



PIPES & CISTERNS



Practice Questions

1. Pipe A can fill a tank in 36 minutes and pipe B can fill it in 45 minutes. If both the pipes are opened to fill an empty tank, in how many minutes will it be full?

- a) 15
- b) 18
- c) 20
- d) 25



- $36 * 45 / 36 + 45$
- $36 * 45 / 81 = 20$ Ans

2. Two pipes can fill a tank in 10 hours and 12 hours respectively while a third pipe empties the full tank in 20 hours. If all the three pipes operate simultaneously, in how much time will the tank be filled?

- a) 7hrs 30min
- b) 7hrs 45min
- c) 8hrs 45min
- d) 9hrs 30min

- LCM (10,12,20) is 60 =number of chocolates
- Efficiency $6^5 - 3$
- Ans is $60 / 8 = 7.5$

3. A tap can fill a tank in 25 minutes and another can empty it in 50 minutes. Find whether the tank will be filled up or emptied and in how many minutes if both working together?

- a) Tank is filled up in 50 minutes
- b) Tank is emptied in 25 minutes
- c) Tank is filled up in 25 minutes
- d) None of these

- $1/25 - 1/50 = 1/50$ Positive number mean tank will be filled in 50 minutes

4. Two pipes A & B can separately fill a cistern in 220 minutes and 330 minutes. Together, they can fill the cistern in
- a) 1 hour 32 minutes
 - b) 1 hour
 - c) 2 hour 12 minutes
 - d) 2 hours

- LCM 660
- Efficiency 3 and 2
- $660/5=132$ minutes =2 hour 12 minutes

A cistern has a leak which would empty the cistern in 20 minutes. A tap is turned on which admits 4 liters a minute into the cistern, and it is emptied in 24 minutes. How many liters does the cistern hold?

- a) 480 liters
- b) 600 liters
- c) 720 liters
- d) 800 liters

- $20 * 24 / (24-20) = 120$ minutes inlet pipe will take to fill the tank
- Capacity of tank = $120 * 4 = 480$ litres

A cistern is filled by a tap in $3 \frac{1}{2}$ hours. Due to leak in the bottom of the cistern, it takes half an hour longer to fill the cistern. If the cistern is full how long will it take the leak to empty it?

- a) 7 hours
- b) 8 hours
- c) 14 hours
- d) 28 hours

- Inlet = $3 \frac{1}{2} = \frac{7}{2}$
- Inlet + Outlet = 4
- Only Outlet = $X * Y / (Y - X) = \frac{7}{2} * 4 / (\frac{1}{2})$
- = 28 Ans

A cistern is normally filled in 8 hours but takes two hours longer to fill because of a leak in its bottom. If the cistern is full, the leak will empty it in?

- a) 16 hrs
- b) 20 hrs
- c) 40 hrs
- d) 25 hrs

- Inlet = 8
- Inlet + Outlet = 10
- Only Outlet = $X*Y/(Y-X)$ = $8 * 10 / 2$
- =40 Ans

A pump can fill a tank with water in 2 hours. Because of a leak, it took $2\frac{2}{3}$ hours to fill the tank. The leak can drain all the water of the tank in

- a) 6 hours
- b) 8 hours
- c) 9 hours
- d) 10 hours

- Inlet = 2
- Inlet + Outlet = $2 \frac{2}{3} = \frac{8}{3}$
- Only Outlet = $X * Y / (Y - X) = 2 * (\frac{8}{3}) / (\frac{2}{3})$
- =8 Ans

Three pipes A, B and C can fill a tank from empty to full in 30 minutes, 20 minutes, and 10 minutes respectively. When the tank is empty, all the three pipes are opened. A, B and C discharge chemical solutions P, Q and R respectively. What is the proportion of the solution R in the liquid in the tank after 3 minutes?

- a) $6/11$
- b) $5/11$
- c) $7/11$
- d) $8/11$

Ans:A

- $\text{LCM}(30, 20, 10) = 60$
- Efficiency 2 3 6
- After 3 minutes chocolates eaten by A B and C respectively will be 6 9 18
- So proportion of C $= 18 / (6 + 9 + 18) = 18/33$
- $= 6/11$ Ans

A tap can fill a tank in 4 hours. After half the tank is filled, two more similar taps are opened. What is the total time taken to fill the tank completely?

- a) 1 hr 20 min
- b) 4 hr
- c) 3 hr
- d) 2 hr 40 min

- Once half the tank is filled in 2 hours two more additional similar pipes are opened which means total 3 pipes are working now each one can fill the remaining half in 2 hours individually
- Pipe A = 2 hours
- Pipe B = 2 Hours
- Pipe C = 2 hours
- Working together they will take reciprocal of $(\frac{1}{2} + \frac{1}{2} + \frac{1}{2} =) \frac{3}{2}$
- i.e $\frac{2}{3}$ hours = 40 minutes
- So total time = 2 hours 40 minutes to fill the tank full capacity

A large tanker can be filled by two pipes A and B in 60 minutes and 40 minutes respectively. How many minutes will it take to fill the tanker from empty state if B is used for half the time and A and B fill it together for the other half?

