**Physics 20 - Lesson 19**

**Uniform Circular Motion**

**Practice problems:**

1. A 5.00 kg object is attached to a rope. What is the tension in the rope if the object is travelling at 6.0 m/s in a circle with a radius of 4.50 m? (40 N)



2. If a centripetal force of 80.0 N causes a 6.00 kg object to travel in a circle once every 0.75 s, what is the radius of the circle? What is the speed of the object? (0.19 m, 1.6 m/s)



3. A force of 45.0 N causes an object to travel in a circle with a diameter of 7.50 m with a frequency of 0.60 Hz. What is the mass of the object? (0.84 kg)



4. An object rotates around a circle of radius 4.75 m. If the object completes 15 cycles in 35 s, what is the centripetal acceleration? (34.4 m/s2)



**Assignment:**

/ 65

1)



/4

2)



/4

3)



/5

4)



/4

5)



/5

6)



/5

The force of gravity supplies the centripetal force

7)



/4

8)



/4

9)



a)

/10



b)



c) Don’t you just love projectile questions?

Horizontal

Vertical



10)



•



/8

b)

a)



11)

At 7.00 m

The period of rotation for both boys is the same



/6



At 3.00 m

an alternative solution is to set up a ratio



12)



b)

a)



/6



c) A person’s feet will always be directed away from the center of rotation while her head will always be toward the center of rotation.