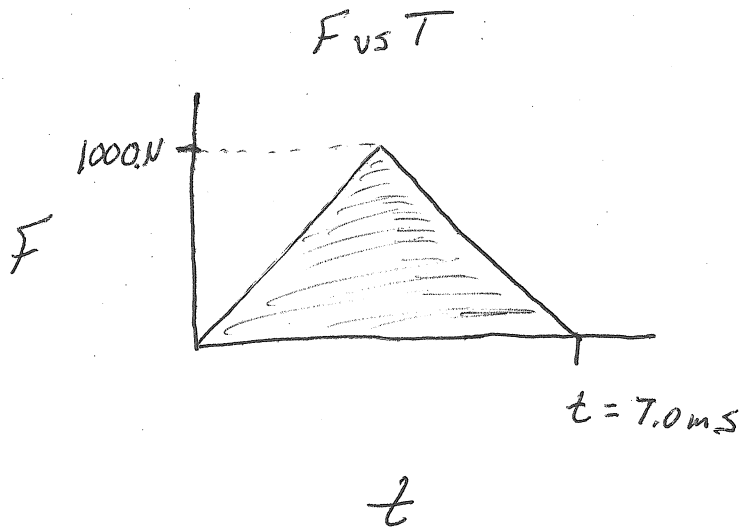


## Example - (Impulse)



The impulse indicated above is applied to a  $17 \text{ g}$  toy automobile traveling at  $10.0 \text{ m/s}$ .

- 1) What was the momentum change of the toy automobile?
- 2) How fast was the automobile traveling after receiving the impulse?

① Impulse = area under curve

$$= \frac{1}{2}bh = \frac{1}{2}(7.0 \times 10^{-3} \text{ s})(1000 \text{ N}) = \boxed{3.5 \text{ N}\cdot\text{s}}$$

②  $F\Delta t = (m v_f - m v_i)$

$$\frac{F\Delta t + m v_i}{m} = v_f = \frac{(3.5 \text{ N}\cdot\text{s}) + (17 \times 10^{-3} \text{ kg})(10.0 \text{ m/s})}{17 \times 10^{-3} \text{ kg}} = \boxed{21.6 \frac{\text{m}}{\text{s}}}$$