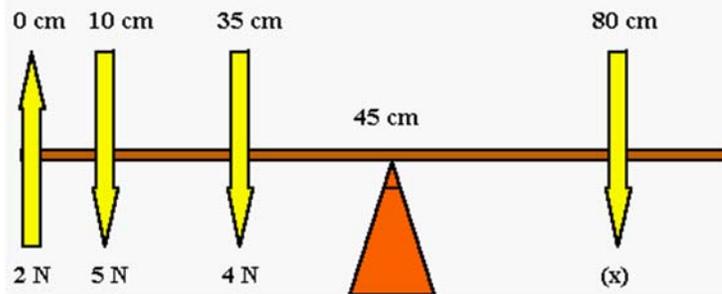
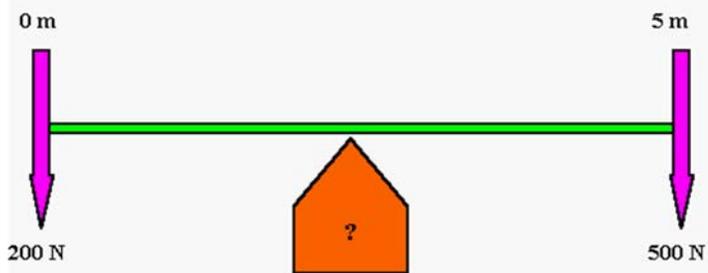


mass meter stick = 0.5 N

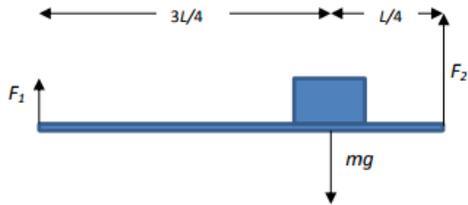


mass 5 meter beam = 100 N



What is the minimum force required to open a door when the torque is $3.1 \text{ N}\cdot\text{m}$ and the force is applied at 0.94 m from the hinges at an angle of 90.0° to the face of the door?

Mass m is supported on a light plank by two forces F_1 and F_2 as shown above. In terms of the given variables m and g , find expressions for F_1 and F_2 that keep the plank in static equilibrium.



A cat walks along a uniform plank that is 4.00 m long and has a mass of 7.00 kg . The plank is supported by two sawhorses, one 0.440 m from the left end of the plank and the other 1.50 m from the right end. When the cat reaches the right end, the plank just begins to tip. What is the mass of the cat? Hint: when the plank just begins to tip, what is the force from the left sawhorse?

The drain plug on a car's engine has been tightened to a torque of $25 \text{ m}\cdot\text{N}$. If a 0.15-m -long wrench is used to change the oil, what is the minimum force needed to loosen the plug?

A bowling ball (mass 7.00 kg and radius 17.0 cm) is released so fast that it skids without rotating down the alley (at least for a while). Assume the ball skids to your right and the coefficient of sliding friction between the ball and the lane surface is 0.400 . (a) What is the direction of the torque exerted by the friction on the ball about the center of mass of the ball? (b) Determine the magnitude of this torque (again about the ball's center of mass).

While standing on a long board resting on a scaffold, a 70-kg painter paints the side of a house, as shown in figure below. If the mass of the board is 15 kg , how close to the end can the painter stand without tipping the board over?

