

### Answer on Question #60553-Physics-Mechanics-Relativity

A car of mass 1100 Kg drives with a velocity such that it has a kinetic energy of 400 kJ ( see the Figure). Find the velocity. If the car is raised with a crane how high should it be lifted in the standard gravitational field (9.81 m/s<sup>2</sup>) to have a potential energy that equals the kinetic energy?

#### Solution

$$K = \frac{mv^2}{2}$$

The velocity is

$$v = \sqrt{\frac{2K}{m}} = \sqrt{\frac{2 \cdot 400000}{1100}} = 27 \frac{m}{s}$$

$$mgh = K.$$

$$h = \frac{K}{mg} = \frac{400000}{1100 \cdot 9.81} = 37 \text{ m.}$$