

What is the magnitude of a net force to stop a 100kg object moving at 1 m/s in 5 seconds?

Solution.

$$m = 100\text{kg}, v_0 = 1 \frac{\text{m}}{\text{s}}, t = 5\text{s};$$

$$F = ?$$

Newton's second law:

$$ma = F;$$

$$a = \frac{F}{m};$$

Velocity is:

$$v = v_0 - at;$$

The object stopped, then $v = 0$

$$0 = v_0 - at;$$

$$a = \frac{v_0}{t};$$

$$\frac{F}{m} = \frac{v_0}{t};$$

$$F = \frac{mv_0}{t}.$$

$$F = \frac{100 \cdot 1}{5} = 20(N).$$

Answer: $F = 20N$.