Pipes & Cistern

Questions & Solution

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Pipes & Cistern Questions With Solution

A Tank is filled with the mixture of Milk and Water in the ratio of 3:2 up to 2/5 of its capacity. The tank has two inlet pipes i.e., Milk and Water inlets. Milk and Water pipe can fill an empty tank in 12 and 18 hours respectively. Now both pipes are opened simultaneously and closed after the Tank is completely filled, then what is the ratio of Milk and Water in the full Tank if it can accommodate 250Litre?
A. 1:1
B. 2:3
C. 3:2
D. 5:4
E. None

Answer & Explanation
Answer – C. 3:2
Explanation :
Initial Milk = 2/5*250*3/5 = 60 L
Water = 2/5*250*2/5 = 40 L
Rest of Tank =150 L
Pipes are opened then can fill rest of tank in 108/25 hours
H/W = constant
then (108/25)/12/x = (108/25)/18(150-x)
X = 90 = Milk, Water = 60
Final ratio = 3:2

• *An Inlet pipe can fill a tank in 5 hours and an Outlet pipe can empty 4/7 of the same Tank in 4 hours. In the first hour only Inlet pipe is opened and in the second hour, only outlet pipe is opened. They have opened alternately every hour until the Tank is filled. Then in how many hours does the Tank gets filled?*
A. 17 Hours 17 Min
B. 34 Hours 60/7 Min
C. 35 Hours 15 Min
D. 36 Hours 60/7 Min
E. None

Answer & Explanation
Answer – B. 34 Hours 60/7 Min
Explanation :
2 hours work = 1/5-1/7 = 2/35
34 hours work = 34/35
remaining work = 1/35
Now its inlet pipe turn = 1/35*5 = 1/7
= 34 hours + 60/7 min

• *A Tank is already filled up to X% of its capacity. An Inlet pipe can fill Full Tank in 30 minutes and an Outlet pipe can empty Full Tank in 20 Minutes. Now both pipes are opened then the Tank is emptied in 24 Minutes. Then initially up to what % of its capacity is Tank filled?*
A. 40%
B. 48%
C. 50%
D. 60%
E. Cannot be determined

Answer & Explanation
Answer – A. 40%
Explanation :
1/30 – 1/20 = -1/60
Full Tank can be emptied 60 Minutes
In 24 minutes 40% of Tank can be emptied.

- **Two Inlet Pipes A and B together can fill a Tank in 'X' minutes. If A and B take 81 minutes and 49 minutes more than 'X' minutes respectively, to fill the Tank. Then They can fill the 5/7 of that Tank in how many minutes?**

A. 45 Minutes
B. 49 Minutes
C. 63 Minutes
D. 81 Minutes
E. None

Answer & Explanation
Answer – A. 45 Minutes
Explanation :
Time taken by two pipes to fill full Tank is = √ab min = 63 min
*5/7 Tank = 63*5/7 = 45 min*

- **Pipe A can fill a Tank in 18 Hours, Pipe B can empty a Tank in 12 Hours, Pipe C can fill Tank in 6 Hours. The Tank is already filled up to 1/6 of its capacity. Now Pipe A is opened in the First Hour alone, Pipe B is opened in the Second Hour alone and Pipe C is opened in the Third Hour alone. This cycle is repeated until the Tank gets filled. Then in How many Hours does the rest of Tank gets filled?**

A. 15 Hours
B. 18 Hours
C. 20 Hours
D. 24 Hours
E. None

Answer & Explanation
Answer – B. 18 Hours
Explanation :
In First Hour Tank filled = 1/6+1/18
Second Hour = 1/6+1/18-1/12
Third Hour = 1/6+1/18-1/12+1/6 = 11/36 is filled
25/36 is left
From then 3 hours work = 1/18-1/12+1/6 = 5/36
*5*3 Hours = 5*5/36 = 25/36*
*Total = 5*3+3 = 18 Hours*

- **If the ratio of Rate of filling of two Pipes A and B is 3:2. If together they can fill a Tank 5/6th of Tank in 20 minutes. Then in how many does A alone can fill the Tank?**

A. 20 Minutes
B. 30 Minutes
C. 40 Minutes
D. 50 Minutes
E. 60 Minutes

Answer & Explanation
Answer – C. 40 Minutes
Explanation :
5/6 tank = 20 Min
Full tank = 24 Min

1/2x+ 1/3x = 1/24
x = 20, A= 2x = 40 Min

• *Pipe A, B and can fill a Full Tank in 24,36 and 48 Minutes respectively. All three Pipes are Opened simultaneously in a Tank which is already filled up to 1/6 of its capacity. A and B are opened for only First 6 Minutes and closed thereafter.Then C alone filled remaining Tank. Then in total how many Minutes does C filled the Tank?*
A. 12 Minutes
B. 14 Minutes
C. 16 Minutes
D. 18 Minutes
E. 20 Minutes

Answer & Explanation

Answer – E. 20 Minutes
Explanation :
6(1/24+1/36+1/48) + x/48 = 5/6*
x = 14 Min
C = 6+14 = 20

