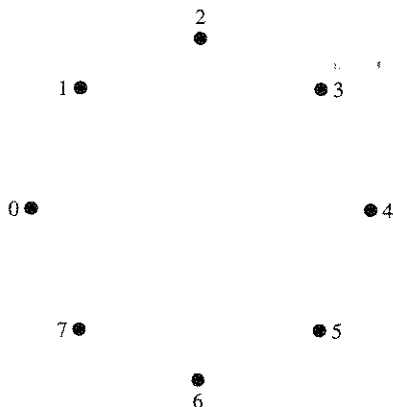


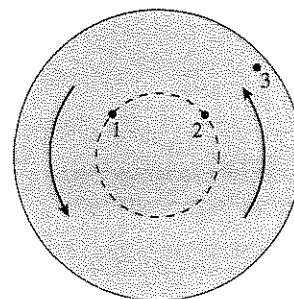
43. The dots of a motion diagram are shown below for an object in uniform circular motion. Carefully complete the diagram.

- Draw and label the velocity vectors  $\vec{v}$ . Use a **black** pen or pencil.
- Draw and label the acceleration vectors  $\vec{a}$ . Use a **red** pen or pencil.



44. The figure shows three points on a steadily rotating wheel.

- Draw the velocity vectors at each of the three points.
- Rank in order, from largest to smallest, the speeds  $v_1$ ,  $v_2$ , and  $v_3$  of these points.



Order:

Explanation:

45. An object is traveling in a circle of radius  $r$  at constant speed  $v$ .

- By what factor does the object's acceleration change if its speed is doubled and the radius is unchanged? \_\_\_\_\_
- By what factor does the acceleration change if the radius of the circle is doubled and its speed is unchanged? \_\_\_\_\_
- By what factor does the acceleration change if the period of the motion is doubled without changing the size of the circle? \_\_\_\_\_

**Circular Motion  
and Gravitation****HOLT PHYSICS****Concept Review***Circular Motion*

1. A Ferris wheel car is moving in a circular path at a constant speed.
  - a. Is the car accelerating? \_\_\_\_\_
  - b. How can the car have a non-zero acceleration if the speed is constant?  
\_\_\_\_\_  
\_\_\_\_\_
  - c. What is the direction of centripetal acceleration?  
\_\_\_\_\_
  - d. What is the magnitude of the centripetal acceleration if the tangential speed of the car is 2.0 m/s and the radius of the wheel is 83 m?  
\_\_\_\_\_
  
2. The hammer throw is a track-and-field event in which the thrower swings a heavy metal ball (the "hammer") on a wire in a circular motion, then releases the wire, sending the hammer flying.
  - a. What provides the force to keep the hammer moving in a circle before the wire is released?  
\_\_\_\_\_
  - b. What is the name for this force? \_\_\_\_\_
  - c. In what direction does this force act? \_\_\_\_\_
  - d. What is the term for the hammer's tendency to move in a straight line?  
\_\_\_\_\_
  - e. Suppose the hammer has a mass of 7.26 kg, the wire is 1.00 m long, and the force keeping the hammer moving in a circle is  $7.43 \times 10^3$  N. What will the hammer's speed be when the thrower releases the wire?