Name_____ Date_____ Period_____

Unit 5

Circular Motion Practice Test

Form P

1. Troy and Abed are working on an experiment in their Physics class that has them twirling a rubber stopper on the end of some fishing line. The rubber stopper has a mass of 15.0 g and is a distance of 0.750 m from the piece of glass tubing in Abed's hand. There is a 200. g mass acting as a weight on the other end of the fishing line.
    a. What is the centripetal acceleration of the stopper?

    b. What is the speed of the stopper in meters per second?

    c. What is the speed of the stopper in radians per second?

    d. What is the period of revolution of the stopper?

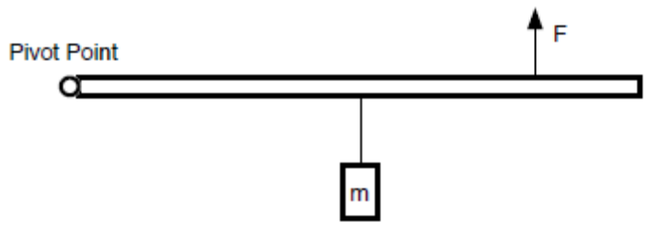
2. Consider a uniform beam 5.00 m long with a weight of 400 N lying on level ground.
    a. How much force would be required to lift one end of this beam off the ground?

    b. How much force would be required if Betty sits down 1.5 m from the end being lifted. Oh, by the way, Betty weighs 720 N.

3. A rod 3.00 m long and weighing 60 N is supported 0.80 m from one end. Where should a weight of 20 N be hung to make the rod balance?

4. What is the angular velocity of the second hand of a clock?

5. Vincent and Jules are performing the laboratory experiment pictured above in which a mass of 1.00-kg is suspended from the center of a 0.200-kg 1.00-m long rod which is fixed at one end (the Pivot Point).



   a. How much torque is produced by the suspended mass?

   b. How much upward force must be supplied by Jules when he holds the rod 80 cm from the pivot point? (F in the diagram above.)

6. You visit an empty playground and notice an empty merry-go-round and you decide to push it on the edge with a force of 250. N. If the merry-go-round has a mass of 50.0 kg and a radius of 1.50 m...
   a. What is the torque applied to the merry-go-round?

   b. What is the merry-go-rounds angular acceleration?

   c. If you pushed it for 2.00 seconds, what is the merry-go-round's final angular velocity?

   d. You decide to jump on the edge of the merry-go-round. If you have a mass of 75.0 kg, what is the merry-go-round's new angular acceleration?