

TORQUES II

1. A safe is pushed by two forces: 500 N up on the left end and 500 N down on the right end. Find the net torque exerted on the safe if its width is 1 m.
2. Find the torque produced by a 300. N force applied at an angle of 60° to one end of a 2.0 m wide door.
3. A 50.0 N weight is held in the hand with the forearm in the horizontal position. The biceps muscle is attached 0.05 m from the joint, and the weight is 0.35 m from the joint. Find the upward force that the biceps exerts on the forearm (the ulna) and the downward force on the upper arm (humerus) acting at the joint. Neglect the weight of the forearm.
4. A window washer is standing on a scaffold supported by vertical ropes at each end. The scaffold weighs 200. N and is 3.00 m long. What is the tension in each rope when the 700. N worker stands 1.00 m from one end?
5. A racing car has a mass of 1600.0 kg. The distance between the front and rear axles is 3.00 m. If the center of gravity of the car is 2.00 m from the rear axle, what is the normal force on each tire?
6. A 2.0 m fishing pole is held flat. What is the torque exerted by a 100. N fish hooked at the end of the pole and pulling downward at an angle of 37° at the end.