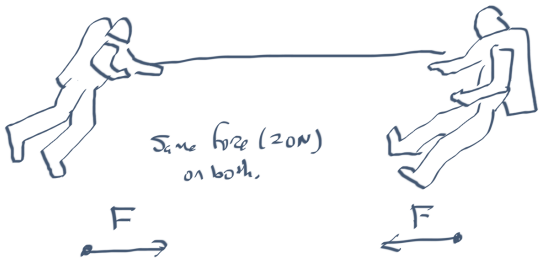


Assumptions

$$M_B = 150$$

$$M_A = 200$$



$$a_B = \frac{20N}{150} = \frac{2}{15} \text{ m/s}^2$$

$$a_A = \frac{20N}{200} = 0.1 \text{ m/s}^2$$

- If they accelerate toward each other when do they hit?
They are both accelerating, and they need to cover a total of 100 meters. Adding the distances travelled in time t :

$$d_A + d_B = 100 = \frac{1}{2} a_A t^2 + \frac{1}{2} a_B t^2$$

$$200 = t^2 (a_A + a_B) \Rightarrow t = \sqrt{\frac{200}{\frac{2}{15} + \frac{1}{10}}}$$

$$t = 29.3 \text{ sec}$$