**Physics 12: Torque and Rotational Equilibrium**

Brought to you by the number Φ and the letters τ and Σ

1. What is the torque provided by a 120N force acting on a lever at an angle of 65o, 85cm from the pivot?

2. Find the normal force from each support. The beam is uniform, 2.8m long and 12kg.

26kg

 1.5m

 1.0m 1.0m

3. If the tension in the cable is 1200N find the mass of the sign. The beam is 1.2m long, 16kg and uniform. The sign is hung from the end of the beam and the cable is attached two thirds of the way from the wall to the end of the beam.

Find My Mass

 cable

 62o

b. Find the force applied to the beam at its base.

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4. A 3.6 m long, 5.0 kg ladder is leaned against a **frictionless** wall, making an angle of 25.0o *between the* *ladder and the* ***wall*.** A 68.0kg person is standing, rather nonchalantly, 2.4 m up the ladder.



 2.4m

Find the minimum coefficient of static friction between the ladder

and the ground for the ladder to not slip?

5. For each of the following each force may have any magnitude but zero. State for each whether or not it may be in translational equilibrium, and whether or not it may be in rotational equilibrium. Assume these objects are floating freely in empty space.

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