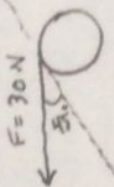


1. A string is attached to a nearly frictionless wheel, and a 30 N force is applied at an angle of 45° to the tangent. The diameter of the wheel is 2 meters. What torque is exerted on the wheel by the string?



2. A soccerball with mass $.6\text{ kg}$ and radius of $.09\text{ m}$ is rolling across a level floor at a constant speed of 12 m/s .

a.) Determine the ball's angular velocity

b.) What is the ball's angular acceleration?

c.) How many turns will the ball make in 3 seconds?

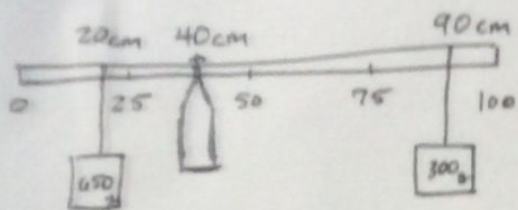
3. A wheel of with a radius of 1.5 meters and mass of 5 kg is turning at 120 rpm when the brakes are applied.

The wheel turns 20 more times before the wheel stops.

a.) What is the wheels angular acceleration?

b.) How far has the wheel traveled across the surface.
(no skidding)

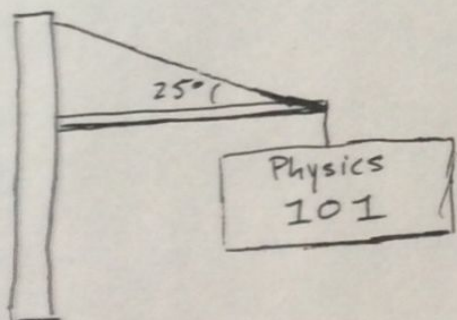
4.



The uniform meterstick above has an object of mass 650 grams hanging at the 20 cm mark and an object of 300 grams at the 90 cm.

What is the mass of the meterstick? Show your work!

5.)



SHOW YOUR WORK!

A uniform wooden beam with a mass of 75 kg extends horizontally from a wall.

A support cable (of negligible mass) extends from the far end of the beam to the wall, forming a 25° angle with the beam. The beam has a 10 kg sign hanging from the end.

a.) Find the tension in the cable that helps support the beam/sign.

b.) Find the horizontal and vertical components of the force the wall exerts on the wooden beam.