Answer on Question#49232 - Physics - Mechanics - Kinematics

A man across a 90 m long straight track with a uniform acceleration in 6 s.if his initial velocity is 3m/s, then he leaves the track with velocity.

Solution:

The displacement of the body moving with constant acceleration can be given by

$$s = \frac{v_0 + v}{2} t$$

where s is the displacement, t is the time, v_0 is the initial velocity, v is the final velocity. Than the final velocity can be expressed as follows:

$$v = \frac{2s}{t} - v_0$$

Substituting $s = 90\ \text{m}$, $t = 6\ \text{s}$, $v_0 = 3\frac{\text{m}}{\text{s}}$ we obtain $v = 27\ \frac{\text{m}}{\text{s}}$.

Answer: 27 m/s.