Name: _____

Period: _____
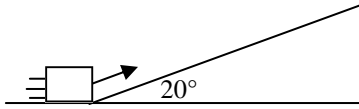
Work and Energy In Class Review

1. Work	A. Rate of doing work; how fast you transfer energy.	6. Law of Conservation of Energy	A. How fast something is done.
2. Power	B. Energy of position or height.	7. Rate	B. An object that moves forever without added energy.
3. Kinetic Energy	C. Applied energy; can create energy.	8. Work-Kinetic Energy Theorem	C. A change in kinetic energy comes from work.
4. Potential Energy	D. Energy of something that can be compressed.	9. Energy	D. Energy can be transformed, but not created nor destroyed.
5. Potential Elastic Energy	E. Energy due to motion and inertia.	10. Perpetual motion	E. Stored work; ability to create forces or cause motion.

11. Chemical	A. Energy stored in the atom.	18. A person pulls down with 50 N to lift an object up 1 m.
12. Nuclear	B. Energy stored in molecular bonds.	
13. Mechanical	C. Caused by friction. Heat.	
14. Thermal	D. Due to moving electrons.	
15. Electrical	E. From light.	
16. Radiant	F. Any kinetic or potential energy.	

18. A person pulls down with 50 N to lift an object up 1 m.

   A) What is the MA of the pulley system?

   B) How much rope will you pull out?

   C) What is W_{in}?

   D) What is W_{out}?

   E) Calculate efficiency.

   F) If the pulley was 100% efficient, how much force would you have needed?

50 N   120 N   1 m

17. Which of the following shows positions from highest to lowest kinetic energy?

   i. E, G, F
   ii. E, F, A
   iii. A, F, D

19. A more powerful motor does more work. True or false?

20. In the same amount of time a more powerful motor:

21. How much energy does a 60 W light bulb use in 2 minutes? (*Be sure to use seconds.*)

22. A 70 kg person climbs up 2 meters in 2.8 seconds.
   A) How much E_p did they gain?

   B) How much power did they use?

23. A. Which of the 3 forces does no work on the object?

   B. Find the *total work* done on the 6 kg mass.

   C. If there is no friction, how much energy does it gain?

6 N   8 N   60°   2 m   5 N   6 kg   6 kg

24. You hold onto a book for an hour.
   A. Does your body get tired?
   B. Does your body use energy?
   C. Do you do any work on the object?
   D. Why?

25. How do all simple machines multiply force?

26. With a simple machine (like the ramp below), do you do more or less work if there is no friction?

27. With a simple machine, do you do more or less work if there is friction?

28. With a simple machine, do you use less or more force?

29. With a simple machine, do you use less or more time?

30. With a simple machine, do you use less or more power?


F = 10N   2 m   10 m   50 N

31. Can a simple machine ever have an efficiency greater than 100%? Why or why not?

32. A frictionless ramp is inclined at 20°. An object going 6 m/s slides up.
    A) Find the final height of the object.

    B) *How far up the ramp does it roll?*

33. A person pushes down on a lever 3.2 meters to lift a 850 N object 0.25 meters up. The person pushes down on the lever with 70 N of force. Find the efficiency of the lever.

70 N

850N
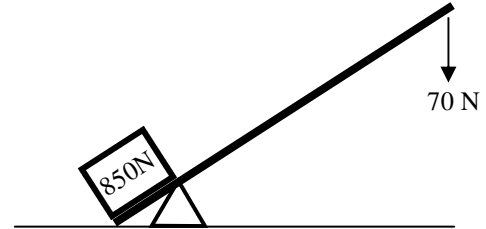
34. A 1.2 kg rock is dropped from 20 meters. The rock is going only 15 m/s just before it hits the ground because of air friction.
    A) How far does friction act on the rock?
    B) How far does the rock drop?
    C) Does all of the Ep turn into Ek?
    D) Does friction add or subtract energy?
    E) Find the force of air friction on the rock.

35. A 6 kg object going 2 m/s speeds up to 7 m/s due to a 4 N force.
    A) How many meters does the force act?   B) What is the acceleration of the object?

36. A 4 kg mass going 6 m/s stops by compressing a spring 1.3 meters. Find the spring constant of the spring. (VEO) (*VEO—variables and equation only. Give equations, put in numbers, and do not solve.*)

37. A 5 kg object is dropped from 30 meters up. How fast is it going 10 meters above the ground? (VEO)

38. A 3 kg object is originally at rest is pushed on by the force shown on the graph at the right.

    A) Find the work done on the object in the first 10 m.

    B) Find the final velocity of the object.

Force vs. Distance

Force (N)

16
14
12
10
8
6
4
2
0

0 1 2 3 4 5 6 7 8 9 10 11 12

Distance (m)