

Name _____

Per _____



I'm in favor of liberalized immigration because of the effect it would have on restaurants. I'd let just about everybody in except the English. -- Calvin Trillin

1. The batter in a baseball game hits a home run. Looking down from the stadium seats, as he circles the bases, is his angular velocity positive or negative? Explain.

2. The rotor on a helicopter turns at an angular speed of 320 revolutions per minute (rpm).
 - (a) Express this in radians per second.

 - (b) If the rotor has a diameter of 4.00 m, what arc length does the tip of the blade trace out in 300 s?

3. A child at an ice cream parlor spins on a stool. If the child turns counterclockwise through 10π rad during a 10 s interval, what is the average angular speed of the child's feet in rad/s?

4. While riding on a carousel that is rotating clockwise, a child travels through an arc length of 11.5 m. (a) If the carousel has a diameter of 8.00 m, through what angular displacement does the child travel?

(b) Convert this angular displacement to degrees.

5. The tires on a car have a diameter of 60.8 cm and are warranted for 100 000. km.

(a) Determine the angle (in radians) through which one of these tires will rotate during the warranty period.

(b) How many revolutions will the tire make during the warranty period?

6. A wheel has a radius of 4.1 m. How far (path length) does a point on the circumference travel if the wheel is rotated through angles of

(a) 30. degrees

(b) 30. rad

(c) 30. rev.

7. A rotating body has a constant angular speed of 33 rev/minute.

(a) What is its angular speed in rad/s?

(b) Through what angle, in radians, does it rotate in 1.5s?

8. Find the angular speed of Earth about the Sun in (a) radians per second

(b) degrees per day.

9. What is the angular speed of the tip of the minute hand on a clock, in rad/s?

10. An old-fashioned vinyl single rotates on a turntable at 45 rpm. (a) What is the angular speed in rad/s?

(b) What is the period of the motion?