

A 76 kg student traveling in a car with a constant velocity has a kinetic energy of $1.1 \cdot 10^4 \text{ J}$. What is the speedometer reading of the car in km/h?

Solution.

The formula for kinetic energy in general form is:

$$E = \frac{mv^2}{2},$$

where m is the mass of an object, v is the velocity of an object, E is the kinetic energy of an object.

So we have from the formula above:

$$v = \sqrt{\frac{2E}{m}} = \sqrt{\frac{2 \cdot 1.1 \cdot 10^4}{76}} = 17.01 \text{ m/s} = \frac{17.014 \cdot 3600}{1000} \text{ km/h} = 61,3 \text{ km/h},$$

and it is the speedometer reading of the car in km/h.

Answer: 61,3 km/h.