**Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Period\_\_\_\_\_\_Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Chapter 12 Review**

**Math Questions:**

KE=1/2mv2 PE=mgh (g=9.8m/s2)

1. You have a force 4200 N that lifts an object 18 m. How much work is done on the object?
2. How far does an object move it a machine does 2400 J of work with a force of 60 N?
3. What is the power of a process that uses 4800 J of work to lift an object 12 m?
4. What is the kinetic energy of an object has a mass of 27 kg and moves at a velocity of 7 m/s?
5. What is the potential energy of a 54 kg object at the top of 34 m hill?
6. A worker applies an effort force of 64 N to open a door with a resistance force of 368 N. What is the object’s Mechanical Advantage or MA?
7. Find the effort force needed to lift a 4200 N rock using a jack with a MA of 6.
8. Suppose you use a ramp, which is 15 meters long to lift a piano 3 meters up some steps. What is the mechanical advantage of using the ramp?
9. A moveable pulley system uses 2 ropes to lift a 200 N piece of steel. What is the mechanical advantage of the pulley system?
10. Using a block and tackle pulley system with 5 strands and an input force of 20 pounds, what is the maximum weight that can be lifted?
11. What does the radius of the axle of a wheel need to be if it has a mechanical advantage of 3.9 and the wheel has a radius of 18 inches
12. You are out to eat with your family, and you use a knife to cut your food. If the knife is 1.5 inch wide and the sloped- side is 7 inches long, what is the mechanical advantage of the knife?
13. Which lever system shown below offers the greatest mechanical advantage (show math)

100

0

60

Input force – 50 N

75N

Output force

100

0

Input force – 50 N

30

75N

Output force

**Review/Concept Questions**

**CATEGORY A QUESTIONS**

2. What do you call the transfer of energy through motion?

4. What is power?

6. What is the kind of energy in the form of motion that depends on mass and velocity?

8. What is the effort force?

10. What is the resistant force?

12. Why do we use machines?

14. What is a lever?

16. What is a pulley?

18. What is a wheel and axle?

20. What is an inclined plane?

22. What is a wedge?

24. What is a zipper?

26. What is a screw?

28. What is a compound machine?

30. True or False: you can never get more work out of something than you put in to something.

**CATEGORY B QUESTIONS**

1. The kind of energy that comes from the motion of objects is:

3. What does potential energy depend on?

5. What does chemical energy depend on?

7. If you have an IMA (ideal mechanical advantage) of 1 what does this mean?

9. If you have an IMA of <1 what does this mean?

11. If you have an IMA of >1 what does this mean?

13. What can change in a:

1st class lever-

2nd class lever-

3rd class lever-

15. The IMA of a pulley always equals the number of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

17. What is the IMA of a:

Fixed pulley:

Movable pulley:

Block and tackle pulley:

19. Does the ability to do work increase or decrease as it is converted from one form to another?

21. Does kinetic energy depend more on mass or velocity?

23. Where will a boulder have MORE potential energy: at the top of cliff or at the bottom of a cliff?

25. True or False: In an ideal machine, the work you put in ALWAYS equals the work you get out?

27. Give an example of each of the following:

Lever-

Pulley-

Wheel and axle-

Inclined plane-

Wedge-

Screw-

Zipper-

29. Give an example of a compound machine and tell how it is a compound machine.