

**Chapter 5 Test    Projectile Motion**

**True or False Questions**

*Circle the correct answer.*

- T     F**    1. A quantity that has both magnitude and direction is called a scalar.
- T     F**    2. A single vector can be replaced by two vectors in the X and Y directions. These X and Y vectors are called the resultant of the original vector.
- T     F**    3. Wind velocity can be represented as a vector quantity.
- T     F**    4. The vertical component of velocity for a projectile varies with time, even with no air resistance.
- T     F**    5. The horizontal component of velocity for a projectile varies with time, even with no air resistance.

**Multiple Choice Questions**

*Choose the best answer to each question and write the appropriate letter in the space provided.*

- \_\_\_\_\_ 6. A vector is a quantity that has
  - a. magnitude and time.
  - b. magnitude and direction.
  - c. time and direction.
- \_\_\_\_\_ 7. When velocity is represented as a vector
  - a. the length of the arrow represents the speed.
  - b. the length of the arrow is drawn to a suitable scale.
  - c. the direction of the arrow shows the direction of motion.
  - d. all of the above
- \_\_\_\_\_ 8. What is the minimum resultant possible when adding a 3-unit vector to an 8-unit vector?
  - a. 24
  - b. 11
  - c. 8
  - d. 5
- \_\_\_\_\_ 9. What is the maximum resultant possible when adding a 3-unit vector to an 8-unit vector?
  - a. 24
  - b. 11
  - c. 8
  - d. 5
- \_\_\_\_\_ 10. An airplane flying into a head wind loses ground speed, and an airplane flying with the wind gains ground speed. If an airplane flies at right angles to the wind, then ground speed is
  - a. less.
  - b. unchanged.
  - c. more.

**Chapter 5 Test Projectile Motion**

- \_\_\_\_\_ 11. Which of the following would NOT be considered a projectile?
- A cannonball thrown through the air
  - A cannonball rolling down a slope
  - A cannonball thrown straight up
  - A cannonball rolling off the edge of a table
- \_\_\_\_\_ 12. The horizontal component of a projectile's velocity is independent of
- the vertical component of its velocity.
  - the range of the projectile.
  - time.
- \_\_\_\_\_ 13. A ball is thrown into the air at some angle between 10 degrees and 90 degrees. At the very top of the ball's path, its velocity is
- entirely vertical.
  - entirely horizontal.
  - both vertical and horizontal.
  - There's not enough information given to determine.

**Math Problems**

*Solve the following problems in the space provided. Show all work.*

14. A boat is rowed at 6.0 km/h directly across a river in water that is flowing at right angles at 8.0 km/h. What is the resulting speed of the boat?
15. Harry jumps horizontally from the top of a building that is 20.0 m high, and hopes to reach a swimming pool that is at the bottom of the building, 10.0 m horizontally from the edge the building. If he is to reach the pool, what must his jumping speed be?

**Essay Question**

*On a separate sheet of paper, answer the following question.*

16. On a piece of graph paper, draw lines 8 cm long at angles of 0 degrees, 30 degrees, 90 degrees, and 135 degrees from the X axis. Find the X and Y components of each line.