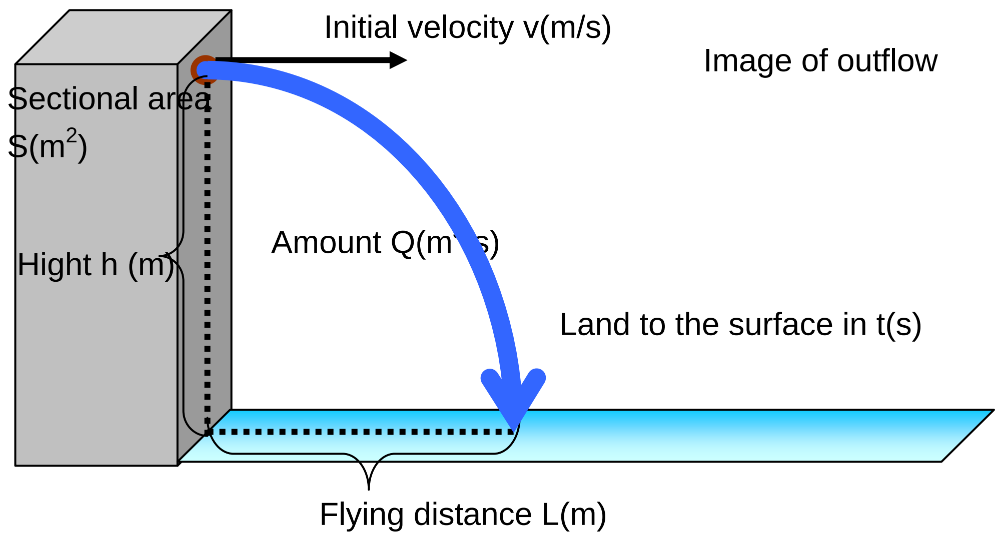
Method taken to estimate amount of flow



Assuming the flowed liquid free-falls, calculate the amount by applying the formulas below based on the flying distances and heights.

Free-fall vertically $\quad h = \frac{1}{2} g t^2 \quad \Leftrightarrow \quad t = \sqrt{\frac{2h}{g}}$

Uniform motion horizontally $\quad v = \frac{L}{t} = \frac{L}{\sqrt{\frac{2h}{g}}}$ $\qquad$ Amount $\quad Q = Sv = \frac{SL}{\sqrt{\frac{2h}{g}}} \quad \cdots$ 1

<Assumptions>

Diameter of a duct	:10 (cm)
Width of water flow	: 6 (cm)
Sectional area of water flow in a duct	: $S = 4.1\times10^{-4}$ (m^2)
Flying distance	: L = 0.50 (m)
Height	: h = 1.27 (m)
Gravity acceleration	: g=9.8 (m/s^2)

Calculate the amount by inputting the assumptions above into the formula as follows;

$$Q = \frac{SL}{\sqrt{\frac{2h}{g}}} \times 4 = \frac{4.1\times10^{-4}\times0.5}{\sqrt{\frac{2\times1.27}{9.8}}} \times 4 = 1.6\times10^{-3}\,(m^3/s) \quad 6(\,m^3/h)$$