Answer on Question#53573 - Physics - Other

What is the mass of an object that has 40J potential energy and is 10m above the ground?

Answer:

The potential energy of the object of mass m is given by

$$E_p = m \cdot g \cdot h,$$

where g – is acceleration due to gravity, and h – is the height above the ground. Assuming that $g = 10\,\frac{\mathrm{m}}{\mathrm{s}^2}$, and considering that $h = 10\mathrm{m}$ and $E_p = 40\mathrm{J}$ we obtain

$$m = \frac{E_p}{g \cdot h} = \frac{40\mathrm{J}}{10\,\frac{\mathrm{m}}{\mathrm{s}^2} \cdot 10\mathrm{m}} = 0.4\mathrm{kg}$$

Answer: $0.4\mathrm{kg}$.