Centripetal Force Lab

1. Run around in a circle with only your socks on, as fast as you can without slipping.
2. Record the diameter of the circle you ran around and how long it took for you to run around a complete circle.
3. Now, do the same thing with your shoes on (or barefoot if you can't run in your shoes).
4. Record the diameter of the circle and how long it took for you to run around.

Trial	**Diameter (m)**	**Radius (m)**	**Time (s)**
Socks			
Shoes/Barefoot			

5. Draw a free body diagram of you as you run. Draw an aerial view and a side view.

6. Calculate the force of static friction between your feet and the floor for each situation.

7. Calculate the coefficient of static friction for each situation (1 kg = 2.2 lbs).

8. What is the highest speed an automobile can have in travelling around a curve of radius 80 m on a level road if the coefficient of static friction between the tires and the road is 0.49?

9. The fastest that a car can travel around a turn with a 30 m radius is 20 m/s. What is the coefficient of static friction between the tires and the road?