• *Pipe A and B can fill a Tank alone in 12 Hours and 6 Hours respectively. Another Pipe C can empty the same Tank alone in 9 Hours. In an empty Tank for the First hour, Pipe A is opened alone, Second Hour pipe B is opened alone, Third Hour pipe C is opened alone. This process is continued until the Tank is filled. Then Pipe A is opened for How many Hours?*
A. 7 Hours
B. 7 Hours 10 Min
C. 7 Hours 15 Min
D. 7 Hours 20 Min
E. None

Answer & Explanation

Answer – D. 7 Hours 20 Min
Explanation :
3 hours work = 1/12+ 1/6 – 1/9 = 5/36
*7*3 hours work = 35/36*
remaining work = 1/36
*Now its pipe A turn = 1/36*12 = 1/3 hour*
Total = 7 hours + 20 min

• *Pipe A and B can fill a Tank alone in 48 Hours and 24 Hours respectively. Another Pipe C can empty the same Tank alone in 36 Hours. In an empty Tank for the First hour, Pipe A is opened alone, Second Hour pipe B is opened alone, Third Hour pipe C is opened alone. This process is continued until the Tank is filled. Then Pipe B is opened for How many Hours?*
A. 28 Hours
B. 28 Hours 10 Min
C. 29 Hours
D. 29 Hours 10 Min
E. None

Answer & Explanation

Answer – B. 28 Hours 10 Min
Explanation :
3 Hours work = (1/48+1/24-1/36) = 5/144
28 3hours = 140/144*
remaining part = 4/144 = 1/36
Now it's A turn = 1/36-1/48
= 1/144 left

*Now it's B turn = 1/144*24 = 1/6 hour = 10 min*
Total B = 28 Hours + 10 Min
• **Two Pipes A and B together can fill a Tank in 'X' minutes. If 'A' is Inlet Pipe can Fill the Tank alone in 40 minutes less than 'X' minutes and 'B' is Outlet pipe can empty the Tank alone in 30 minutes less than 'X' minutes. Then together they can fill the empty Tank in how many minutes?**
A. 48 Minutes
B. 54 Minutes
C. 60 Minutes
D. 70 Minutes
E. None
Answer & Explanation
*Answer – **C. 60 Minutes***
Explanation :
1/x-40 – 1/x-30 = 1/x
x= 60 min

•
A Special pump can be used for filling as well as for emptying a Cistern. The capacity of the Cistern is 2400m³. The emptying capacity of the Cistern is 10m³ per minute higher than its filling capacity and the pump needs 8 minutes lesser to Cistern the tank than it needs to fill it. What is the filling capacity of the pump?
A. 40m³/min
B. 50m³/min
C. 60m³/min
D. 30m³/min
E. None of the Above
Answer & Explanation
*Answer – **B. 50m³/min***
Explanation :
Filling Capacity of the Pump = x m/min
Emptying Capacity of the pump = (x+10) m/min
2400/x – 2400/x+10 = 8
(x – 50) + (x + 60) = 0
x = 50
• **Three pipes P, Q and R can fill a Cistern in 6 hours. After working at it together for 2 hours, R is closed and P and Q can fill the remaining part in 7 hours. The number of hours taken by R alone to fill the Cistern is**
A. 14 hours
B. 12 hours
C. 15 hours
D. 18 hours
E. None of the Above
Answer & Explanation
*Answer – **A. 14 hours***
Explanation :
Part filled in 2 hours = 2/6 = 1/3
Remaining Part = (1-1/3) = 2/3
(P + Q)'s 7 hour work = 2/3
(P + Q)'s 1 hour work = 2/21
R's 1 hour work = (P + Q + R) 1 hour work – (P + Q) 1 hour work
= (1/6 – 2/21) = 1/14 = 14 hours

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

A. 5 minutes
B. 4 minutes
C. 6 minutes
D. 8 minutes
E. None of the Above

Answer & Explanation

Answer – C. 6 minutes

Explanation :
pipe B is faster than pipe A and so,the tank will be emptied.
part to be emptied = 2/5
part emptied by (A+B) in 1 minute= (1/6 – 1/10) = 1/15
1/15 : 2/5 :: 1: x
*2/5 * 15 = 6 minutes.*

• *If a pipe A can fill a tank 3 times faster than pipe B. If both the pipes can fill the tank in 32 minutes, then the slower pipe alone will be able to fill the tank in?*

A. 128 minutes
B. 124 minutes
C. 154 minutes
D. 168 minutes
E. None of the Above

Answer & Explanation

Answer – A. 128 minutes

Explanation :
Time is taken by pipe A = x
Time is taken by pipe B = x/3
1/x + 3/x = 1/32
x = 128 minutes

• *A large cistern can be filled by two pipes P and Q in 15 minutes and 20 minutes respectively. How many minutes will it take to fill the Cistern from an empty state if Q is used for half the time and P and Q fill it together for the other half?*

A. 12 minutes
B. 17 minutes
C. 18 minutes
D. 19 minutes
E. None of the Above

Answer & Explanation

Answer – A. 12 minutes

Explanation :
Part filled by P and Q = 1/15 + 1/20 = 7/60
Part filled by Q = 1/20
x/2(7/60 + 1/20) = 12 minutes

• *A pipe can fill a cistern in 16 hours. After half the tank is filled, three more similar taps are opened. What is the total time taken to fill the cistern completely?*

