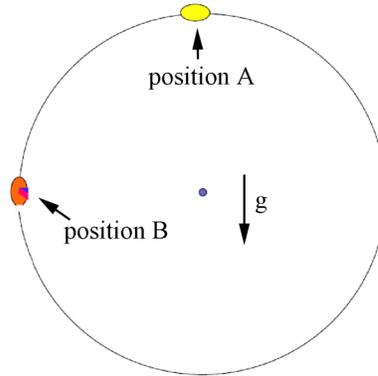
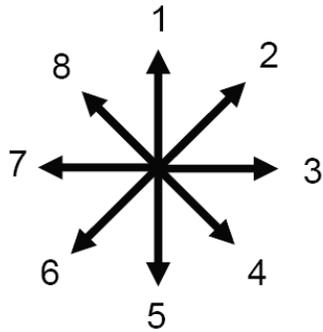


Circular Motion Concept Questions

Question 1 A bead is given a small push at the top of a hoop (position A) and is constrained to slide around a frictionless circular wire (in a vertical plane). Circle the arrow that best describes the direction of the acceleration when the bead is at the position B.



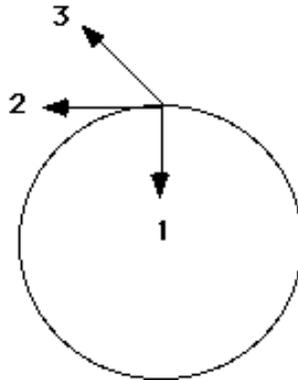
Question 2 A car is rounding a circular turn of radius 200 m at constant speed. The magnitude of its centripetal acceleration is $2 \text{ m} \cdot \text{s}^{-2}$. What is the speed of the car?

1. 400 m/s
2. 20 m/s
3. 100 m/s
4. 10 m/s
5. None of the above.

Question 3 You are a passenger in a racecar approaching a turn after a straight-away. As the car turns left on the circular arc at constant speed, you are pressed against the car door. Which of the following is true during the turn (assume the car doesn't slip on the roadway)?

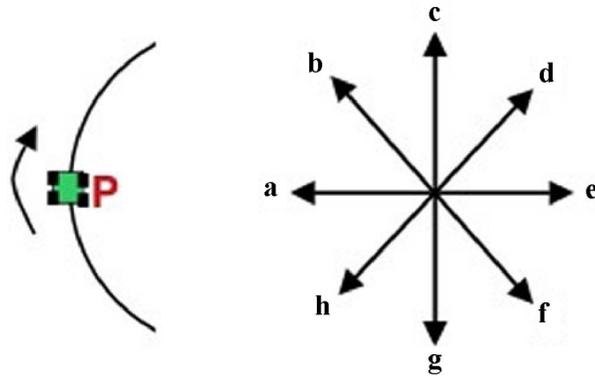
1. A force pushes you away from the door.
2. A force pushes you against the door.
3. There is no force pushing you against the door.
4. The frictional force between you and the seat pushes you against the door.
5. There is no force acting on you.
6. You cannot analyze this situation in terms of the forces on you since you are accelerating.
7. Two of the above.
8. None of the above.

Question 4: As the object speeds up along the circular path in a counterclockwise direction, shown below, its acceleration points:

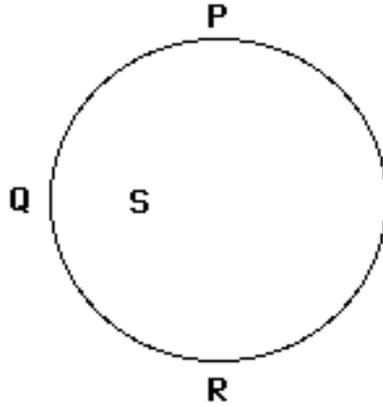


1. toward the center of the circular path.
2. in a direction tangential to the circular path.
3. outward.
4. none of the above.

Question 5 A golf cart moves around a circular path on a level surface with decreasing speed. Which arrow is closest to the direction of the car's acceleration while passing the point P?

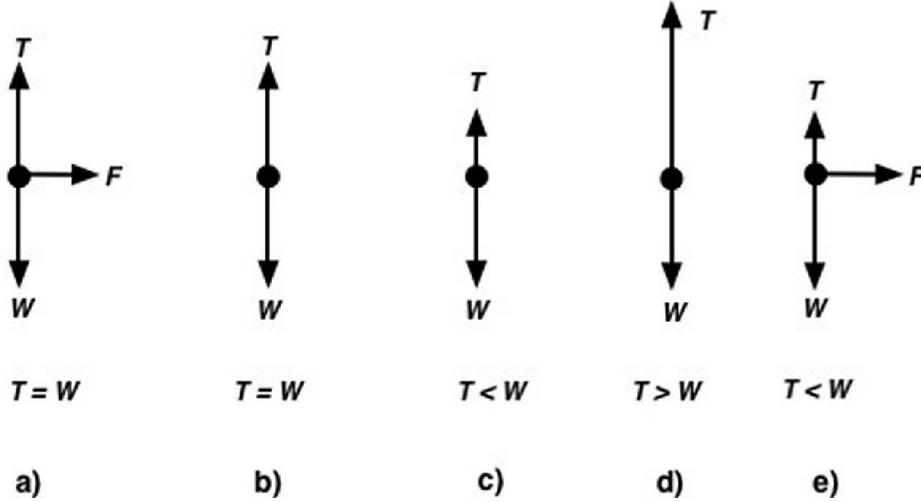


Question 6 An object moves counter-clockwise along the circular path shown below. As it moves along the path its acceleration vector continuously points toward point *S*. The object



1. speeds up at P, Q, and R.
2. slows down at P, Q, and R.
3. speeds up at P and slows down at R.
4. slows down at P and speeds up at R.
5. speeds up at Q.
6. slows down at Q.
7. No object can execute such a motion.

Question 7 A pendulum bob swings down and is moving fast at the lowest point in its swing, T is the tension in the string, and W is the gravitational force exerted on the pendulum bob. Which free-body diagram below best represents the forces exerted on the pendulum bob at the lowest point? The lengths of the arrows represent the relative magnitudes of the forces.



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