Assessment )

## **Two-Dimensional Motion and Vectors**

## **Section Quiz: Projectile Motion**

## Write the letter of the correct answer in the space provided.

- **1.** Which of the following may be classified as projectile motion?
  - a. a punted football
  - **b.** a thrown baseball
  - c. a water droplet cascading down a waterfall
  - **d.** all of the above
- **2.** In the absence of air resistance, the path of a projectile is a(n)
  - **a.** parabola.
  - **b.** arc.
  - **c.** polygon.
  - **d.** semicircle.
- **3.** The motion of a projectile in free fall is characterized by
  - **a.**  $a_x = a_y = -g$ .
  - **b.**  $a_x = \text{constant}$  and  $v_y = \text{constant}$ .
  - **c.**  $v_x = \text{constant}$  and  $a_y = -g$ .
  - **d.**  $v_x = \text{constant}$  and  $v_y = \text{constant}$ .
  - **4.** For an object to be a projectile, it must be in free fall and its initial velocity must
    - a. have a horizontal component.
    - **b.** have both a vertical and a horizontal component.
    - c. have either a vertical or a horizontal component.
    - **d.** start from rest.
- 5. A baby drops a ball from her hand resting on the serving tray of her high chair. Simultaneously, she knocks another ball from the same tray. Which of the following statements are true?
  - I. Both balls strike the ground at the same time.
  - II. The dropped ball reaches the ground first.
  - III. The knocked ball reaches the ground first.
  - IV. Both balls strike the ground at the same speed.
  - a. I only
  - **b.** II only
  - **c.** III only
  - **d.** I and IV

## Two-Dimensional Motion and Vectors continued

<ul> <li><b>6.</b> A gard the hor from the water be a. the b. the will</li> <li><b>c.</b> the the the d. The</li> </ul>	ner holds the nozzle of a hose constant at a small angle above zontal and observes the path of the stream of water coming e nozzle. If the pressure of the water is increased so that the eaves the nozzle at a greater speed, height and width of the water's path will increase. Height of the water's path will increase but the width of the path remain the same. Width of the water's path will increase but the height will remain ame. Height and width of the water's path will remain the same.
<b>7.</b> Assum project <b>a.</b> hori <b>b.</b> vert <b>c.</b> vert <b>d.</b> vert velo	ng no air friction and $a_y = -g$ , the horizontal displacement of a le depends on the contal component of its initial velocity only. cal component of its initial velocity only. cal component of its initial velocity and its time in flight. cal component and the horizontal component of its initial city.
<ul> <li><b>8.</b> A volle speed :</li> <li><b>a.</b> just</li> <li><b>b.</b> at th</li> <li><b>c.</b> just</li> <li><b>d.</b> whe equal</li> </ul>	vball player taps a volleyball well above the net. The ball's s least after it is tapped by the player. e highest point of its path. before it strikes the ground. In the horizontal and vertical components of its velocity are l.
<b>9.</b> Explain how a vertical displa	projectile can have a horizontal displacement even though its cement is zero.
<b>10.</b> In a movie proto a balcony 3 what is the mi plish the jump	duction, a stunt person must leap from a balcony of one building ) m lower on another building. If the buildings are 2.0 m apart, simum horizontal velocity the stunt person must have to accom- ? Assume no air resistance and that $a_y = -g = -9.81$ m/s <sup>2</sup> .