Ch 9: Circular Motion

1. What does centripetal mean? What does centrifugal mean? Which one is "fake"? Which force is present in the "spin" cycle of a washing machine?

2. What is an axis?

3. Who would spin (tangential/linear speed) faster: someone on the edge or on the inside of a carousel?

4. Compare the following: angular speed, linear speed, rotational speed, tangential speed. (Some of these are the same thing! Know which is which!)

5. List 2 possible units for rotational speed.

6. Which direction does centripetal force ALWAYS go?

7. What is the so called outward force on a rotating object really? _i_____.

8. If you were to cut or release a circular object, what direction would it move off in?

9. Make sure you can calculate tangential speed, centripetal acceleration, and centripetal force. (see problems)

10. What is the difference between frequency and period?

Ch 10: Center of Gravity

1. What prevents something from toppling?

2. How can you find the center of gravity of an object?

3. Where would the center of gravity of a baseball bat be located?

4. When you throw an irregular object what shaped path does the center of gravity take?

5. When you throw an irregular object through the air *(Figure 10.4, pg 137.)* what point does the entire object rotate around?

6. List an object that would have its center of gravity not in the center.

7. How can you adjust your center of gravity? How does a monkey's long tail help him keep his balance?

   (Monkey hint on pg 141)

8. Why can't you touch your toes with your back and heels flat against a wall?

9. Where is your center of gravity located?

10. Objects tend to rotate around what point?

Problems:

1. What is the frequency of a carousel that takes 12 seconds for one rotation?

2. What is the period of an object with a frequency of .5 Hz.

3. Find the tangential speed of an object that is spinning around a circle once every 3 seconds at a distance of .5 meters from the center?

4. Find the radius of a carousel that has a speed of 10 m/s and a period of 5 seconds.

5. Find the centripetal acceleration of an object with a speed of 6 m/s and a radius of 2m.

6. Find the centripetal force of an object with a mass of 5 kg, a radius of 2 meters and a speed of 6 m/s?

7. A wrench is pulled with a force of 9 N. The length of the effort arm is 0.12m, what is the torque produced?

8. What force is needed 0.4 m away from the pivot point of a lever to balance a torque produced by a 20 N force 0.2 m away? *(draw a picture, it may help)*

| 7.96 m | 2 s | 27 kg·m·m/s | 10 N | 1.04 m/s | 18 m/s^2 | 1.08 N·m | 90 N | 0.083 Hz |