Simple Machines Worksheet (AP)
Name $\qquad$
Write down givens, show work, and circle final answer.

1. How much work is done when a man applies a 40 N force over a distance of 38 meters?
2. How much force is required to do 800 J of work when pushing a box 108 meters?
3. A man exerts 6800 J of work to move a box 33 meters. How much force was he applying?
4. How much power is exerted by a person exerts 66 J of work in 88 seconds?
5. A woman exerts 90000 W of power while doing 333 J of work. How long is she working?
6. Challenge. A boy exerts 7890 N of force to move a box 50 meters in 30 seconds. How much power does he exert?

## Worksheet (cont.)

Name $\qquad$

1. How much work does it take to push a car with 145 N over a distance of 500 m ?
2. How much work does it take to climb a 0.233 km rope? (It takes 1000 N of force to get to the top)
3. How much force are you applying to a box if you push it 2300 cm and it takes 8520 J or work?
4. How far do you push a box if it takes 5000 N of force and 10983 J of work?
5. Solve for the unknown.

Work $=456456.456 \mathrm{~J}$
Distance $=45.225 \mathrm{~km}$
Force = ???

Name $\qquad$

1. How much power does it take to move a box if you apply 3000 J of work over 1 minute?
2. How much power does it take to move a stone if you apply 450 J of work over 0.2 minutes?
3. How long does it take you to move a car if you apply 34567 W of power and 456 J of work? (I want the answer in hours)
4. You apply a 4500 N force over 3000 cm in 30 seconds. How much power did you produce?

## Worksheet 2

Name $\qquad$
Show work, write givens, circle final answer.

1. Draw and label a $1^{\text {st }}, 2^{\text {nd }}$, and $3^{\text {rd }}$ class lever.
2. What is the MA equation for a lever?
3. What is the MA equation for a pulley?
4. What is the MA equation for a wheel and axel?
5. What is the MA for a lever with a input are of 40 cm and an output arm of 30 cm ?
6. What is the length of the input arm of a lever if the lever has a MA of 6.5 and an output arm of 9 meters?
7. What is the MA of a single pulley hanging from the ceiling?
8. You need to pull down with 40 N of force to lift a 120 N box off the ground using a pulley. Are you using a block and tackle system? If so, how do you know and how many pulleys are there in the block and tackle?
9. You are pushing your friend on the Merry-go-round. If the merry-go-round is attached to a center axle with a radius of 11 cm and you are 3.6 meters away from the center of the merry-goround. What is the MA of the merry-go-round?
10. A bicycle tire has a diameter of 86 cm and a mechanical advantage of 19 . What is the radius of the axle?
11. You incorrectly build a teeter-totter. One side if 5 meters away from the axle and the other side is 4.5 meters away from the axle. What is the MA of the teeter-totter? Does it matter which side you push down on? If it does, show how you know (back it up with math).
12. What is an example of a $1^{\text {st }}, 2^{\text {nd }}$, and $3^{\text {rd }}$ class lever? (Make sure to label each one)
