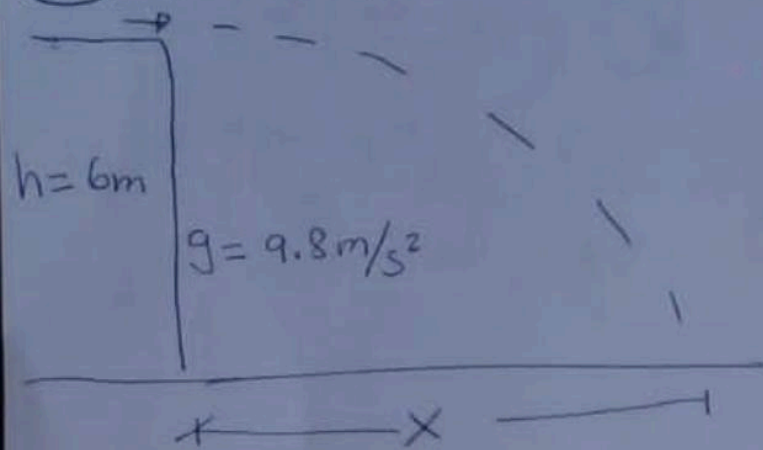


① $V_0 = 20 \text{ m/s}$



$$V_f^2 = V_0^2 + 2gh$$

$$V_f = \sqrt{V_0^2 + 2gh}$$

$$V_f = \sqrt{20^2 + 2(9.8)(6 \text{ m})}$$

$$V_f = \sqrt{400 + 117.60}$$

$$V_f = \sqrt{517.60}$$

$$V_f = 22.75 \text{ m/s}$$

$$V_f = V_0 + gt$$

$$t = \frac{V_f - V_0}{g}$$

$$t = 0.28 \text{ s}$$

$$x = V_0 t$$

$$x = 20 \text{ m/s} \times 0.28 \text{ s}$$

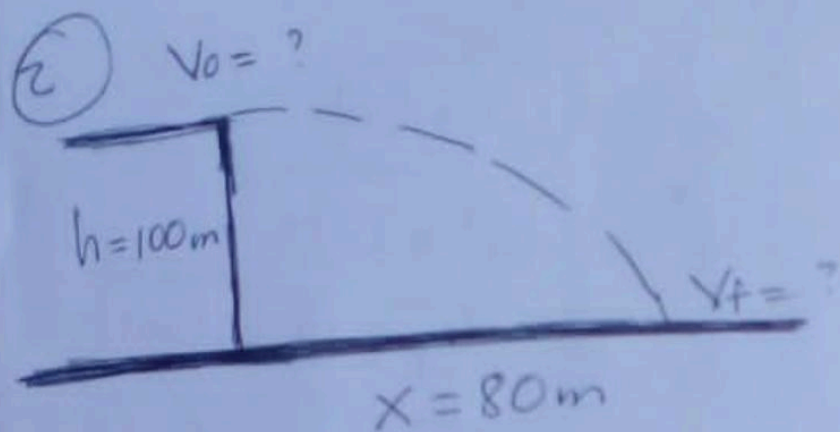
$$x = 5.6 \text{ m}$$

$$t = \sqrt{\frac{2h}{g}} = \sqrt{\frac{2(6 \text{ m})}{9.8 \text{ m/s}^2}} = 1.10$$

