MORE Practice Problems
Work, Power, Mechanical Advantage and Efficiency

1. A man expends 100J of work to move a box up an inclined plan. The amount of work produced is 80J. What is the efficiency of the machine?

2. A box weighing 100 N is pushed an inclined plane that is 5 meters long, it takes a force of 75 N to push it to the top, which has a height of 3 N. What is the efficiency of the machine?

3. If you wanted to use a crank and windlass to lift an object, what would the mechanical advantage be if the crank handle is 20 cm from the pivot, and the windlass (the part the rope winds onto) has a radius of 2 cm?

4. A tow truck pulls a car out of a ditch in 10 seconds. If 7000 watts of power are used, how much work does the truck perform?

5. You want to lift a box that weighs 60 N. If the mechanical advantage of your lever is 3.5, how much force will you need to apply to do the job?

6. Using a lever, a person applies 60N of force and moves the lever 1 meter. This moves a 200 N rock at the other end by 0.2 meters. What is the efficiency of the lever?

7. There is a cart filled with books that weighs 120 N. It is moved to the top of a ramp that is 2.8 meters high. If the force needed to move the cart up the 15 meter long ramp is 60 N, what is the efficiency of the ramp?

8. A lever is used to lift a load of bricks 1.75 meters. The bricks are placed .4 meters from the pivot, and the force is applied 1.75 m from the pivot. What is the mechanical advantage of this lever?

9. A roller coaster lifts 22 passengers 75 meters in 30 seconds. The power is 15,000 watts. What is the total weight of the roller coaster cars and passengers?

10. A pulley system operates with 40% efficiency. If the work put in is 200 J, how much useful work is produced?