

## 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= $1/x$ .
  - If a pipe can empty a tank in  $y$  hours, then :part emptied in 1 hour= $1/y$ .
  - 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= $(1/x - 1/y)$ .
  - 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= $(1/y - 1/x)$ .
- \*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  $(1 + T / t_1) t_2$  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  $[ x (T_1 * T_2 / (T_2 - T_1) ) ]$  litres.