A. 3 hours
B. 2 hours
C. 9 hours
D. 4 hours
E. None of the Above

Answer & Explanation

Answer – C. 9 hours

Explanation :

In One hour pipe can fill = 1/16

*Time is taken to fill half of the tank = 1/2 * 16 = 8 hours*

*Part filled by four pipes in one hour = (8*1/16) = 1/2*

Required Remaining Part = 1/2

Total time = 8 + 1 = 9

• *Two pipes P and Q are opened together to fill a tank. Both the pipes fill the tank in time "x" If Q separately took 25 minutes more time than "x" to fill the tank and Q took 49 minutes more time than "x" to fill the tank, then find out the value of x?*

A. 48 minutes

B. 35 minutes

C. 54 minutes

D. 68 minutes

E. None of the Above

Answer & Explanation

Answer – B. 35 minutes

Explanation :

*Time is taken to fill the tank by both Pipes x = √a*b*

*x = √25*49 = 5 * 7 = 35*

• *Three taps P, Q and R can fill a tank in 12, 15 and 20 hours respectively. If P is open all the time and Q, R are open for one hour each alternatively, the tank will be full in*

A. 3 hours

B. 2 hours

C. 7 hours

D. 4 hours

E. None of the Above

Answer & Explanation

Answer – C. 7 hours

Explanation :

(P + Q)'s 1 hour work = 1/12 + 1/15 = 3/20

(P + R)'s 1 hour work = 1/12 + 1/20 = 2/15

For 2 hrs = (3/20 + 2/15) = 17/60

*For 6 hrs = (3*17/60) = 17/20*

Remaining Part = 1 – 17/20 = 3/20 filled by P and Q in 1 hour

• *Pipe A fills a tank in 30 minutes. Pipe B can fill the same tank 5 times as fast as pipe A. If both the pipes were kept open when the tank is empty, how much time will it take for the tank to overflow?*

A. 3 minutes

B. 2 minutes

C. 5 minutes

D. 4 minutes

E. None of the Above

Answer & Explanation

Answer – C. 5 minutes

Explanation :

Total Capacity = 90L.

Tank filled in 1 minute by A = 3L

Tank filled in 1 minute by B = 15L

The capacity of the tank filled with both A and B in 1 minute = 18L.

overflow = 90/18 = 5 minutes.

• *Two pipes P and Q can fill a cistern in 10 hours and 20 hours respectively. If they are opened simultaneously. Sometimes later, tap Q was closed, then it takes total 5 hours to fill up the whole tank. After how many hours Q was closed?*

A. 14 hours
B. 15 hours
C. 10 hours
D. 16 hours
E. None of the Above

Answer & Explanation

Answer – C. 10 hours

Explanation :
Pipe P Efficiency = 100/10 = 10%
Pipe Q Efficiency = 100/20 = 5%
Net Efficiency = 15%
15x + 10(5-x) = 100
x = 10

•

If a pipe A can fill a tank 3 times faster than pipe B and takes 32 minutes less than pipe B to fill the tank. If both the pipes are opened simultaneously, then find the time taken to fill the tank?

A. 14 minutes
B. 12 minutes
C. 15 minutes
D. 16 minutes
E. None of the Above

Answer & Explanation

Answer – B. 12 minutes

Explanation :
3x – x = 32
x = 16
1/16 + 1/48 = 4/48
Time taken to fill the tank = 48/4 = 12 minutes

• *Two pipes P and Q can fill a tank in 24 minutes and 27 minutes respectively. If both the pipes are opened simultaneously, after how much time should B be closed so that the tank is full in 8 minutes?*

A. 14 minutes
B. 12 minutes
C. 15 minutes
D. 18 minutes
E. None of the Above

Answer & Explanation

Answer – D. 18 minutes

Explanation :
Required time = y(1-(t/x)) = 27(1-(8/24))= 18 minutes

• *A full tank gets emptied in 8 minutes due to the presence of a leak in it. On opening a tap which can fill the tank at the rate of 9 L/min, the tank get emptied in 12 min. Find the capacity of a tank?*

A. 120 L
B. 240 L
C. 216 L
D. 224 L
E. None of the Above

Answer & Explanation

Answer – C. 216 L
Explanation :
a = 8; b = 9; C = 12
Capacity of a tank = a*b*c/c-a = 8*9*12/4 = 216 Litre.

- **If a pipe A can fill a tank 3 times faster than pipe B. If both the pipes can fill the tank in 42 minutes, then the slower pipe alone will be able to fill the tank in?**

A. 148 minutes
B. 124 minutes
C. 154 minutes
D. 168 minutes
E. None of the Above

Answer & Explanation

Answer – D. 168 minutes
Explanation :
Time is taken by pipe A = x
Time is taken by pipe B = x/3
1/x + 3/x = 1/42
x = 168 minutes

- **A large cistern can be filled by two pipes P and Q in 15 minutes and 10 minutes respectively. How many minutes will it take to fill the Cistern from an empty state if Q is used for half the time and P and Q fill it together for the other half?**

