

Review

$$\vec{p} = m \cdot \vec{v}$$

$$\Delta p = F \Delta t$$

$$F = \frac{\Delta p}{\Delta t}$$

Momentum
measured in kg m/s

Stopping time
& Distance

ex) A 2240 kg car traveling west slows down from 20 m/s to 5 m/s . How long does it take to decelerate if the force on the car is 8410 N to the east.

$$\Delta p = F \Delta t$$

$$p_0 = (2240 \text{ kg})(20 \text{ m/s}) = 44,800 \text{ kg m/s}$$

$$\Delta p = -33,600 \text{ kg m/s}$$

$$p_f = (2240 \text{ kg})(5 \text{ m/s}) = 11,200 \text{ kg m/s}$$

$$\Delta p = p_f - p_0$$

$$\Delta t = \frac{\Delta p}{F} = \frac{-33,600 \text{ kg m/s}}{-8410 \text{ N}} \approx 4.0 \text{ sec}$$

