**Honors Physics Chapter 7 Part 2 Study Sheet** **Name** _____ **#:**____

***Draw a picture, list your given information and unknowns for each problems***

1) A test car moves at a constant speed of _____ **m/s** around a circular track. If the distance from the car to the center of the track is _____ **m**, **what is the centripetal acceleration** of the car?

**Drawing** **Given Info** **Formula** **Set-Up with Units**

**Answer** _____

2) **Find the tangential acceleration** of a person standing _____ **m** from the center of a spinning amusement-park ride that has an angular acceleration of _____ **rad/s²**.

**Drawing** **Given Info** **Formula** **Set-Up with Units**

**Answer** _____

3) An _____**-kg** bicyclist is riding at a linear speed of _____ **m/s** around a circular track with a radius of _____ **m**. **Find the magnitude of the force** that maintains the bike's circular motion.

**Drawing** **Given Info** **Formula** **Set-Up with Units**

**Answer** _____

4) A _____**-kg** person stands _____ **m** from a _____**-kg** person sitting on a bench nearby. **What is the magnitude of the gravitational force** between them?

**Drawing** **Given Info** **Formula** **Set-Up with Units**

**Answer** _____

5) A coin with a diameter of _____ **cm** is dropped onto a horizontal surface. The coin starts out with an initial angular speed of _____ **rad/s** and rolls in a straight line without slipping. If the rotation slows with an angular acceleration of magnitude _____ **rad/s²**, **how far does the coin roll before coming to rest**?

**Drawing** **Given Info** **Formula** **Set-Up with Units**

**Answer** _____

6) A mass attached to a _____ **cm** string starts from rest and is rotated in a circular path exactly _____ **revolutions** in _____ **min** before reaching a final angular speed. **What is the angular speed** of the mass after _____ **min**?

**Drawing** **Given Info** **Formula** **Set-Up with Units**

**Answer** _____

7) An ostrich lays the largest bird egg. A typical **diameter** for an ostrich egg at its widest part is _____ **cm**. Suppose an egg of this size **rolls down a slope** so that the **tangential speed of its widest part is** _____ **m/s**. **What is the magnitude of the centripetal acceleration** acting at those points?

**Drawing** **Given Info** **Formula** **Set-Up with Units**

**Answer** _____

8) Mata Jagdamba of India had the longest hair—in 1994, it was measured to be _____ **m long**. Suppose Jagdamba conducts experiments with her hair. First, she determines that one hair can support a mass of _____ **g**. She then attaches a **smaller mass** to the same hair and **swings it in the horizontal plane**. If the hair breaks when the **tangential speed** of the mass reaches _____ **m/s**, **how large is the mass**?

**Drawing** **Given Info** **Formula** **Set-Up with Units**

**Answer** _____

9) Deimos, a satellite of Mars, has an **average radius of** _____ **km** and a **mass of** _____ **kg**. **Calculate the gravitational force** applied to a rock with a mass of ___ **kg** that lies on the surface of Deimos.

**Drawing** **Given Info** **Formula** **Set-Up with Units**

**Answer** _____