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AP Physics Unit 9 - Worksheet 1: Rotational Motion

 Two disgruntled businesspeople are trying to use a revolving door. The woman on the left exerts a force of 625 N perpendicular to the door and 1.20 m from the hub's center, while the man on the right exerts a force of 850 N perpendicular to the door and 0.800 m from the hub's center. Who wins?

2. A woman of mass 55.0 kg sits on the left end of a seesaw – a plank of length of 4.00 m, pivoted in the middle.
a) Where should a man of mass 75.0 kg sit if the system is to be balanced?
b) Find the normal force exerted by the pivot if the plank has a mass of 12.0 kg.

3. A uniform ladder 10.0 m long and weighing 50.0 N rests against a frictionless vertical wall. If the ladder is just on the verge of slipping when it makes a 50.0 degree angle with the ground, find the coefficient of static friction between the ladder and the ground.

4. A uniform horizontal beam 5.00 m long and weighing 300 N is attached to a wall by a pin connection that allows the beam to rotate. Its far end is supported by a cable that makes an angle of 53.0 degrees with the horizontal. If a person weighing 600 N stands 1.50 m from the wall, find the magnitude if the tension in the cable and the components of the force exerted by the wall on the beam.