NUMBER SYSTEM - PIPES & CISTERNS

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

2. **Outlet:** A pipe connected with a tank or cistern or reservoir, emptying it is known as an outlet.

Important Concepts

1. If a pipe can fill a tank in x hours, part filled in 1 hour = 1/x.

2. If a pipe can fill a tank in x hours and another pipe in y hours, part of tank filled in 1 hour when both the pipes are opened simultaneously = (1/x + 1/y) = (x+y)/xy

   ∴ Time taken to fill the tank by both the pipes when opened simultaneously = xy/(x+y)

3. If a pipe can empty a tank in "y" hours, then tank emptied in 1 hour = 1/y

4. If a pipe can empty a tank in y hours and another pipe in x hours, part of tank emptied in 1 hour when both the pipes are opened simultaneously = (1/x + 1/y) = (x+y)/xy

   ∴Time taken to empty the tank by both the pipes when opened simultaneously = xy/(x+y)

5. 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 = (y - x)/xy

   ∴When both the pipes are opened simultaneously, time taken to fill the tank fully = xy/(y - x) hours.

6. 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 emptied in 1 hour = 1/y - 1/x = (x - y)/xy

   ∴ When both the pipes are open simultaneously, time taken to empty the tank fully = xy/(x - y) hours.

Solved Examples

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aptitude_pipes_cisterns.htm