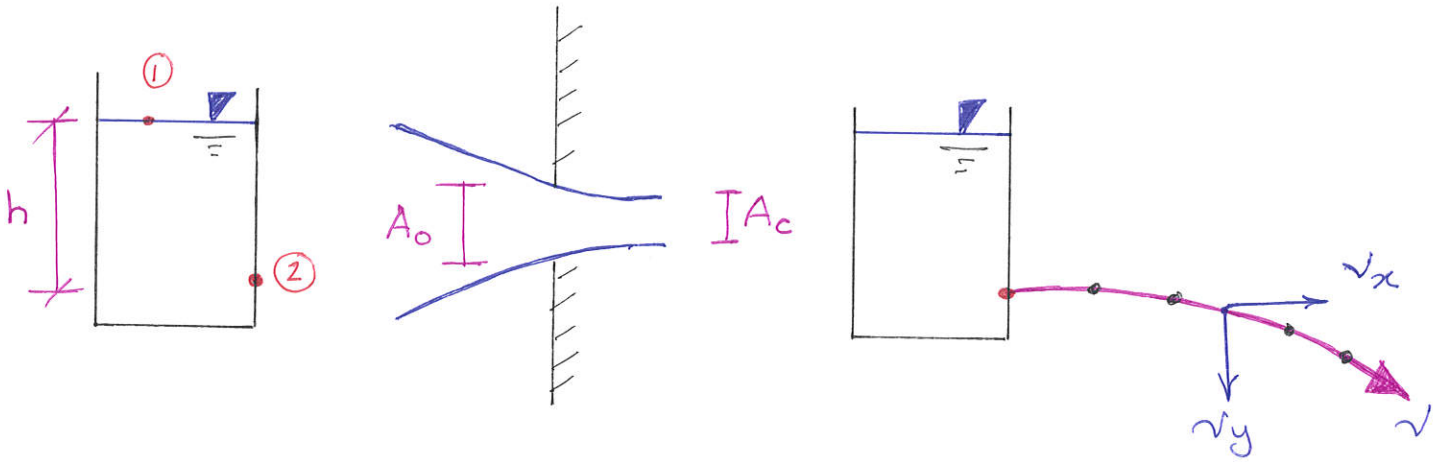
✱ Exp. # 5 : Determination of Coefficient of velocity (C_v) from Jet

✱ Calculations :-



- $v_i = \sqrt{2gh}$ (Ideal velocity)
- $v = C_v\sqrt{2gh}$ (Actual velocity)

→ C_v : Coefficient of velocity < 1

✱ X- Direction :

$$v = \frac{x}{t}$$

✱ Y- Direction :

$v = at$; Due to Gravity acceleration (g)

→ $t = \sqrt{2\frac{y}{g}}$

$$\rightarrow v = \frac{x}{\sqrt{2\frac{y}{g}}} = C_v\sqrt{2gh}$$

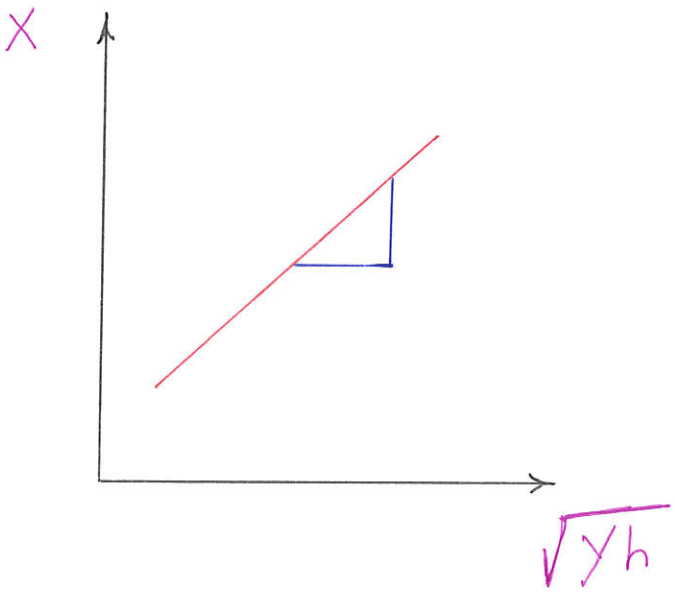
$$\rightarrow x = C_v * 2\sqrt{yh}$$

$$\rightarrow C_v = \frac{x}{2\sqrt{yh}}$$

$$\rightarrow 2C_v = \frac{x}{\sqrt{yh}} = \text{slope}$$

(*) Figure 0°

- $C_v = \frac{\text{slope}}{2}$
- $v = C_v\sqrt{2gh}$



❖ Results: (Tables)

Point	Orifice Diameter, D (m)	Head, h (m)	Horizontal Distance, X (m)	Vertical Distance, Y (m)	$\sqrt{Yh}$ (m)
	0.003				

Point	Orifice Diameter, D (m)	Head, h (m)	Horizontal Distance, X (m)	Vertical Distance, Y (m)	$\sqrt{Yh}$ (m)
	0.006				

❖ Results: (Figures)

1- Plot (**X**) against ($\sqrt{Yh}$) for 3 mm orifice and determine the slope of curve.
2- Plot (**X**) against ($\sqrt{Yh}$) for 6 mm orifice and determine the slope of curve.
3- Determine the value of Coefficient of Velocity (C_v) for the two orifices.
4- Determine the value of Actual Velocity (v) for the two situations.
5- Compare between the all above results.