YEAR 8 ENERGY CALCULATIONS WORKSHEET

**POTENTIAL ENERGY AND KINETIC ENERGY**

Potential energy is stored energy due to position. Kinetic energy is that which depends on mass and velocity (movement).

Potential Energy = Weight x Height( P.E = w x h)

Kinetic Energy = ½ x Mass x Velocity2 ( K.E = ½ mv2 )

Units used are: Energy→ Joules( J ) 1000 J = 1kJ, 1MJ(mega joule) = 1000,000J

 Weight→ Newtons ( N )

 Height → Meters (m)

 Mass → Kilograms (kg)

 Velocity → meter/second ( m/s )

In a closed system, the sum of the potential energy and the kinetic energy is constant.

Potential energy decreases, the kinetic energy increases.

1. What is the potential energy of a rock that weighs 100 newtons that is sitting on top of a hill 300 meters high?
2. What is the kinetic energy of a bicycle with a mass of 14 kg travelling at a velocity of 3m/s?
3. A flower pot weighing 3 newtons is sitting on a window sill 30 meters from the ground. Is the energy of the flower pot potential or kinetic? How many joules is this?
4. When the flower pot is only 10 meters from the ground, what is it’s energy?
5. How much of the total energy in problem 3 and 4 has been transformed to kinetic energy?
6. A 1200kg automobile is travelling at a velocity of 100m/s. Is its energy potential or kinetic? How much energy does it possess?
7. Calculate how many of joules of energy in:
8. 6 MJ = b) 3800 kJ =
9. How many megajoules in:
10. 8 300 000 J = b) 6000 kJ =