

4. If the driver drives at the velocity v_0 , then the distance he needs to stop is

$$x = v_0 \Delta t + \frac{1}{2} a t_0^2$$

↑
reaction time

↑ t_0 is the time between reaction and stop

$$t_0 = \frac{v_0}{a}$$

$$x = v_0 \Delta t + \frac{1}{2} \frac{v_0^2}{a}$$

so when $x = 4 \text{ m}$, $\Delta t = 0.5 \text{ s}$ and $a = 7 \text{ m/s}^2$

$$v_0 = 4.76 \text{ m/s} \approx 17 \text{ km/hr}$$

