

Task. An object is moving up an inclined plane. Its velocity changes from $v_0 = 15$ m/s to $v_1 = 10$ m/s in $t = 2$ seconds. What is its acceleration?

Solution. Assume that the plane moved with constant acceleration a . Then a can be expressed via v_0 , v_1 and t by the following formula:

$$a = \frac{v_1 - v_0}{t}.$$

Substituting values we get:

$$a = \frac{v_1 - v_0}{t} = \frac{10 - 15}{2} = -2.5 \text{ m/s}^2.$$

The negative sign means that the velocity decreases during the motion.

Answer. $a = 2.5 \text{ m/s}^2$.