

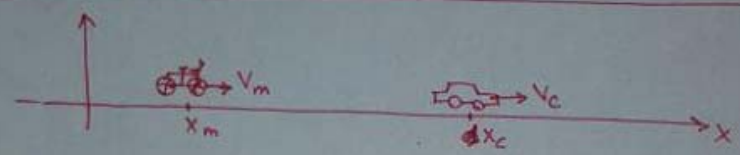
A: $y_A = -\frac{1}{2}gt^2 + 25t$

B: $y_B = -\frac{1}{2}gt^2 + 15$

$t = T : y_A = y_B$

$-\frac{1}{2}gt^2 + 25t = -\frac{1}{2}gt^2 + 15$

$t = \frac{15}{25} = 0.6\text{ s}$



Car $\begin{cases} a_c = 0 \\ v_c = v_0 \\ x_c = v_0 t + d \end{cases}$

motorcyclist $\begin{cases} 0 \rightarrow T & a_m = a \\ v_m = at + v_0 \\ x_m = \frac{1}{2}at^2 + v_0 t \\ T = ? & x_m(t=T) = ? \end{cases}$

$t = T : v_m = 2v_c \rightarrow aT + v_0 = 2v_0 \rightarrow aT = v_0 \rightarrow T = \frac{v_0}{a}$

$x_m(t=T) = \frac{1}{2}aT^2 + v_0 T = \frac{1}{2}a \frac{v_0^2}{a^2} + v_0 \frac{v_0}{a} = \frac{3v_0^2}{2a} \rightarrow x_m(t=T) = \frac{3v_0^2}{2a}$

