

A body starting from rest travels with uniform acceleration. If it travels 100 m in 5 seconds what is the value of acceleration?

Solution.

The distance traveled by the body after t seconds with uniform acceleration a m/s² is:

$$S = v_0 t + \frac{1}{2} a t^2 \text{ m};$$

where v_0 (m/s) is the initial velocity of the body;

In this case $v_0 = 0$, because body is starting to travel from rest. So:

$$S = \frac{1}{2} a t^2;$$

Find the acceleration:

$$a = \frac{2S}{t^2} = \frac{2 \cdot 100}{5^2} = 8 \text{ m/s}^2;$$

Answer: the acceleration is **8 m/s²**.