A. 6.5 minutes
B. 7.5 minutes
C. 8.5 minutes
D. 9.5 minutes
E. None of the Above

Answer & Explanation

Answer – B. 7.5 minutes
Explanation :
Part filled by P and Q = 1/15 + 1/10 = 1/6
Part filled by Q = 1/10
x/2(1/6 + 1/10) = 2/15 = 15/2 = 7.5 minutes

- **A pipe can fill a cistern in 8 hours. After half the tank is filled, three more similar taps are opened. What is the total time taken to fill the cistern completely?**

A. 3 hours
B. 2 hours
C. 5 hours
D. 4 hours
E. None of the Above

Answer & Explanation

Answer – C. 5 hours
Explanation :
In One hour pipe can fill = 1/8
Time is taken to fill half of the tank = 1/2 * 8 = 4 hours
Part filled by four pipes in one hour = (4*1/8) = 1/2
Required Remaining Part = 1/2
Total time = 4 + 1 = 5

- **Two pipes P and Q are opened together to fill a tank. Both the pipes fill the tank in time "x" If Q separately took 16 minutes more time than "x" to fill the tank and Q took 36 minutes more time than "x" to fill the tank, then find out the value of x?**

A. 48 minutes

B. 24 minutes

C. 54 minutes

D. 68 minutes

E. None of the Above

Answer & Explanation

*Answer – **B. 24 minutes***

Explanation :

Time is taken to fill the tank by both Pipes x = √a*b

x = √16*36 = 4 * 6 = 24

• **A Cistern has an inlet pipe and outlet pipe. The inlet pipe fills the cistern completely in 1 hour 20 minutes when the outlet pipe is plugged. The outlet pipe empties the tank completely in 6 hours when the inlet pipe is plugged. If there is a leakage also which is capable of draining out the water from the tank at half of the rate of the outlet pipe, then what is the time taken to fill the empty tank when both the pipes are opened?**

A. 3 hours

B. 2 hours

C. 5 hours

D. 4 hours

E. None of the Above

Answer & Explanation

*Answer – **B. 2 hours***

Explanation :

Inlet pipe Efficiency = 100/(8/6) = 75%

Outlet pipe Efficiency = 100/(6) = 16.66%

Efficiency of leakage = half of the rate of the outlet pipe = 8.33%

Net Efficiency = 75 – (16.66 + 8.33) = 50%

Required time = 100/50 = 2 hours

• **A Cistern has an inlet pipe and outlet pipe. The inlet pipe fills the cistern completely in 1 hour 20 minutes when the outlet pipe is plugged. The outlet pipe empties the tank completely in 4 hours when the inlet pipe is plugged. If both pipes are opened simultaneously at a time when the tank was one-third filled, when will the tank fill thereafter?**

A. 3 hours

B. 2 hours

C. 5 hours

D. 4 hours

E. None of the Above

Answer & Explanation

*Answer – **B. 2 hours***

Explanation :

Inlet pipe Efficiency = 100/(8/6) = 75%

Outlet pipe Efficiency = 100/(4) = 25%

Net Efficiency = 75 – 25 = 50%(1/3)filled

2/3 filled = 100%

Required time = 100/50 = 2 hours

• **Two pipes P and Q can fill a cistern in 10 hours and 20 hours respectively. If they are opened simultaneously. Sometimes later, tap Q was closed, then it takes total 8 hours to fill up the whole tank. After how many hours Q was closed?**

A. 4 hours

B. 5 hours

C. 2 hours

D. 6 hours
E. None of the Above
Answer & Explanation
Answer – A. 4 hours
Explanation :
Pipe P Efficiency = 100/10 = 10%
Pipe Q Efficiency = 100/20 = 5%
Net Efficiency = 15%
15x + 10(8-x) = 100
x = 4

-
Three pipes A, B, and C can fill the tank in 10 hours, 20 hours and 40 hours respectively. In the beginning all of them are opened simultaneously. After 2 hours, tap C is closed and A and B are kept running. After the 4th hour, tap B is also closed. The remaining work is done by tap A alone. What is the percentage of the work done by tap A alone?
A. 30 %
B. 35 %
C. 45 %
D. 50 %
E. None of the Above
Answer & Explanation
Answer – B. 35 %
Explanation :
Pipe A's work in % = 100/10 = 10%
Pipe B's work in % = 100/20 = 5%
Pipe C's work in % = 100/40 = 2.5%
All of them are opened for 2 hours + after 2 hours, tap C is closed + After the 4th hour, tap B is also closed = 100
*=> (10+5+2.5)*2 + (10+5)*2 + X = 100*
=> 35 + 30 + work by tap A alone = 100
=> work by tap A alone = 100-65 = 35%

- **A pipe can fill a tank in 12 minutes and another pipe can fill it in 15 minutes, but a third pipe can empty it in 6 minutes. The first two pipes are kept open for 5 min in the beginning and then third pipe is also opened. Time taken to empty the water tank is?**
A. 30 mins
B. 25 mins
C. 45 mins
D. 50 mins
E. None of the Above
Answer & Explanation
Answer – C. 45 mins
Explanation :
x/6 – (x+5)/12 – (x+5)/15 = 0
x = 45 mins

- **Two pipes A and B can fill a tank in 12 hours and 18 hours respectively. The pipes are opened simultaneously and it is found that due to leakage in the bottom of the tank it took 48 minutes excess time to fill the cistern. When the cistern is full, in what time will the leak empty it?**
A. 72 hours
B. 62 hours
C. 64 hours

D. 84 hours

E. None of the Above

Answer & Explanation

Answer – A. 72 hours

Explanation :

Work done by the two pipes in 1 hour = (1/12)+(1/18) = (15/108).

