

Pipes & Cisterns - Solved Examples

Q 1 - Two pipes A and B can fill a tank in 24 hours and 30 hours separately. In the event that both the channel are opened all the while in the void tank, the amount of the truth will surface eventually taken by them to fill it?

A - 12 hrs 10 min

B - 13 hrs 20 min

C - 12 hrs 20 min

D - 11 hrs 20 min

Answer - B

Explanation

Part filled by A in 1 hour = $\frac{1}{24}$, part filled by B in 1 hour = $\frac{1}{30}$

Part filled by (A+B) in 1 hour = $(\frac{1}{24} + \frac{1}{30}) = \frac{9}{120} = \frac{3}{40}$

Time taken by both to fill the tank = $\frac{40}{3}$ hrs = 13 hrs 20 min.

Q 2 - A funnel can fill a tank in 15 hours .because of a hole in the bottom; it is filled in 20 hours. On the off chance that the tank is full, what amount of the reality of the situation will become obvious eventually break take to discharge it?

A - 40 hours

B - 50 hours

C - 60 hours

D - 70 hours

Answer - C

Explanation

Work done by the break in 1 hour = $(1/15 - 1/20) = 1/60$

Time taken by the break to discharge it = 60 hours

Q 3 - Funnels A and B can fill a tank in 6 hours and 9 hours individually and channel C can purge it in 12 hours. On the off chance that every one of the funnels is opened together in the vacant tank in what amount of the reality of the situation will become obvious eventually be full?

A - 39/7 hrs

B - 36/7 hrs

C - 38/7 hrs

D - 34/7 hrs

Answer - B

Explanation

Net part filled in 1 hour = $(1/6 + 1/9 + 1/12) = 7/36$

Thus, the tank will be full in 36/7 hrs.

Q 4 - Two Pipes A and B can fill a tank in 24 minutes and 32 minutes separately. On the off chance that both the channel opened together, after the amount of time B ought to be shut so that the tank is full in 18 minute?

A - 10 min

B - 8 min

C - 12 min

D - 15 min

Answer - B

Explanation

Let B be shut after x minutes. At that point, (part filled by (A+B) in x min.)
+ {part filled by A in (18-x) min} = 1
 $\therefore x \left(\frac{1}{24} + \frac{1}{32} \right) + (18-x) \cdot \frac{1}{24} = 1$
 $\Rightarrow \frac{7x}{96} + \frac{(18-x)}{24} = 1$
 $\Rightarrow 7x + 4(18-x) = 96$
 $\Rightarrow 3x = 24$
 $\Rightarrow x = 8$
Subsequently, B ought to be shut after 8 min.

Q 5 - Two Pipes A and B can fill a tank in 1 hour and 75 minutes separately. There is likewise an outlet C. On the off chance that all the three funnels are opened together, the tank is full in 50 minutes. What amount of the reality of the situation will become obvious eventually taken by C to purge the full tank?

A - 20 minutes

B - 50 minutes

C - 100 minutes

D - 80 minutes

Answer - C

Explanation

Work done by C in 1 min. = $(1/60 + 1/75 - 1/50) = 3/300 = 1/100$
Thus, C can discharge the full tank in 100 minutes.

Q 6 - Two funnels can fill a reservoir in 14 hours and 16 hours individually. The channels are opened all the while and it is found that because of spillage in the base it took 32 minutes more to fill the reservoir. Once the reservoir is full, in what time, spillage will discharge the full reservoir?

A - 5 hr

B - 8 hr

C - 9 hr

D - 10 hr

Answer - C

Explanation

Work done by the two funnels in 1 hour = $(1/14 + 1/16) = 15/112$
Time taken by these funnels to fill the tank = $112/15$ hrs = 7 hrs 28 min.
Because of spillage, time taken = 7 hrs. 28 min. + 32 min. = 8 hrs.
 \therefore Work done by (two funnels + spill) in 1 hour = $1/8$
Work done by the break in 1 hour = $(15/112 - 1/8) = 1/112$
Break will discharge the full reservoir in 8 hours.