

Multiple Choice

6.1 Angle of Rotation and Angular Velocity 23.

What is 1 radian approximately in degrees?

- a. 57.3°
- b. 360°
- c. $^\circ$
- d. 2°

24.

If the following objects are spinning at the same angular velocities, the edge of which one would have the highest speed?

- a. Mini CD
- b. Regular CD
- c. Vinyl record

25.

What are possible units for tangential velocity?

- a. m/s
- b. rad/s
- c. circ/s

26.

What is 30° in radians?

- a. $\frac{\pi}{12}$
- b. $\frac{\pi}{9}$
- c. $\frac{\pi}{6}$
- d. $\frac{\pi}{3}$

27.

What happens to arc length as rotation angle increases?

- a. Arc length increases linearly with rotation angle.
- b. Arc length increases inversely with rotation angle.
- c. Arc length increases inversely with rotation angle a revolution is completed, then restarts at zero.
- d. Arc length increases linearly with rotation angle until a revolution is completed, then restarts at zero.

6.2 Uniform Circular Motion 28.

Which of these quantities is constant in uniform circular motion?

- a. Speed
- b. Velocity

- c. Acceleration
- d. Displacement

29.

Which of these quantities impact centripetal force?

- a. Mass and speed only
- b. Mass and radius only
- c. Speed and radius only
- d. Mass, speed, and radius all impact centripetal force

30.

An increase in the magnitude of which of these quantities causes a reduction in centripetal force?

- a. Mass
- b. Radius of curvature
- c. Speed

31.

What happens to centripetal acceleration as the radius of curvature decreases and the speed is constant, and why?

- a. It increases, because the centripetal acceleration is inversely proportional to the radius of the curvature.
- b. It increases, because the centripetal acceleration is directly proportional to the radius of curvature.
- c. It decreases, because the centripetal acceleration is inversely proportional to the radius of the curvature.
- d. It decreases, because the centripetal acceleration is directly proportional to the radius of the curvature.

32.

Why do we experience more sideways acceleration while driving around sharper curves?

- a. Centripetal acceleration is inversely proportional to the radius of curvature, so it increases as the radius of curvature decreases.
- b. Centripetal acceleration is directly proportional to the radius of curvature, so it decreases as the radius of curvature decreases.
- c. Centripetal acceleration is directly proportional to the radius of curvature, so it decreases as the radius of curvature increases.
- d. Centripetal acceleration is directly proportional to the radius of curvature, so it increases as the radius of curvature increases.

6.3 Rotational Motion 33.

Which of these quantities is not described by the kinematics of rotational motion?

- a. Rotation angle
- b. Angular acceleration
- c. Centripetal force
- d. Angular velocity

34.

In the equation

$$\tau = rF\sin\theta$$

, what is F ?

- a. Linear force
- b. Centripetal force
- c. Angular force

35.

What happens when two torques act equally in opposite directions?

- a. Angular velocity is zero.
- b. Angular acceleration is zero.

36.

What is the mathematical relationship between angular and linear accelerations?

- a. $a = r\alpha$
- b. $a = \frac{\alpha}{r}$
- c. $a = r^2\alpha$
- d. $a = \frac{\alpha}{r^2}$