Name:

COLONIAL CHRISTIAN SCHOOL

Chapter 14 Kinetic Energy KE and Potential Energy Math Sheet

Pledge: I pledge that I have neither given nor receive any assistance beyond that permitted by the instructor in charge:

Signed:

$KE = 1/2\ mv^2$

Joules =mass in kg • (velocity in m/s)^2

PE = mhg

Joules = mass in kg • height in m • gravity (9.8m/s^2)

PE = wh

Joules = weight in kg • height in m

1 kg = 2.2 lb
1 m = 3.28 ft

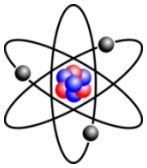
1. Adrian just retrieved a soccer ball from the roof and is dropping it from a height of 5 meters. The ball weights 0.5 kg. What is its potential energy?

2. Jonny's model rocket reached a speed of 220 m/s at the end of its thrust phase. It has a mass of 0.45 kg. How much energy did the rocket have as it hit the watermelon he targeted?

3. Angelina is on a roller coaster car at the top of a 72 m hill. The weight of the roller coaster car with her aboard is 1500 N. How much energy is stored by the roller coaster.

4. Jonny is at it again. Apparently he hates watermelon. Now he is going to drop a watermelon off the top of Miami's Four Seasons Hotel's 70th floor, 240m up. The watermelon weighs 7.7 kg. How much energy does the doomed watermelon have when it hits the ground.

5 Laylani is stacking shelves with supplies to get ready for hurricane Wilson. One container had a mass of 2 kilograms, and was lifted at a speed of 2 m/sec. The other had a mass of 4 kilograms and was lifted at a rate of 3 m/sec. Which took more effort, and how much more effort did it take?



6. The potential energy of Elizabeth's lunch is 12 Joules. It is on a locker 2.0 m high. How much does her lunch weigh in pounds?

7. Giancarlo wieghs 120 lb and works for the Ringling Brothers' Circus. During a death defying dive he successfully dove off a platform and hit the water in a bucket below with 15,000 J of energy, receiving thunderous applause. How high was the platform in feet?

8. Juliana is driving a truck to the Haponik Pavilion in Washington DC to bring supplies to her employees at 55 m/s. The truck has a mass of 2900 kg. What is its kinetic energy?

9. Eliyah, an environmentalist from the Pew Research Company, fires a tranquilizer dart at a charging lion. The dart has a mass of 0.0042 kg, and is travelling 993 m/s. What is the kinetic energy of the dart as it hits the lion?

10. Hannah's Shopping cart is rolling down Cutler Ridge at 18 m/s. It has 90 J of energy. What is its mass in pounds?