Pipes and Cisterns: Tips & Tricks

- **INLET**: A pipe connected with a tank or cistern or a reservoir, that fills it, it is known as Inlet.

- **OUTLET**: A pipe connected with a tank or a cistern or a reservoir, emptying it, is known as Outlet.

- If a pipe can fill a tank in $x$ hours, then :part filled in 1 hour=$\frac{1}{x}$.

- If a pipe can empty a tank in $y$ hours, then :part emptied in 1 hour=$\frac{1}{y}$.

- If a pipe can fill a tank in $x$ hours and another pipe can empty the full tank in $y$ hours (where $y>x$), then on opening both the pipes, the net part filled in 1 hour=$\left(\frac{1}{x} - \frac{1}{y}\right)$.

- If a pipe can fill a tank in $x$ hours and another pipe can empty the full tank in $y$ hours (where $x>y$), then on opening both the pipes, the net part filled in 1 hour=$\left(\frac{1}{y} - \frac{1}{x}\right)$.

*Two pipes can fill an empty reservoir in $t_1$ and $t_2$ min respectively. If both the pipes are opened simultaneously then the time after which the second pipe is closed so that the total time taken to fill the reservoir is $T$ min, is given by $(1 + \frac{T}{t_1}) t_2$ min.

*There is a hole in a reservoir which empties it in $T_1$ hours. If a tap is turned on which admits the water in the reservoir at the rate of $x$ litres/hour due to which the reservoir is now emptied in $T_2$ hours, then the volume of the reservoir is given by $[x \left(\frac{T_1 T_2}{T_2 - T_1}\right)]$ litres.