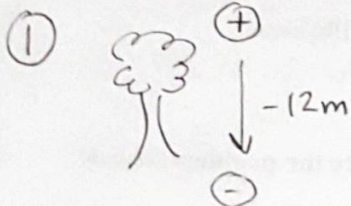


COBRA



$$\Delta \vec{x} = -12 \text{ m}$$

$$\vec{v}_i = 0$$

$$\vec{v}_f = -15.5 \frac{\text{m}}{\text{s}}$$

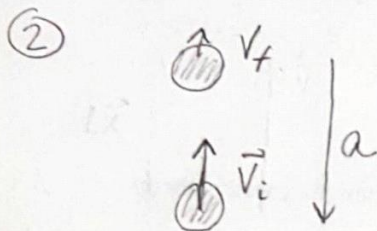
$$\vec{a} = ?$$

$$\Delta t = ?$$

$$v_f^2 = v_i^2 + 2a \Delta x$$

$$(-15.5 \frac{\text{m}}{\text{s}})^2 = 0^2 + 2a(-12 \text{ m})$$

$$a = \frac{(-15.5 \frac{\text{m}}{\text{s}})^2}{2(-12 \text{ m})} = \boxed{-10 \frac{\text{m}}{\text{s}^2}}$$



$$\Delta \vec{x} = 0.750 \text{ m}$$

$$\vec{v}_i = 1.20 \frac{\text{m}}{\text{s}}$$

$$\vec{v}_f = ?$$

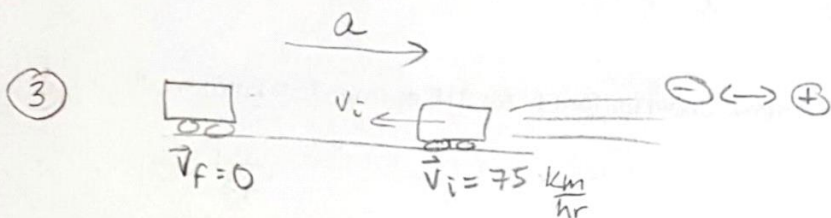
$$\vec{a} = -0.310 \frac{\text{m}}{\text{s}^2}$$

$$\Delta t = ?$$

$$\vec{v}_f^2 = \vec{v}_i^2 + 2a \Delta \vec{x}$$

$$\vec{v}_f^2 = (1.20 \frac{\text{m}}{\text{s}})^2 + 2(-0.310 \frac{\text{m}}{\text{s}^2})(0.750 \text{ m})$$

$$\vec{v}_f = \pm \sqrt{0.975 \frac{\text{m}^2}{\text{s}^2}} = \boxed{0.987 \frac{\text{m}}{\text{s}}}$$



$$\frac{75 \text{ km}}{1 \text{ hr}} \cdot \frac{1000 \text{ m}}{1 \text{ km}} \cdot \frac{1 \text{ hr}}{3600 \text{ s}} = 20.8 \frac{\text{m}}{\text{s}}$$

$$\Delta \vec{x} = \left(\frac{\vec{v}_i + \vec{v}_f}{2} \right) \Delta t$$

$$-218 \text{ m} = \left(\frac{-20.8 \frac{\text{m}}{\text{s}} + 0 \frac{\text{m}}{\text{s}}}{2} \right) \Delta t \rightarrow \boxed{\Delta t = 21 \text{ s}}$$

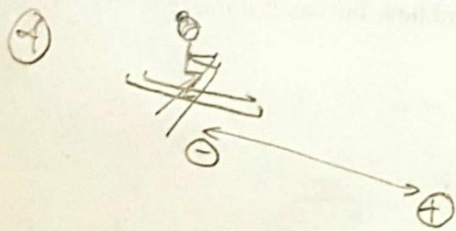
$$\vec{v}_i = -20.8 \frac{\text{m}}{\text{s}}$$

$$\vec{v}_f = 0$$

$$\Delta \vec{x} = -218 \text{ m}$$

$$\Delta t = ?$$

$$\boxed{\Delta t = 21 \text{ s}}$$



$$\vec{a} = +1.40 \frac{\text{m}}{\text{s}^2}$$

$$\Delta \vec{x} = ?$$

$$\vec{v}_f = 7.00 \frac{\text{m}}{\text{s}}$$

$$\vec{v}_i = 0$$

$$\Delta t = ?$$

$$\vec{v}_f^2 = \vec{v}_i^2 + 2\vec{a} \Delta \vec{x}$$

$$(7.00 \frac{\text{m}}{\text{s}})^2 = 0 + 2(1.40 \frac{\text{m}}{\text{s}^2}) \Delta \vec{x}$$

$$\boxed{17.5 \text{ m} = \Delta \vec{x}}$$