

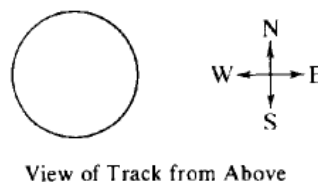
Name: _____

**AP Physics 1: Uniform Circular Motion
Centripetal Forces**

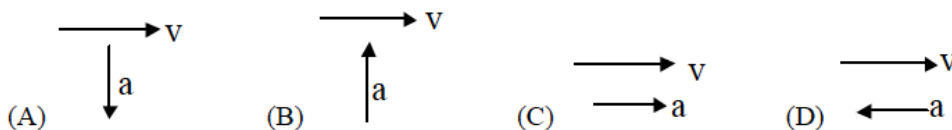
Multiple Choice:

1. A racecar is moving around a circular track with a radius of 300.0 m at a uniform speed as shown. At the instant when the car's velocity is directed due east, its acceleration is directed due south and has a magnitude of 3.00 m/s^2 . When viewed from above, the car's velocity is...

- A. Clockwise at 30.0 m/s
- B. Clockwise at 10.0 m/s
- C. Counter-clockwise at 30.0 m/s
- D. Counter-clockwise at 10.0 m/s
- E. Cannot be determined



2. An automobile moves at a constant speed down one hill and up another along the smoothly curved road as shown. Which of the following diagrams best represents the direction of the velocity and the acceleration of the automobile at the instant it is at the lowest position as shown?



3. A child has a toy tied to the end of a string and whirls the toy at a constant speed in a horizontal circular path of radius R . The toy completes each revolution of its motion in a time period T . What is the magnitude of the acceleration of the toy?

- A. Zero
- B. $\frac{4\pi^2 R}{T^2}$
- C. $\frac{\pi R}{T^2}$
- D. g
- E. $2\pi g$



4. A figure of a dancer on a music box moves counter-clockwise at a constant speed around the path shown above. The path is such that the lengths of its segments PQ, QR, RS, and SP are equal. Arcs QR and SP are semicircles. Which of the following best represents the magnitude of the dancer's acceleration as a function of time during one trip around the path beginning at point P?

