FLINN SCIENTIFIC

Name_____

AP Physics 1 Review Questions

Integrating Content, Inquiry and Reasoning

1. A rider on a bicycle with a total mass of 80 kg rounds a curve with a radius of 20 meters at a speed of 10 km/hr.

   a. What is the centripetal acceleration of the cyclist? *Hint:* Convert km/hr to m/s.

   b. What is the amount of centripetal force acting on the bicycle?

   c. What is the source of the centripetal force on the bicycle?

2. A 0.6-kg ball is attached to a cord and spun in a horizontal circle with a radius of 1.2 m. The maximum tension the cord can withstand is 60 N.

   a. What is the maximum speed the ball can attain before the cord breaks?

   b. If you wanted to maintain the speed of the ball from part *a*, would it be better to increase or decrease the radius to ensure the cord would not break?

3. The Earth's orbit around the Sun is nearly circular with an average radius of 1.5×10^{11} m. Assume the Earth is in uniform circular motion as it travels around the Sun.

   a. What is the source of the centripetal force acting on the Earth?

   b. What is the centripetal acceleration of the Earth?