Physics 111 session 15

1) If a record spins 45 degrees in 4 seconds, what is its angular velocity?

2) A beach ball with a radius of 60 cm rolls with an angular speed of 20 rad/sec. what is its tangential velocity and period of revolution? 12 ft/s, .314 sec

3) If you tie a 1-meter string around a pumpkin to swing it around, the linear velocity reaches 12 m/s in 5.3 seconds, what is the angular acceleration? 2.26 rad/s^2

4) A merry-go-round, initially spinning at 2 rad/sec comes to a stop in 11 seconds. What is the angular acceleration on it? -.18 rad/s^2

5) My bike tire has a radius of 0.3m. If I want to bike 1000m, how many times does the wheel need to spin to get me there? 530.5 times

6) I need to spin a disc 3400 radians. If it starts at rest, and I apply a constant angular acceleration of 5 rad/s^2, how long will it take? 36.9 sec

7) What is the moment of inertia of a 0.5 kg ball spinning on the end of a 2-meter string? 2 kg*m^2

8) 2 kids are sitting on a merry-go-round. The merry-go-round has mass 50 kg and radius 1.2 m. The first kid has mass 60 kg, and is sitting 1 m from the center, and the second kid weighs 55 kg, and is sitting 1.1 m from the center. What is the total moment of inertia?162.6 kg*m^2

9) If the merry-go-round from question 6 is spinning with an angular velocity of 2 rad/sec, what is its rotational kinetic energy? 325 J

10) A ball with radius 2 cm, and mass 0.1 kg is released from rest at the top of a 0.7-meter ramp. If the ball is going 3.13 m/s at the bottom of the ramp, how fast is it spinning? 156.6 rad/sec