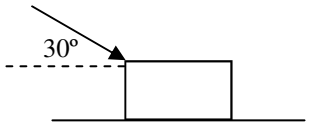
A-Day Due Thurs., Nov 15 (Assigned: 11/13)
B-Day: Due Fri., Nov 16 (Assigned: 11/14)

Energy 2

P	watts	Power	Rate (how fast) work is done

$$P = \frac{W}{t}$$

1. A 25 N force pushes a box 3.2 meters at an angle of 30º to the surface. Find the work done by this force.



2. Label the following as Work (W), Kinetic Energy (E_k), Potential Energy (E_p), Elastic Potential Energy (PE), or no Energy (N):(*could be more than one):*

A. _____A car going 20 m/s.
B. _____Due to motion.
C. _____A rubber ball is compressed.
D. _____An object at rest at the top of a hill.
E. _____Needs an elastic object.
F. _____How forces transfer energy.
G. ____ An object at rest on the ground.
H. ____ A dish is at the edge of a 1.4 m table.
I. ____ Friction acting on an object for 3 m.
J. ____ Energy due to position.
K. ____ An object moving on a spring.
L. ____ An object thrown thru the air.

3. If the energy of an object changes _____ was done on the object.

4. How can you prove something has energy?

5. +W, –W, or no Work?

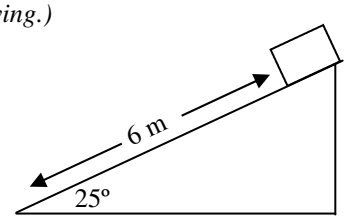
A. ____ An object slows down .
B. ____ An object is raised up.
C. ____ An object rolls down a hill.
D. ____ The sin component of a force.
E. ____ An object at rest on a hill.
F. _____Compressing a spring.
G. _____Lowering an object down to the ground.
H. _____Speeding up an object.
I. _____Friction acting on an object.
J. _____Holding onto an object.

6. A 3 kg ball is thrown up into the air. The ball goes 20 m up into the air.
   A. What kind of energy does it have when it is thrown?
   B. What kind of energy does it have after (up in the air)?
   C. Calculate the energy at the top.

   D. If there was no air friction, how much energy did it have when it was thrown?

7. For potential energy h must be v_____. *(Using this knowledge, answer the following.)*

8. A 2 kg object is 6 m up a ramp tilted at an angle of 25º (*see diagram*).
   A. Find the potential energy of the object.



   B. If there is no friction on the ramp, how much kinetic energy must it have at the bottom?

9. For each of the pairs of objects, circle the one with the most energy?
   A. A 2 kg object at rest or a 2 kg object moving.
   B. A 4 kg object 3 m up; a 6 kg object 3 m up.
   C. A 3 kg object going 2 m/s; a 3 kg object going 6 m/s.
   D. A full moving train or an empty moving train.

10. Prove that a rolling ball has energy.

11. How fast you transfer energy to an object is called:

12. Two people decide to ride their bikes to work. Person A rides to work in 10 minutes. Person B takes 30 minutes to go the same distance.
    A. Which one did more work?
    B. Which one is more tired?
    C. Which one used more power?

13. Motor A has a rating of 300 W. Motor B has a rating of 200 W.
    A. Which motor is more powerful?
    B. How long would it take Motor A to do 6000 J of work?

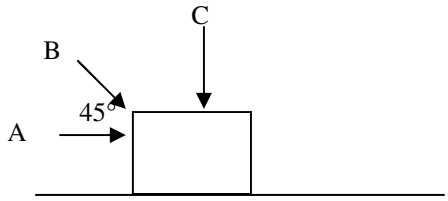
    C. How long would it take Motor B to do 6000 J of work?

    D. Which motor did the work quicker?
    E. Which motor did more work?

14. True or false (and why)?: "*A more powerful object does more work.*"

15. Mechanical, Chemical, Radiant, Nuclear, Electrical, or Thermal Energy?

    A. _____Runs your refrigerator.
    B. _____What a refrigerator removes.
    C. _____Given off by a light bulb.
    D. _____What a space heater gives off.
    E. ____ A rolling object.
    F. ____ Energy from eating.
    G. ____ An atom bomb comes from this.
    H. ____ Stored in a spring.



16. Of the forces at the left
    A. Which does no work.
    B. Which does only some work.
    C. 100% of it does work.
    D. The angle of C is _____
    E. The angle of A is _____.
    F. What % of B does work on the object?