Answer on Question #70956-Physics-Other

1. Determine the kinetic energy of a 625-kg roller coaster car that is moving with a speed of 18.3 m/s.

Solution

$$KE = \frac{mv^2}{2} = \frac{1}{2}(625)(18.3)^2 = 105\ kJ.$$

2. If the roller coaster car in the above problem were moving with twice the speed, then what would be its new kinetic energy?

Solution

$$KE' = \frac{mv'^2}{2} = \frac{1}{2}(625)(2 \cdot 18.3)^2 = 419\ kJ.$$

3. A 8-kg bird 60m above the ground is flying at 25m/s. Find its potential energy and kinetic energy.

Solution

Kinetic energy is

$$KE = \frac{mv^2}{2} = \frac{1}{2}(8)(25)^2 = 2.5\ kJ.$$

Potential energy is

$$U = mgh = (8)(9.8)(60) = 4.7\ kJ.$$