

Simple Machines

Name: _____

1. What force must be applied to the end of a 2.0 meter long crowbar in order to lift a 500 newton rock if the fulcrum of the bar is .5 meters from the rock?
2. With what force must Megan raise a wheelbarrow handle in order to carry away a bush whose weight is 410 newtons. The bush is 40 cm from the wheel of the wheelbarrow, and the total length of the wheelbarrow is 100 cm.
3. How much force is needed to lift a 10.0 kg mass from a horizontal position using the human arm if the forearm is 25 cm long and the lifting muscle is 2.0 cm from the elbow?
4. A nutcracker 12.5 cm long is used to open a nut placed .85 cm from the hinged edge. A force of 82.5 newtons is required to break the nut. What force must be applied to the handle of the nutcracker?
5. Suppose the efficiency of a 1.65 m long crowbar is 60%. What force will be needed to remove a tree stump that resists with a force of 15,500 newtons if the fulcrum of the crowbar is 8.0 cm from the tree stump?

