

Chapter 8 Assignment 1

From Giancoli Chapter 8 Problems:

- The blades in a blender rotate at a rate of 6500 rpm. When the motor is turned off during operation, the blades slow to rest in 3.0 s. What is the angular acceleration as the blades slow down?
- A child rolls a ball on a level floor 3.5 m to another child. If the ball makes 15.0 revolutions, what is its diameter?
- A bicycle with tires 68 cm in diameter travels 8.0 km. How many revolutions do the wheels make?
- (a) A grinding wheel 0.35 m in diameter rotates at 2500 rpm. Calculate its angular velocity in rad/s. (b) What are the linear speed and acceleration of a point on the edge of the grinding wheel?
- A rotating merry-go-round makes one complete revolution in 4.0 s (Fig. 8?38). (a) What is the linear speed of a child seated 1.2 m from the center? (b) What is her radial (centripetal) acceleration? her tangential acceleration?
- Calculate the angular velocity of the Earth (a) in its orbit around the Sun, and (b) about its axis.
- What is the linear speed of a point (a) on Earth's equator due to Earth's rotation?

Further Problems:

- The crankshaft in a Formula 1 car goes from rest to 3000 rpm in 2.0 s.
 - What is the final angular velocity in rad/s?
 - What is the the crankshaft's angular acceleration?
 - How many revolutions does the crankshaft make during those 2.0 s?
- When a computer is turned on, its hard drive starts from rest and accelerates at 190 rad/s^2 until it reaches its final angular velocity of 7200 rpm. How many revolutions does it make from the start until it attains its final angular velocity?