Time taken by these pipes to fill the tank = (108/15)hrs = 7 hours 12 min.

Due to leakage, time taken = 7 hours 12 min + 48 min = 8 hours

Work done by two pipes and leak in 1 hour = 1/8.

Work done by the leak in 1 hour =(15/108)-(1/8)=(1/72).

Leak will empty the full cistern in 72 hours.

• **A tank is normally filled in 6 hours but takes two hours longer to fill because of a leak in the bottom of the tank. If the tank is full the leak will empty it in how many hours?**

A. 16 hours

B. 18 hours

C. 17 hours

D. 24 hours

E. None of the Above

Answer & Explanation

Answer – D. 24 hours

Explanation :

Work done by leak in 1 hr=(1/6-1/8)=1/24

Leak will empty the tank in 24 hours

• **Twelve pipes are connected to a Cistern. Some of them are inlet pipes and the others are outlet pipes. Each of the inlet pipes can fill the tank in 8 hours and each of the outlet pipes can empty the cistern completely in 6 hours. If all the pipes are kept open, the empty tank gets filled in 24 hours. How many inlet pipes are there?**

A. 6

B. 8

C. 7

D. 4

E. None of the Above

Answer & Explanation

Answer – C. 7

Explanation :

(x/8)-[(12-x)/6] = 1/24

x = 7

• **A dam has four inlets – A, B, C and D. The dam can be filled in 12 minutes through the first three inlets and it can be filled in 15 minutes through the second, the third and fourth inlet also it can be filled through the first and the fourth inlet in 20 minutes. How much time required to fill up the dam by all the four inlets?**

A. 10 mins

B. 15 mins

C. 20 mins

D. 25 mins

E. None of the Above

Answer & Explanation

Answer – A. 10 mins

Explanation :

(1/A + 1/B + 1/C) = 1/12 …(i)

(1/B + 1/C + 1/D) = 1/15 …(ii)

(1/A + 1/D) = 1/20 …(iii)
From eqn (i) and (ii)
(1/A – 1/D) = 1/60…(iv)
From eqn (iii) and (iv)
A=30 D=60.
Let the time taken to full the tank = T
T(1/A + 1/B +1/C +1/D)= 1
T(1/30 + 1/15) = 1
T = 10 mins

• **Three pipes P, Q and R connected to a Cistern. The first pipe (i.e) P can fill 1/2 part of the tank in one hour, second pipe, Q can fill 1/3 part of the cistern in one hour. R is connected to empty the cistern. After opening all the three pipes 7/12 part of the cistern. Then how much time required to empty the cistern completely?**
A. 2 hours
B. 3 hours
C. 4 hours
D. 5 hours
E. None of the Above

Answer & Explanation

Answer – C. 4 hours
Explanation :
In 1 hour, P can fill = 1/2 Part
Time taken to fill the Cistern by Pipe P = 2 hours
In 1 hour, Q can fill = 1/3 Part
Time taken to fill the Cistern by Pipe P = 3 hours
[1/2 + 1/3 – 1/R] = 7/12
1/R = 1/4
Time required to empty the Cistern = 4 hours

• **A Cistern can be filled by an inlet pipe at the rate of 4 litres per minute. A leak in the bottom of a cistern can empty the full tank in 8 hours. When the cistern is full, the inlet is opened and due to the leak, the cistern is empty in 40 hours. How many litres does the cistern hold?**
A. 4000 litre
B. 2400 litre
C. 1920 litre
D. 2020 litre
E. None of the Above

Answer & Explanation

Answer – B. 2400 litre
Explanation :
Part emptied by the leak in 1 hour = 1/8
part filled by (leak & inlet open) in 1 hour = 1/40
Part filled by the inlet pipe in 1 hour = 1/8 – 1/40 = 1/10
Inlet pipe fills the tank in = 10 hours
Inlet pipe fills water at the rate of 4 litres a minute.
*Capacity of Cistern = 10 * 60 * 4 = 2400 litre*

• **In a tank there is a pipe which can be used for filling the tank as well as for emptying it. The capacity of the tank is 1200 m³. The emptying of the tank is 10 m³ per minute higher than its filling capacity and the pump needs 6 minutes lesser to empty the tank than it needs to fill it. What is the filling capacity of the pipe?**
A. 20 m³ / min.
B. 40 m³ / min.

