Calculating Work, Force, and Distance

Date _____

Last Name _____, First _____ per ___

Work equals force times distance. *Calculate the amount of work done or the force required in each of the following cases. Show your work in the in the "show your work box" and provide the answer in the space. The unit for work is the joule (J).*

1. A basketball player pushes on the ball with a force of 380 N for a distance of 0.5 m, how much work is done?

	Answer = _____J

2. A jet flies a distance of 300m with a force of 3000 N, how much work is done?

	Answer = _____

3. A basket of apples weighs 12 N. If the basket is lifted by a grocer a distance of 0.8 m, how much work does the grocer do?

	Answer = _____

*When using a machine you get a mechanical advantage. That means less force is required to move an object with the machine. But, work isn't free, you'll have to apply the force over a longer distance. Remember when using a lever****, the work you put into it equals the work you get out of it.***

Work In = Work Out

input force X input distance = output force X output distance.

4. A friend who weighs 400N is sitting on the end of a see saw. You push down a distance of 0.5m on the opposite end, which moves your friend up a distance of 0.1m. How much work did you do?

Answer = _____

5. How much force did you have to apply to the lever arm in the above example in order to lift your 400N friend?

Answer = _____

6. Now lift your 400N friend straight up a distance of 0.1m without the help of a lever. How much work did you do?

Answer = _____

7. How much force was required to lift your 400N friend off the ground?

Answer = _____

8. A battery operated toy tow truck can pull its toy load with a force of 40N. Factory tests have found that the truck can accomplish 16,000 J of work before the batteries run out. How far can the truck pull its load?

Answer = _____