Answer on Question #61262-Physics-Mechanics-Relativity

A vehicle of mass 20kg is moving with a velocity of 4ms, find the magnitude of the force that is to be applied on the vehicle so that the vehicle have a velocity of 1ms after travelling a distance of 20m.

Solution

We use kinematic equation for deceleration:

$$v_i^2 - v_f^2 = 2ad \rightarrow a = \frac{v_i^2 - v_f^2}{2d}$$

From the Second Newton's law:

$$F = ma = m\frac{v_i^2 - v_f^2}{2d} = 20\frac{4^2 - 1^2}{2(20)} = 7.5 N.$$

Answer: 7.5 N.

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