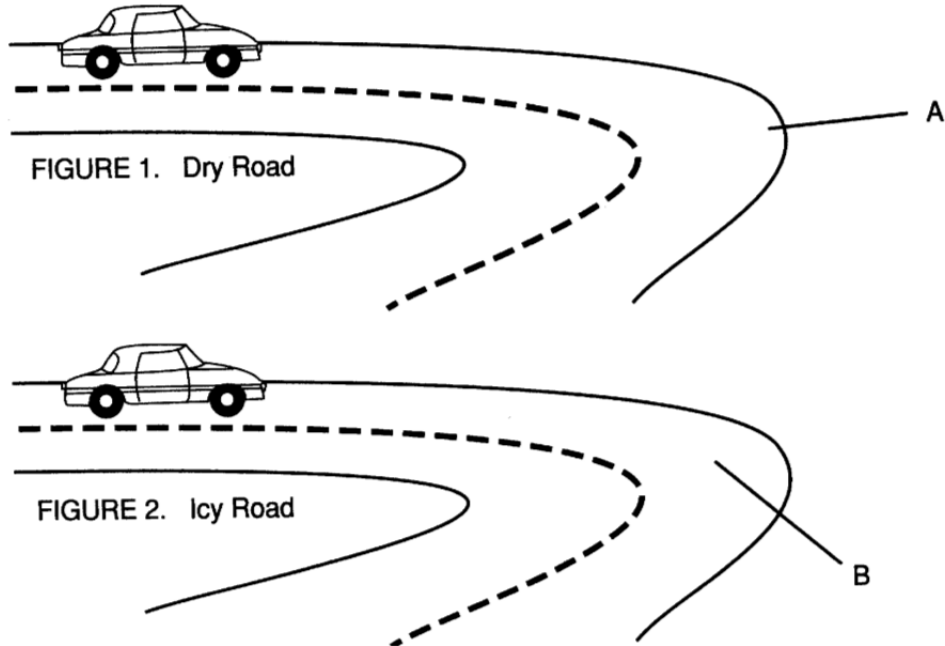
12. Why do objects that are thrown or shot follow a curved path? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

13. Draw a diagram below to illustrate your answer for question 12.

# REINFORCEMENT

## Projectile and Circular Motion

Use the diagrams below to complete the following.



1. What force causes a moving object to move in a curved or circular path? \_\_\_\_\_

2. What is the centripetal force that allows a car to move around a sharp curve in a roadway? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

3. Draw an arrow on the top diagram to show the direction the car will move when it reaches point A.

4. Draw an arrow on the bottom diagram to show the movement of the car if the centripetal force of the road and car is not enough to overcome the car's inertia when it reaches point B.

5. Explain why the car is accelerating when it reaches point A in the first diagram.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

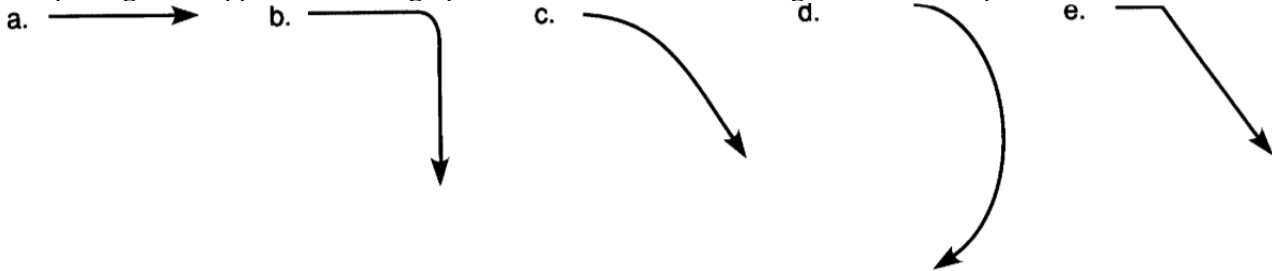
**ENRICHMENT**

**Chapter 3**

**Projectile and Circular Motion**

**PROBLEMS IN MOTION**

1. A package is dropped from a cargo plane. Which of the following best shows its path?



2. A 1-gram marble has a speed that is 5 times as fast as a 100-gram marble. Both marbles leave the table at the same time. Which one hits the ground first? \_\_\_\_\_

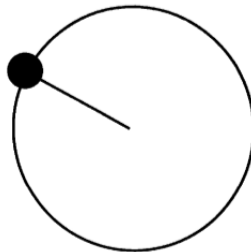
Which one goes the farthest? \_\_\_\_\_

How can you explain these results? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

3. A ball is swinging from a rope. Mark on the diagram where the string should be released for the ball to hit the target.



Target

4. A ball is rolled through each tube shown below. Draw the path of the ball as it leaves each of these tubes.