C. 50 m³ / min.
D. 60 m³ / min.
E. None of the Above

Answer & Explanation

*Answer – **B. 40 m³ / min.***

Explanation :
$1200/x – 1200/(x+10) = 6$
$200/x – 200/(x+10) = 6$
$x2 + 10x – 2000 = 0$
$x = 40$

• **Two pipes P and Q can fill a cistern in 12 hours and 4 hours respectively. If they are opened on alternate hours and if pipe A is opened first, in how many hours will the tank be full?**
A. 4 hours
B. 5 hours
C. 2 hours
D. 6 hours
E. None of the Above

Answer & Explanation

*Answer – **D. 6 hours***

Explanation :
Pipe P can fill = 1/12
Pipe Q can fill = 1/4
For every two hour, 1/12 + 1/4 = 1/3 Part filled
Total = 6 hours

•
Two pipes A and B can fill a tank in 10 hours and 15 hours respectively while a third pipe C can empty the full tank in 20 hours. All the pipes are opened for 5 hours and then C is closed. Find the time in which the tank is full?
a) 5.5 hrs
b) 6.5 hrs
c) 7.5 hrs
d) 8.5 hrs
e) None of these

Answer & Explanation

*Answer – **c) 7.5 hrs***

Explanation :
$(1/10 + 1/15 – 1/20)*5 + (1/10 + 1/15)*T = 1$. We will get T = 2.5 hrs
so total time = 5 + 2.5 = 7.5 hrs

• **Three pipe P, Q and R can fill a tank in 12 minutes, 18 minutes and 24 minutes respectively. The pipe R is closed 12 minutes before the tank is filled. In what time the tank is full?**
a) 8.(5/13) hrs
b) 8.(4/13) hrs
c) 7.(4/13) hrs
d) 8.(6/13) hrs
e) None of these

Answer & Explanation

*Answer – **b) 8.(4/13) hrs***

Explanation :
Let T is the time taken by the pipes to fill the tank
$(1/12 + 1/18 + 1/24)*(T – 12) + (1/12 + 1/18)*12 = 1$
We will get T = 108/13 = 8.(4/13) hrs

- **On pipe P is 4 times faster than pipe Q and takes 45 minutes less than pipe Q. In what time the cistern is full if both the pipes are opened together?**
a) 8 minutes
b) 10 minutes
c) 12 minutes
d) 14 minutes
e) None of these

Answer & Explanation

Answer – c) 12 minutes

Explanation :
Let P takes x minutes to fill the tank alone, then Q will take 4x minutes to fill the tank
4x – x = 45, x = 15
So P will take 15 minutes and Q will take 60 minutes to fill the tank. Both will fill the tank in
(60*15)/(75) = 12 minutes

- **Two pipes can fill a tank in 15 and 20 hours respectively. The pipes are opened simultaneously and it is found that due to the leakage in the bottom, 17/7 hours extra are taken extra to fill the tank. If the tank is full, in what approximate time would the leak empty it?**
a) 27 hrs
b) 32 hrs
c) 36 hrs
d) 39 hrs
e) None of these

Answer & Explanation

Answer – d) 39 hrs

Explanation :
Total time taken by both pipes before the leak was developed = 60/7 hours
now, leaks is developed which will take T time to empty the tank so, (1/15 +1/20 – 1/T) = 1/11
solve for T, we will get 660/17 hours = 39 hours (approx.)

- **Two pipes A and B can fill a tank in 8 minutes and 12 minutes respectively. If both the pipes are openedsimultaneously, after what time should B be closed so that the tank is full in 6 minutes?**
a) 1 min
b) 2 min
c) 3 min
d) 4 min
e) None of these

Answer & Explanation

Answer – c) 3 min

Explanation :
Let after x minutes pipe B is closed
(1/8 + 1/12)*x + (1/8)*(6 -x) = 1
X= 3 minutes

- **In what time would a cistern be filled by three pipes whose diameters are 1cm, 2 cm and 3 cm running together, when the largest pipe alone can fill the tank in 21 minutes? The amount of water flowing through the pipe is directly proportional to the square of its diameter.**
a)10.5 minutes
b) 11.5 minutes
c) 12.5 minutes
d) 13.5 minutes
e) None of these

Answer & Explanation

Answer – d) 13.5 minutes
Explanation :
More the diameter more will be the water flowing through it and less will be the time taken.
Means bigger pipe will take less time to fill the tank
So, for 1 cm time, $(1^2)/(3^2) = 21/t$, we get $t = 189$
For 2 cm time, $(2^2)/(3^2) = 21/t$. We get $t = 189/4$
So total time = 1/21 + 1/189 + 4/189 = 2/27
So total time = 13.5 minutes

• **Two pipes P and Q can fill a tank in 10 min and 12 min respectively and a waste pipe can carry off 12 litres of water per minute. If all the pipes are opened when the tank is full and it takes one hour to empty the tank. Find the capacity of the tank.**
a) 30
b) 45
c) 60
d) 75
e) None of these

Answer & Explanation

Answer – c) 60
Explanation :
Let the waste pipe take 'T' time to empty the tank.
(1/10 + 1/12 – 1/T)*60 = -1
We will get T = 5 min
So capacity = 5*12 = 60ltr

• **One pipe fill 1/4 of the tank in 4 minutes and another pipe fills 1/5 of the tank in 4 minutes. Find the time taken by both pipe together to fill half the tank?**
a) 40/9 minutes
b) 50/9 minutes
c) 44/9 minutes
d) 53/9 minutes
e) None of these
Answer & Explanation

