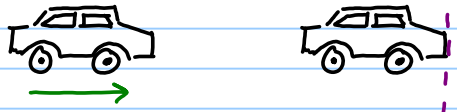
Quiz 1c

Note Title 11/09/2011

A car is traveling at a constant speed of 75 km/h. The driver spots a red light ahead and reacts in 0.55 s to hit the brakes, slowing the car at $8.2\ m/s^2$.

What is the total amount of distance covered by the car from the instant the driver spots the red light until the car stops?

const. $\vec{v}$



$v = 75\ km/h \div 3.6 = 20.83\ m/s$

$V = 20.83\ m/s$

$d = ?$

$t = 0.55s$

$V = \frac{d}{t}$ ✓ $d = V \cdot t$

$= (20.83\ m/s)(0.55s)$

$= 11.46\ m$ ✓

const. $\vec{a}$

$V = 0$

$V_0 = 20.83\ m/s$

$a = -8.2\ m/s^2$

$d = ?$

$t =$

$v^2 = v_0^2 + 2ad$ ✓

$d = \frac{v^2 - v_0^2}{2a}$

$= \frac{(0)^2 - (20.83)^2}{2(-8.2)}$

$= 26.46\ m$ ✓

$$d_{total} = 11.46m + 26.46m = \boxed{37.9m}$$ ✓