6.3 Review Questions

Remember, the Kg is a unit of MASS. MASS is not WEIGHT!

1. Excluding the seesaw, name three examples of a first class lever. Draw them as best you can labeling the fulcrum, load force and effort force.

2. Excluding the wheel barrow, name three examples of a second class lever. Draw them as best you can labeling the fulcrum, load force and effort force.

3. Excluding the baseball bat, name three examples of a third class lever. Draw them as best you can labeling the fulcrum, load force and effort force.

4. A 200 N object is being lifted using a first class lever. The object is 0.25 m from the fulcrum and the effort is applied 1.50 m from the fulcrum.
    a. How long is the lever?
    b. What is the mechanical advantage of the lever?
    c. What is the effort force needed to lift the object?

5. A 1.75 m long wheel barrow is used to move 100 Kg of rocks. The rocks sit 0.50 m from the wheel (fulcrum).
    a. What is the mechanical advantage of the wheel barrow?
    b. What force must a person apply to lift the rocks in the barrow?

6. How is a third class lever different than a first or second class lever?

7. 2500 N of rocks is being lifted using a wheelbarrow. The distance between the rocks and the wheel is 0.55 m. The force needed to lift the handles of the wheelbarrow is 743 N. How long is the wheelbarrow?

8. A wheelbarrow is 1.75 m long. 1000 N of rocks are in it, 0.25 m from the wheel. What is the force needed to move the rocks across a yard?

9. A 1.65 m long broom is being used to sweep away some dirt. The brush is moving the dirt with 4.30 N of force. The person's hand is 0.55 m from the top of the broom (which is the fulcrum).
    a. What force does a person have to apply to sweep the dirt?
    b. What is the broom's mechanical advantage?

10. A 150 kg rock is to be lifted out of the ground using a 1.80 m long, first class lever. If the fulcrum is 0.40 m from the rock, with what force must you apply to lift the rock?
11. A class 2 lever is needed to lift a 55 Kg board. If the board is 0.35 meters from the fulcrum and the crowbar is 0.75 meters long what force is needed to lift the board and what is the mechanical adv. of the crowbar?

12. A 300 Kg rock must be lifted out of the ground. If you use a first class lever that is 9m long and the rock is 2m from the fulcrum, how much force must you apply?

13. A 1.75m long broom is being used to sweep away a broken dish. The dish weighs 3.0 N. The person's hand is 0.50 m from the top of the broom (which is the fulcrum in this case.).
    a. What force does he have to apply to sweep the dish?
    b. What is the broom's mechanical advantage?

14. A 650 Kg rock is to be lifted out of the ground using a 1st class lever that is 4.50 m long. If a force of 500 N is applied, how far from the rock must the fulcrum be placed?

15. A 200 Kg safe is to be lifted out of the ground using a 15 meter lever, and the safe is 6 meters from the fulcrum.
    a. How much force must you apply to lift the safe?
    b. What is the mech. adv. of the lever?
    c. What class lever is being used?