• **Two pipes can separately fill the tank in 15hrs and 30hrs respectively. Both the pipe are opened and when the tank is 1/3 full a leak is developed due to which 1/3 water supplied by the pipe leaks out. What is the total time to fill the tank?**
a) 20/3 hr
b) 35/3 hr
c) 40/3 hr
d) 50/3 hr
e) None of these
Answer & Explanation

Answer – c) 40/3 hr
Explanation :
(1/15 + 1/30)*T1 = 1/3, T1 = 10/3 hr
Now after leak is developed, [(1/15 + 1/30) – (1/3)*(1/15 + 1/30)]*T2 = 2/3
T2 = 10 hr. So total time = 10 + 10/3 = 40/3 hr

- *Three pipes A, B and C is attached to a cistern. A can fill it in 20 minutes and B can fill it in 30 minutes. C is a waste pipe. After opening both the pipes A and B, Riya leaves the cistern to fill and returns when the cistern is supposed to be filled. But she found that waste pipe C had been left open, she closes it and now the cistern takes 5 minutes more to fill. In how much time the pipe C can empty the full cistern?*
a) 26.8 minutes
b) 25.8 minutes
c) 27.8 minutes
d) 28.8 minutes
e) None of these

Answer & Explanation

Answer – d) 28.8 minutes

Explanation :

*The tank supposed to be filled in (30*20)/50 = 12 minutes*

*so, (1/20 + 1/30)*12 – 12/C + (1/20 + 1/30)*5 = 1 (A and B work for 12 minutes and also C work for 12 minutes and then A and B takes 5 more minutes to fill the tank)*

solve for C, we will get C = 144/5 = 28.8

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A pipe can empty a tank in 60 minutes alone. Another pipe whose diameter is twice the diameter of first pipe is also opened. Now find the time in which both pipe will empty the tank together.
a) 8 min
b) 10 min
c) 12 min
d) 14 min
e) None of these

Answer & Explanation

Answer – c) 12 min

Explanation :

Time taken by pipe to empty the tank is inversely proportional to cross- sectional area.

So, time taken by second pipe will be = 60/4 = 15 min (πr2 = 1/60 and for second pipe 4πr2 = 1/T so we get T = 15 min)

*Time taken by both to empty the pipe = (60*15)/75 = 12*

- *Two pipes P and Q can fill a tank in 10 min and 12 min respectively and a waste pipe can carry off 12 litres of water per minute. If all the pipes are opened when the tank is full and it takes one hour to empty the tank. Find the capacity of the tank.*
a) 30
b) 45
c) 60
d) 75
e) None of these

Answer & Explanation

Answer – c) 60

Explanation :

Let the waste pipe take 'T' time to empty the tank.

*(1/10 + 1/12 – 1/T)*60 = -1*

We will get T = 5 min

*So capacity = 5*12 = 60ltr*

- *Two pipes P and Q can fill a tank in 36 and 24 minutes respectively. If both the pipes are opened simultaneously, after how much time pipe Q should be closed so that tank is full in 30 minutes.*
a) 2min

b) 4min
c) 6min
d) 8min
e) None of these

Answer & Explanation

Answer – b) 4min

Explanation :

Let after T time, Q is closed, (1/36 + 1/24)*T + (1/36)*(30 – T) = 1

- **Two pipes A and B can fill a tank in 20 and 30 minutes respectively. Both the pipes are opened together but after 5 minutes pipe B is closed. What is the total time required to fill the tank**

a) 16.1/3 min
b) 16.2/3 min
c) 17.2/3 min
d) 18.2/3 min
e) None of these

Answer & Explanation

Answer – b) 16.2/3 min

Explanation :

(1/20 + 1/30)*5 + (1/20)*T = 1

total time = T + 5 min

- **Three pipes P, Q and R can fill a tank in 12, 15 and 20 minutes respectively. If pipe P is opened all the time and pipe Q and R are opened for one hour alternatively. The tank will be full in**

a) 5hr
b) 6hr
c) 7hr
d) 8hr
e) None of these

Answer & Explanation

Answer – c) 7hr

Explanation :

(1/12 + 1/15) + (1/12 + 1/20) = 17/60 (in 2 hrs this much tank is filled)

so in 6 hrs 51/60 is filled. Remaining, 9/60 = (1/12 + 1/15)*t, so T = 1hr

so total = 6 + 1 = 7 hr

- **A cistern can be filled by a pipe in 6 hours. A leak is developed at the bottom due to which it takes 2 hours more to fill the cistern. Find the time taken by the leak to empty the cistern when the cistern is full.**

a) 20hr
b) 22hr
c) 24hr
d) 26hr
e) None of these

Answer & Explanation

Answer – c) 24hr

Explanation :

1/6 – 1/T = 1/8, solve for T

- **A pipe can fill a tank in 20 minutes and another pipe can fill the tank in 40 minutes. There is a waste pipe which can empty the tank in 15 minutes. First two pipes are opened for 5 minutes and then the third pipe is also opened. In what time the cistern is emptied after the third pipe also opened**

a) 60
b) 75

c) 80
d) 90
e) None of these

Answer & Explanation

Answer – b) 75

Explanation :

