SIMPLE MACHINES REVIEW

$PE_g = mgh$ $W = F \times d$ $MA = F_L/F_e = d_e/d_L$ $g = 10\ m/s/s$

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1. Write the definition of a Simple Machine below:

2. Give an example of the following type of simple machine:

   A. First Class Lever

   B. Second Class Lever

   C. Third Class Lever

   D. Wedge

   E. Pulley

   F. Wheel and Axle

   G. Screw

   H. Inclined Plane

3. A burley construction worker lifts a 705 N box of nails 1.5 m up to a loading platform. He goes on a coffee break and a squirrelly little construction worker takes over. He's not strong enough to lift 705 N so he gets a frictionless ramp and pushes one of the 705 N boxes of nails up to the 1.5 m high loading platform with an average force of 100 N.

   a) Who did more work? WHY?

   b) How long is the ramp the little guy used?

4. A mechanic needs to lift a 3000 N engine out of a car. She rigs up a block and tackle (pulley) so that for every 5 m of chain she pulls, the engine rises 25 cm. With how much force does she have to pull the chain?

   A. 15,000 N B. 150 N
   C. 0.04 N D. 3750 N

5. A 30,000 N elephant sits 1 m from the fulcrum on a seesaw. How far from the fulcrum would a 800 N man have to sit to balance the elephant?

A. 37.5 m
B. 24 million meters
C. 0.03 m
D. about a hundred meters

6. A 500 kg rock is to be lifted out of the ground using a 10 m long first class lever. If the fulcrum is placed at the 1.5 m mark,

A. What force must you apply to lift the rock?
B. What is the mechanical advantage of the lever?

7. A worker lifts a 500 N box 2 m up to a loading dock. In order to push the box up to the loading dock with only 100 m of force, how long would the ramp have to be? (The ramp is frictionless)

A. 2.5 m
B. 10 m
C. 2 m
D. 4 m

8. What force must be applied at point **A** in the sketch below to keep the load stable?