- a) 15 min
- b) 20 min
- c) 27.5 min
- d) 30 min

- $\text{LCM}(60,40)=120=\text{Number of Chocolates}$
 - Efficiency A = $120/60=2$ Chocolates per minute
 - Efficiency B = $120/40=3$ Chocolates per minute
 - As given in the statement half the time A+B worked and half the time only B so from options
 - **[half the time * 5] + [half the time * 3] should be =120**
- a) 15 min [$7.5 * (2+3) + 7.5 * 3$ is not = 120]
- b) 20 min [$10 * (2+3) + 10 * 3$ is not = 120]
- c) 27.5 min not feasible
- d) 30 min [$15 * (2+3) + 15 * 3 = 120$]

A leak in the bottom of a tank can empty the full tank in 6 hours. An inlet pipe fills water at the rate of 4 liters a minute. When the tank is full, the inlet is opened and due to the leak, the tank is empty in 24 hours. How many liters does the tank hold?

- a) 4010 litre
- b) 2220 litre
- c) 1920 litre
- d) 2020 litre

- Outlet=6
- Inlet + Outlet =24
- Only Inlet= $X * Y / (Y-X)$
- $6 * 24 / (24-6) = 8$ hours inlet pipe will take to fill the tank
- Capacity of tank= $8 * 60 * 4 = 1920$ litres

Two pipes can fill a tank in 10 and 14 minutes respectively and a waste pipe can empty 4 gallons per minute. If all the pipes working together can fill the tank in 6 minutes, what is the capacity of the tank?

- a) 120 gallons
- b) 240 gallons
- c) 450 gallons
- d) 840 gallons

- A can fill in 10 min
 - B can fill in 14 min
 - Let C can **empty** in X min
 - A+ B+C together can fill in 6 minutes (given)
 - So $\frac{1}{10} + \frac{1}{14} - \frac{1}{X} = \frac{1}{6}$
 - X= 210 minutes
- and Since waste pipe can empty 4 gallons per minute
- So capacity = $210 \times 4 = 840$ Gallons



If two pipes function simultaneously, the reservoir will be filled in 24 hrs. One pipe fills the reservoir 20 hours faster than the other. How many hours does it take for the second pipe to fill the reservoir?

- a) 12 hrs
- b) 30 hrs
- c) 44 hrs
- d) 60 hrs



- a) 12 hrs (not possible)
- b) 30 hrs ($\frac{1}{30} + \frac{1}{10}$) is not $= \frac{1}{24}$
- c) 44 hrs ($\frac{1}{44} + \frac{1}{24}$) is not $= \frac{1}{24}$
- d) 60 hrs ($\frac{1}{60} + \frac{1}{40} = \frac{1}{24}$)

A water tank is two-fifth full. Pipe A can fill a tank in 10 minutes and pipe B can empty in 6 minutes. If both the pipes are open, how long will it take to empty or fill the tank completely ?

- a) 6 min to empty
- b) 7 min to full
- c) 6 min to full
- d) 7 min to empty

- Working together (Inlet +Outlet)= $1/10-1/6$
- $=-4/60= -1/15$ (minus sign indicates it will empty the tank)
- It means working together they will empty the full tank in 15 minutes so to empty $2/5$ th of a tank they will take $2/5 * 15 = 6$ minutes to empty

. There are 12 pipes attached to a tank. Some of them are fill pipes and some are drain pipes. Each of the fill pipes can fill the tank in 12 hours, while each of the drain pipes will take 24 hours to drain a full tank completely. If all the pipes are kept open when the tank was empty, it takes 2 hours for the tank to overflow. How many of these pipes are drain pipes?

- a) 6
- b) 11
- c) 4
- d) 7

- a) 6 ($6/12 - 6/24$ is not equal to $\frac{1}{2}$)
- b) 11 ($1/12 - 11/24$ is not equal to $\frac{1}{2}$)
- c) 4 ($8/12 - 4/24$ is **equal** to $\frac{1}{2}$)
- d) 7 ($5/12 - 7/24$ is not equal to $\frac{1}{2}$)

Ans: C

. Pipe A can fill a tank in 'a' hours. On account of a leak at the bottom of the tank it takes thrice as long to fill the tank. How long will the leak at the bottom of the tank take to empty a full tank, when pipe A is kept closed?

- a) $3a/2$ hrs
- b) $2a/3$ hrs
- c) $4a/3$ hrs
- d) $3a/4$ hrs



- $(a + 3a) / (3a - 2a) = 3a/2$

. Two taps can fill a tank in 12 min and 18 min respectively. Both the taps are kept open for 2 min and then the tap that fills the tank in 12 min is turned off. In how many more minutes will the tank be filled?

- a) 9
- b) 12
- c) 13
- d) 10

- LCM 36
- Efficiency 3 and 2
- Together they worked for 2 minutes in 2 minutes they must have consumed 10 Chocolates
- Pending Chocolates $36 - 10 = 26$ Chocolates to be consumed by pipe B (which takes 18 minutes) so $26/2 = 13$ minutes

Pipe A usually fills a tank in 2 hours. On account of a leak at the bottom of the tank, it takes pipe A 30 more minutes to fill the tank. How long will the leak take to empty a full tank if pipe A is shut?

- a) 2 hrs 30mins
- b) 5 hrs
- c) 4 hrs
- d) 10 hrs

- Inlet=2 Hours
- Inlet + Outlet = 2 and half hour= $2\frac{1}{2} = \frac{5}{2}$
- Only Outlet = $(X * Y) / (Y-X)$
- $(\frac{5}{2} * 2) / (\frac{1}{2}) = 10$ hours

