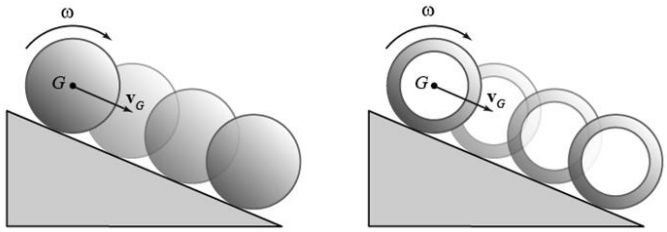
AP Physics 1 Name: _____

Unit 5&6 Quiz Date: _____

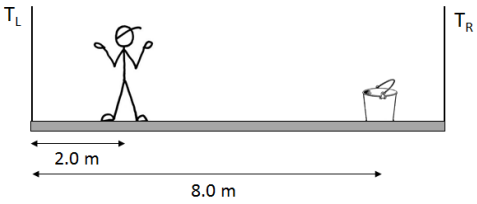
Directions: **Show the steps** required to arrive at the answer (if applicable).

1. Here comes dat boi. The unicycle shown has a radius of 0.3 m and to a stop at a rate of 6.0 rad/s^2. The wheel makes 40 complete revolutions while accelerating.
   a) What was the initial linear velocity of the wheel?
   b) How long does it take the wheel to come to a stop?
   c) If the wheel has a moment of inertia of 4.0 kgm^2, find the magnitude of the torque required to cause the acceleration of the wheel.

2. A hollow cylinder and solid cylinder of equal masses and radii are both rolled down identical inclines at the same time. Which cylinder will reach the bottom of the cylinder last? Justify your answer.



3. A winder washer is washing windows while standing on a suspended platform held up by two chains on the left and right sides of the platform, as shown. The winder washer has a mass of 70 kg and stands 2.0 m from the left end of the platform. A 2.0 kg bucket is place 8.0 m from the left end of the platform. The platform itself is uniform and weighs 5000 N and has a total length of 12 m.



   a) Find the tensions in the left and right chains (T_L and T_R).
   b) Calculate the location of the center of mass of the dude/bucket/platform, system.