Name:_____ **Hour:**_____

SUMMARY AND REVIEW OF ENERGY, WORK, & POWER

I) Kinetic Energy (K.E.)- energy of _____ measured in _____

K.E.=

If you are not moving, your K.E. = ____J

II) Potential Energy (P.E.) - the energy due to an object's _____ measured in _____

P.E.=

If you are on the ground, your P.E. = ____J

III) <u>The Conservation of Energy</u>- means the _____ energy remains constant

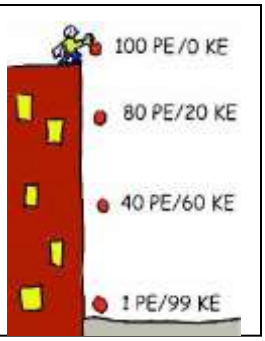
initial PE + the initial KE = final PE + final KE

PE_i + KE_i = PE_f + KE_f

$mgh_i + \frac{1}{2} mv_i^2 = mgh_f + \frac{1}{2} mv_f^2$

Starts with speed = ____.
As it falls, loses PE because it's _____ is decreasing.

As it falls, gains K.E. because it's _____ is increasing.
The total is _____!

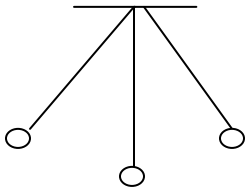


<u>Concept of the Conservation of Energy</u>

The total energy stays constant.. Example- swinging pendulum

Pendulum stopped at the top.

P.E.= __20___ J
K.E.= _____ J



When a pendulum hangs straight down, h= ____

P.E.= _____ J
K.E.= _____ J

<u>WORK:</u> Amount of energy transferred by a _____ acting through a _____

Work =

Measured in _____

<u>POWER:</u> The rate at which work is done or energy is transferred.

Power =

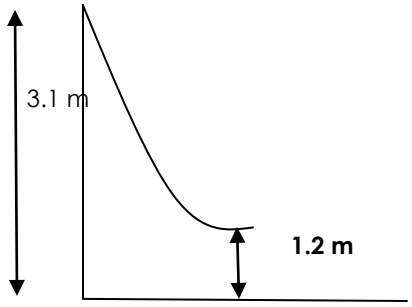
Measured in _____ = 1 _____

_____ Watts = 1 horsepower (hp)

Name:_____ **Hour:**_____

1. If you (165 lbs) can run up a flight of **20 stairs** that are **each 0.25 m high** in 4.6 sec, what is your horsepower? (-1.07 hp)

2. A hot wheel car (mass=15.5 g) starts from rest 3.1 m above the ground and slides down a track as shown below. It leaves the track horizontally at 1.2 m off the ground. Calculate how far away (Δx) from the base of the ramp it will land. (3.01 m) (Use CE to find Vf , then car turns into a horizontal projectile with Vf=Vx and Δy = 1.2 m)



3. You are helping your dad string holiday lights on your roof (height = 7.2 m) when you accidentally drop a 5-lb hammer. How fast is the hammer traveling after falling 4.0 m? Solve this problem using both:

conservation of energy equation: (8.85 m/s) **one-dimensional motion equation: (8.85 m/s)**

Before you start… what is Δ**y**? _____ h_i? _____ h_f? _____

4. A 2,500 kg car accelerates from 0 to 31.5 m/s in 5.55 seconds. What is the horsepower delivered by the engine during the acceleration? ***(≈300 hp. You will need to solve for the a, Δx, W, P, and hp!)*** **Wow you know a lot of physics ☺**

5. You kick a 1.25 kg ball at a 65° angle with a velocity of 15.2 m/s. What is the potential energy of the ball at its maximum height? (≈120 J)