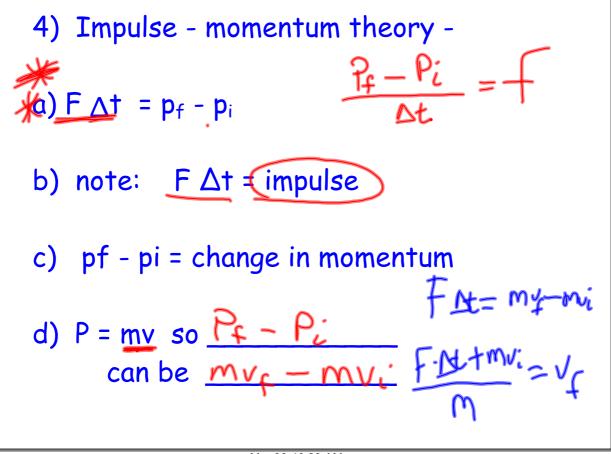


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Ex: 1

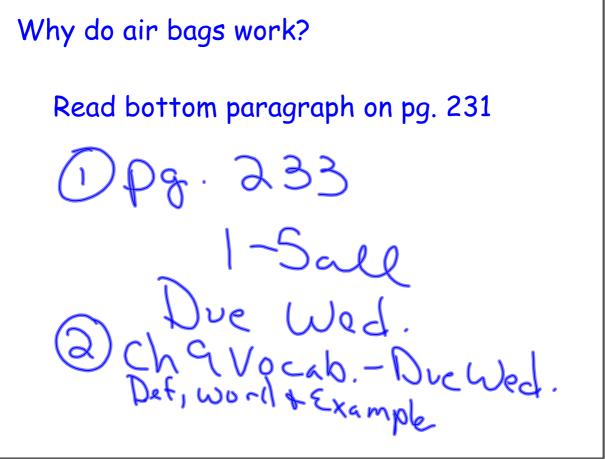
A 2000 kg car is traveling at 90 km/hr can be stopped in 18s by gentling applying the brakes. It can be stopped in 3.2s by slamming on the brakes. It can also be stopped in 0.20s by hitting a big tree. What is the average force exerted on the vehicle in each type of stop? M = 2000 Kg $V_{i} = 90 \text{ Km}/hr$ $\frac{1000 \text{ m}}{1 \text{ Km}} \cdot \frac{1 \text{ min}}{60 \text{ min}} - \frac{35 \text{ m}}{60 \text{ m}}$ $V_{f} = 0 \text{ m/s}$ Δt_{smill} 18s $\Delta t_{smill} = 33 \text{ s}$ $\Delta t_{smill} = 0.3 \text{ s}$ from f = 0 m/s $\Delta t_{smill} = 18 \text{ s}$ $\Delta t_{smill} = 33 \text{ s}$ $\Delta t_{smill} = 0.3 \text{ s}$ $f_{smill} = 600 \text{ kg}$ $f_{smill} = 600 \text{ m/s}$ $\Delta t_{smill} = 0.3 \text{ s}$ $f_{smill} = 0 \text{ m/s}$ $\Delta t_{smill} = 0.3 \text{ s}$ $f_{smill} = 0 \text{ m/s}$ $\Delta t_{smill} = 0.3 \text{ s}$ $f_{smill} = 0 \text{ m/s}$ $\Delta t_{smill} = 0.3 \text{ s}$ $f_{smill} = 0 \text{ m/s}$ $\Delta t_{smill} = 0.3 \text{ s}$ $f_{smill} = 0 \text{ m/s}$ $\Delta t_{smill} = 0.3 \text{ s}$ $f_{smill} = 0 \text{ m/s}$ $\Delta t_{smill} = 0.3 \text{ s}$ $f_{smill} = 0 \text{ m/s}$ $\Delta t_{smill} = 0.3 \text{ s}$ $f_{smill} = 0 \text{ m/s}$ $\Delta t_{smill} = 0.3 \text{ s}$ $f_{smill} = 0.3 \text{ s}$ $f_{smill} = 0.3 \text{ s}$

$$F_{gentle} = \frac{0 - 50,000}{18s} = -2,777.8$$

$$F_{gentle} = \frac{0 - 50,000}{18s} = -15,625N$$

$$F_{Tree} = \frac{0 - 50,000}{0.205} = -3500,000N$$

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