Name: Date: Period:

Rotational Review Questions

1. If you are looking for each of the following, which symbol are you looking for and what conversions (if any) would you have to do?
   (a) Number of revolutions

   (b) Rate of rotation in rpm

   (c) Rate in rad/s^2.

   (d) Linear velocity of a point on the outside of a wheel.

   (e) Distance a wheel travels over a certain number of radians.

   (f) Moment of inertia

   (g) Angular momentum

   (h) Torque

2. What would happen if a figure skater doing a pirouette were to pull in her arms? Why?

3. Use physics from this unit to describe why a nut is easier to loosen with a wrench than with your fingers.

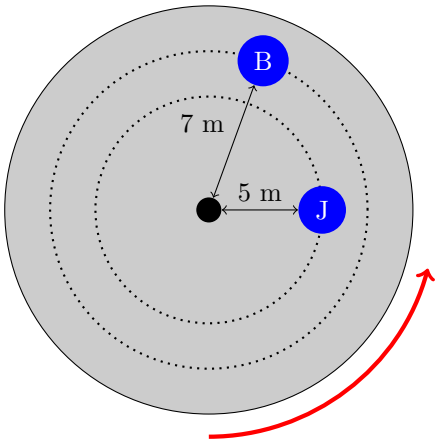
4. Why is the moment of inertia for a hoop larger than the moment of inertia for a disk?

5. Rank these object in terms of which would hit the bottom of a ramp first: a 5-cm diameter hoop, a 7-cm diameter hoop, a 5-cm diameter disk, a 7-cm diameter solid sphere.

6. Little Bobby and Janey are both riding a carousel. Janey is on a pony, which is 5 m from the center of rotation, and Bobby is on a water buffalo, which is 7 m from the center.

   (a) Which child, if either of them, will have the greater v? Explain.

   (b) Which child, if either of them, will have the greater ω? Explain.



7. You are holding a spinning bicycle wheel while standing on a stationary, frictionless turntable. The wheel is spinning counterclockwise with an angular momentum vector $\vec{L}_0$.

   (*Image Credit: Giancolli* Physics with Applictations, *7th e.*)

   (a) If you suddenly flip the wheel over, what will happen? Why?

   (b) What will the angular momentum of the turntable be in terms of $\vec{L}_0$?