$$x = V_0 t$$

$$x = 20 \text{ m/s} (1.10 \text{ s})$$

$$x = 22 \text{ m}$$



$$X = V_{0x} t$$

$$h_{\text{max}} = \left(\frac{V_f + V_0}{2} \right) t$$

$$V_f^2 = V_0^2 + 2gh$$

$$V_f = V_0 + gt$$

$$h = V_{0y} t + \frac{1}{2} g t^2$$

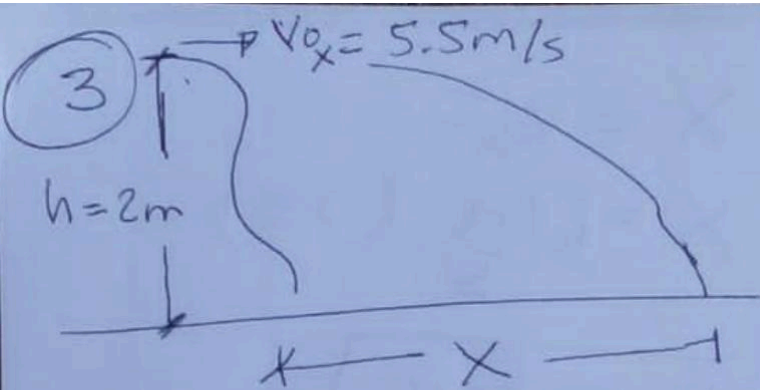
$$t = \sqrt{\frac{2h}{g}}$$

$$t = \sqrt{\frac{2(100\text{m})}{9.8\text{m/s}^2}}$$

$$t = 4.52\text{sec}$$

$$V_{0x} = \frac{X}{t}$$

$$V_{0x} = \frac{80\text{m}}{4.52\text{s}} = \boxed{17.70\text{m/s}}$$



$h = v_{0y} t + \frac{1}{2} g t^2$

$$t = \sqrt{\frac{2h}{g}}$$

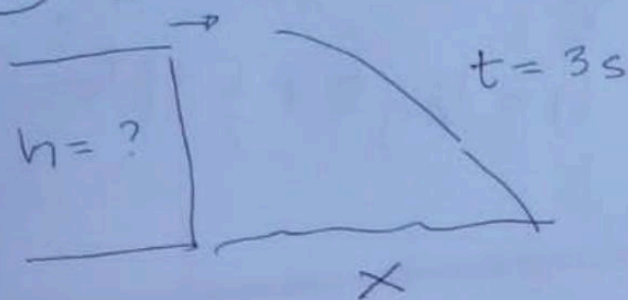
$$t = \sqrt{\frac{2(2 \text{ m})}{9.8 \text{ m/s}^2}} = 0.64 \text{ s}$$

$$X = v_{0x} t$$

$$X = 5.5 \frac{\text{m}}{\text{s}} (0.64 \text{ s})$$

$$X = 3.52 \text{ m}$$

④ $V_x = 1.8 \text{ m/s}$



$$X = V_{0x} t$$

$$X = 1.8 \frac{\text{m}}{\text{s}} (3 \text{ s})$$

$$\boxed{X = 5.4 \text{ m}}$$

$$h = \left(\frac{V_{fy} + V_{0y}}{2} \right) t$$

$$V_{fy} = \cancel{V_{0y}} + gt$$

$$V_{fy} = 9.8 \frac{\text{m}}{\text{s}^2} (3 \text{ s})$$

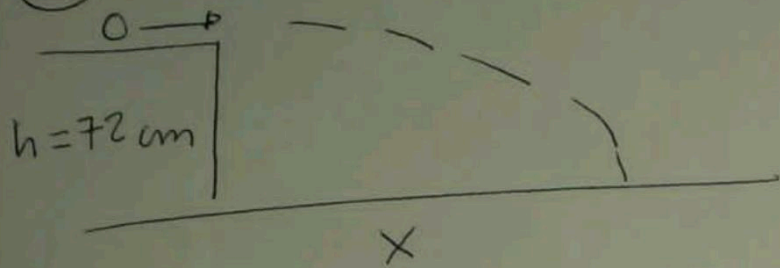
$$V_{fy} = 29.40 \frac{\text{m}}{\text{s}}$$

$$h = \left(\frac{V_{fy} + V_{0y}}{2} \right) t$$

$$h = \left(\frac{29.40 \frac{\text{m}}{\text{s}} + 1.8 \frac{\text{m}}{\text{s}}}{2} \right) 3 \text{ s}$$

$$\boxed{h = 46.80 \text{ m}}$$

⑤ $v = 26 \text{ cm/s}$



~~$v_{fy} = v_{oy} + g t$~~
 $h = v_{oy} t + \frac{1}{2} g t^2$

$$72 \text{ cm} = \frac{1}{2} (9.8) t^2$$

$$t = \sqrt{\frac{2h}{g}} = \sqrt{\frac{2(72 \text{ cm})}{980 \text{ cm/s}^2}} = 0.38 \text{ s}$$

$$X = v_{ox} t$$

$$X = \frac{26 \text{ cm}}{\cancel{s}} * 0.38 \cancel{s} = \boxed{9.88 \text{ cm}}$$