Answer on Question #39492, Physics, Mechanics | Kinematics | Dynamics

Question:

An athlete takes 2.0sec to reach his max. speed of 18.0km/h. What is the magnitude of his average acceleration?

Answer:

If a body is having an initial velocity v_i at time interval t_i and it attains final velocity v_f after some time t_f then its average acceleration formula is given by

$$a = \frac{v_f - v_i}{t_f - t_i}$$

Where v_i is the initial velocity, v_f is the final velocity, t_i is the initial time, t_f is the final time.

Therefore:

$$a = \frac{18\frac{km}{h}}{2\ s} = \frac{18\frac{m}{s}}{3.6 \cdot 2\ s} = 2.5\frac{m}{s^2}$$

Answer: $2.5\frac{m}{s^2}$