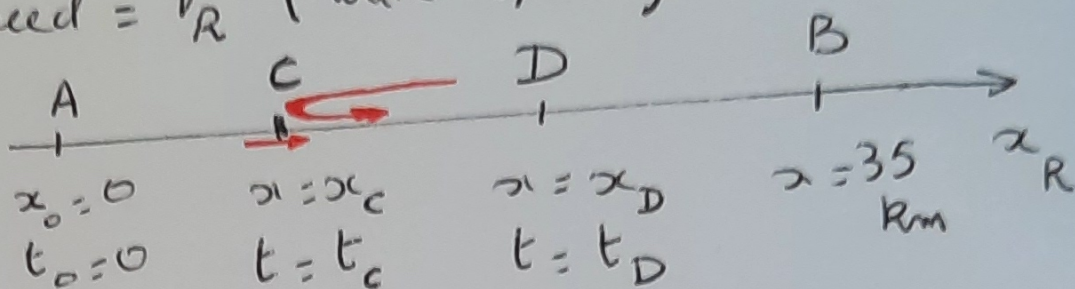


Raft: speed = V_R (water speed)



$$x_R = V_R \cdot t \Rightarrow x_c = V_R t_c$$

Boat upstream: speed = $V_M = 6V_R$

$$x_{M_1} = -(V_M - V_R)t + 35 = -5V_R t + 35$$

$$t = t_c \Rightarrow \begin{cases} x_R = x_c = V_R t_c \\ x_{M_1} = x_c = -5V_R t_c + 35 \end{cases}$$

$$\Rightarrow 6V_R t_c = 35 \Rightarrow \boxed{V_R t_c = \frac{35}{6} = x_c}$$

Boat downstream: speed

$$\begin{aligned} x_{M_2} &= (V_M + V_R)(t - t_c) + x_c \\ &= 7V_R(t - t_c) + x_c = 7V_R t - 6x_c \end{aligned}$$

$$t = t_B = t_D \Rightarrow x_{M_2} = 35 \Rightarrow 7V_R t_B - 6x_c = 35$$

$$\Rightarrow V_R t_B = \frac{35 + 6x_c}{7} = 10 \text{ km} \Rightarrow \boxed{x_D = 10 \text{ km}}$$

\Rightarrow Distance between D and B is:

$$35 - 10 = \underline{\underline{25 \text{ km}}}$$