

# NOTES - KINETIC ENERGY

## WHAT IS ENERGY?

- Energy is the ability to do \_\_\_\_\_
- Work is done when a \_\_\_\_\_ causes something to move

## KINETIC ENERGY

\_\_\_\_\_ in \_\_\_\_\_

- Any type of \_\_\_\_\_ that is in \_\_\_\_\_ has \_\_\_\_\_ energy

## FORMS OF ENERGY

\_\_\_\_\_

\_\_\_\_\_ (stored in nucleus of an \_\_\_\_\_)

\_\_\_\_\_ (chemical reactions)

\_\_\_\_\_ (radiant)

\_\_\_\_\_ (vibrations)

\_\_\_\_\_

thermal (\_\_\_\_\_)

## EXAMPLES

1. A skier \_\_\_\_\_ down a hill.
2. An \_\_\_\_\_ shot through the air.
3. A roller \_\_\_\_\_ moving.

## KINETIC ENERGY EQUATION

The \_\_\_\_\_ of kinetic energy depends on \_\_\_\_\_ variables

\_\_\_\_\_ of the object (\_\_\_\_\_)

\_\_\_\_\_ of the object (\_\_\_\_\_)

$$KE = \text{_____} \times \text{_____}^2$$

KE= kinetic energy- \_\_\_\_\_ (J)

m = \_\_\_\_\_ of object- kilograms (kg)

v = \_\_\_\_\_ of object- meters/second (m/s)

**LET'S TRY IT!**

**Remember:  $KE = 0.5 \times MV^2$**

Complete the following kinetic energy calculations. Show your work!!!

1. A car with a mass of 700 kg is moving with a speed of 20m/s. Calculate the kinetic energy of the car.
2. A cyclist and bike have a total mass of 100 kg and a speed of 15 m/s. Calculate the kinetic energy.
3. A tennis ball is traveling at 50 m/s and has a kinetic energy of 75 J. Calculate the mass of the tennis ball.
4. Determine the kinetic energy of a 1000 kg roller coaster car that is moving with a speed of 20.0 m/s.
5. If the roller coaster in the above problem were moving at twice the speed, then what would be its new kinetic energy?
6. Missy Diwater, the former platform diver for the Ringling Brother's Circus had a kinetic energy of 15,000 J just prior to hitting the bucket of water. If Missy's mass is 50 kg, then what is her speed?
7. A polar bear runs at a speed of 11m/s with 23,000 J of kinetic energy. What is the polar bear's mass?
8. What is the Kinetic Energy of a 150 kg panda bear that is moving with a speed of 15 m/s?
9. A sailboat has a kinetic energy of 25 J and a mass of 34 kg , how fast is the sailboat moving?
10. Korbin is riding a rhinoceros. They are going 15 m/s. Korbin's mass is 65 kg. The rhino's mass is 1800 kg.

What is Korbin's kinetic energy?

What is the rhino's kinetic energy?

What is their combined kinetic energy?