

Name \_\_\_\_\_ Hour \_\_\_\_\_

## Work-Energy Review/Practice Test

Work-Energy Test: \_\_\_\_\_  $\approx$  70 \_\_\_\_\_ pts on \_\_\_\_\_ Friday 12/11 \_\_\_\_\_

Concepts: (20 Multiple Choice and True/False)

1. What variables does PE depend on? If you double the height, what happens to the PE?
2. If you double the velocity, what happens to the KE? WHY?
3. What are the units of the following items:  
energy, work, power, force, distance
4. The Joule is equal to what other unit? (use work equation to help) \_\_\_\_\_
5. What are these the definitions for?  
Energy transferred by a force through a distance  
Rate at which work is done  
Push or a pull  
Energy of position  
Energy of motion  
Ability to do work
6. What does conservation of energy state?
7. If you start with 8 J of KE and lose 3 J of KE, how much PE should be gained? \_\_\_\_\_
8. When can you use the  $a_y = \frac{v_{fy} - v_{iy}}{\Delta t}$  equation with projectiles?
9. Are  $v_{iy}$  and  $\Delta y$  the same thing when using projectiles? \_\_\_\_\_  
(So when you are looking for height...you can't stop after finding  $v_{iy}$ !)
10. If you start at a height of 12 m and fall 8 m...what is  $h_i =$  \_\_\_\_\_,  $h_f =$  \_\_\_\_\_  $\Delta y =$  \_\_\_\_\_
11. How many watts are in a 24 hp engine?
12. You pull a sled with a force of 25 N at an angle of  $55^\circ$  N of E, and it moves a distance of 10 m. Find the work done. (Remember-it moves horizontally so you need  $F_x$ !)

Problems: (Short Answer) There will be 5 problems on the test...similar to these ones.

1. A 1 kg balloon car accelerates from 0 to 3 m/s in 2.5 sec. Find its horsepower.

Name \_\_\_\_\_ Hour \_\_\_\_\_

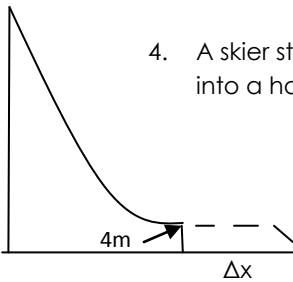
## Work-Energy Review/Practice Test

2. Rudolph (250 lbs) accidentally falls off a 11.5 m roof while delivering presents. After falling 6 m, he remembers he can fly! Find his velocity at this point using both conservation of energy and a 1-D motion equation.  $\Delta y =$  \_\_\_\_\_,  $h_i =$  \_\_\_\_\_,  $h_f =$  \_\_\_\_\_

**Conservations of energy:**

**1-D motion equation:**

3. A **25 gram** pendulum is released from an initial height of 0.25 m. Calculate the **velocity** it will be traveling at the bottom of its swing. What is its **kinetic energy**?



4. A skier starts from rest 35 m above the ground. If he leaves the track at a height of 4 m and turns into a horizontal projectile, how far away ( $\Delta x$ ) from the end of the track should he land?

4. A disc (15 **grams**) shot out of a Zoom-O at an angle travels 5.6 m in 2.66 sec. Calculate the potential energy at its maximum height.