Name: _____

Period: _____

Work and Energy In Class Review

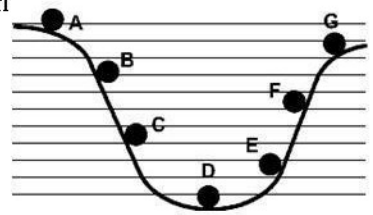
1. Work C	A. Rate of doing work; how fast you transfer energy.
2. Power A	B. Energy of position or height.
3. Kinetic Energy E	C. Applied energy; can create energy.
4. Potential Energy B	D. Energy of something that can be compressed.
5. Potential Elastic Energy D	E. Energy due to motion and inertia.

6. Law of Conservation of Energy D	A. How fast something is done.
7. Rate A	B. An object that moves forever without added energy.
8. Work-Kinetic Energy Theorem C	C. A change in kinetic energy comes from work.
9. Energy E	D. Energy can be transformed, but not created nor destroyed.
10. Perpetual motion B	E. Stored work; ability to create forces or cause motion.

11. Chemical B	A. Energy stored in the atom.
12. Nuclear A	B. Energy stored in molecular bonds.
13. Mechanical F	C. Caused by friction. Heat.
14. Thermal C	D. Due to moving electrons.
15. Electrical D	E. From light.
16. Radiant E	F. Any kinetic or potential energy.

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~~



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

A) What is the MA of the pulley system? 3 = # of support ropes

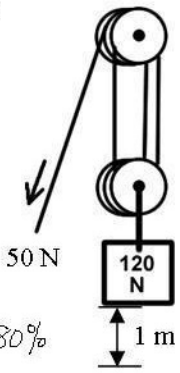
B) How much rope will you pull out? 3 m

C) What is W_{in}? W
$50(3) = 150$ J

D) What is W_{out}? Ep
$mgh = 120(1) = 120$ J

E) Calculate efficiency.
$\frac{120}{150} = \frac{12}{15} = \frac{4}{5} = \frac{40}{50} = \frac{80}{100} = 80\%$

F) If the pulley was 100% efficient, how much force would you have needed? $120/3 = 40$ N



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

just does it faster.

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

does more work.

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

$P = \frac{w}{t}$ $\quad 60 = \frac{w}{120}$ $\quad 120(60) = w$
$7200\text{ J} = w$

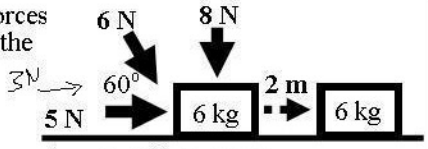
22. A 70 kg person climbs up 2 meters in 2.8 seconds.

A) How much E_p did they gain?
$Ep = mgh = 70(10)(2) = 1400$ J

B) How much power did they use?
$P = \frac{w}{t} = \frac{1400}{2.8} = 500$ W

23. A. Which of the 3 forces does no work on the object? 8 N

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



$6\cos 60° = 3$ N

$W = Fd = (5+3)2 = 8(2) = 16$ J

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

16 J

24. You hold onto a book for an hour.

A. Does your body get tired? yes
B. Does your body use energy? yes
C. Do you do any work on the object? No
D. Why? Book does move or change E.

25. How do all simple machines multiply force? *by spreading the work over MORE DISTANCE*

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

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?

You actually use MORE work with a simple machine, but less force and less power, so it FEELS easier.