(1/20 + 1/40)*5 + (1/20 + 1/40 – 1/15)*T = 1

- **Two pipes can separately fill the tank in 15hrs and 30hrs respectively. Both the pipe are opened and when the tank is 1/3 full a leak is developed due to which 1/3 water supplied by the pipe leaks out. What is the total time to fill the tank?**

a) 20/3 hr
b) 35/3 hr
c) 40/3 hr
d) 50/3 hr
e) None of these

Answer & Explanation

Answer – c) 40/3 hr

Explanation :

(1/15 + 1/30)*T1 = 1/3, T1 = 10/3 hr
now after leak is developed, [(1/15 + 1/30) – (1/3)*(1/15 + 1/30)]*T2 = 2/3
T2 = 10 hr. So total time = 10 + 10/3 = 40/3 hr

- **Pipe P is 4 times as fast as Q in filling a tank. If P takes 20 minutes to fill a tank, then what is the time taken by both the pipe P and Q to fill the tank?**

a) 12
b) 16
c) 18
d) 20
e) None of these

Answer & Explanation

Answer – b) 16

Explanation :

P takes 20 minutes and it is 4 times faster than Q, it means Q will take 80 minutes to fill the tank.
(1/20 + 1/80)*t = 1. We get t = 16

- **In what time a cistern is filled by three pipes of diameter 2cm, 4cm and 6cm respectively. If the time taken by largest pipe to fill the tank is 40 minutes. Amount of water flowing through the pipe is proportional to the diameter of the pipe**

a) 25.5/7 min
b) 25.3/7 min
c) 23.5/7 min
d) 23.4/7 min
e) None of these

Answer & Explanation

Answer – a) 25.5/7 min

Explanation :

Larger the cross-section area less will be time taken by pipe to fill the tank.
36/16 = T/40, T = 90min (for 4 cm pipe)
similarly for 2 cm pipe time taken will be = 360min
Total time = (1/360 + 1/90 + 1/40) = 1/p, so we get P = 25.5/7 minutes

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Two pipes P and Q can fill a tank in 20hrs and 25hrs respectively while a third pipe R can empty the

tank in 30hrs. If all the pipes are opened together for 10hrs and then pipe R is closed then in what time the tank can be filled.
a) 400/23hrs
b) 400/27hrs
c) 200/23hrs
d) 200/27hrs
e) None of these
Answer & Explanation
Answer – b) 400/27hrs
Explanation :
(1/20 + 1/25 – 1/30)*10 + (1/20 + 1/25)*x = 1
We get x = 130/27, so total time to fill the tank = 130/27 + 10 = 400/27 hrs

• **There are three taps A, B and C which can fill a tank in 12hrs, 15hrs and 30 hrs respectively. If the tap A is opened first, after one hour tap B was opened and after 2 hours from the start of A, tap C is also opened. Find the time in which the tank is full.**
a) 6(2/11)hr
b) 6(3/11)hr
c) 5(3/11)hr
d) 5(2/11)hr
e) None of these
Answer & Explanation
Answer –a) 6(2/11)hr
Explanation :
In first hour only A is opened, in the next hour A and B are opened and in the third hour A, B and C are opened.
So, in three hours (3/12 + 2/15 + 1/30) = 25/60 tank is already filled.
Now, 25/60 = (1/12 + 1/15 + 1/30)*t
T = 25/11. Total time = 3 + 25/11 = 58/11 hours

• **Three pipes P, Q and R can fill the tank in 5, 10 and 15 minutes respectively. If all the pipes are opened together and pipe Q is turned off 5 minutes before the tank is fill. Then find the time in which the tank will full.**
a) 45/11hrs
b) 53/11hrs
c) 51/13hrs
d) 47/11hrs
e) None of these
Answer & Explanation
Answer – a) 45/11hrs
Explanation :
Let total time taken by the pipes is T hrs, then
(1/5 + 1/10 + 1/15)*(T – 5) + (1/5 + 1/15)*5 = 1

• **A pipe can fill a tank in 20 minutes but due to a leak develop at the bottom of the tank, 1/5 of the water filled by the pipe leaks out. Find the time in which the tank is filled.**
a) 20 min
b) 25 min
c) 30 min
d) can't be determined
e) None of these
Answer & Explanation
Answer – b) 25 min
Explanation :

Amount of tank filled by the pipe in one minute = 1/20 and due to leakage 1/5 of 1/20 leaks out so, [1/20 – (1/5)*(1/20)]*T = 1
We get T = 25

• **A bathing tub can be filled by a cold pipe in 15 minutes and by a hot pipe in 10 minutes. Ramesh opened both the tap and leaves the bathroom and returns at the time when the tub should be full. He observed that a waste pipe is opened at the bottom, he now closes it. Now the tub will take more 5 minutes to fill the tank, find the time in which the leak can empty the tank.**
a) 36/5 min
b) 33/5 min
c) 37/5 min
d) can't be determined
e) None of these
Answer & Explanation
Answer – a) 36/5 min
Explanation :
(1/15 + 1/10 – 1/x)*6 + (1/15 + 1/10)*5 = 1
x = 36/5

• **There are 10 taps connected to a tank. Some of them are waste pipe and some of them are water pipe. Water pipe can fill the tank in 15 hours and waste pipe can empty the tank in 30 hours. Find the number of waste pipes if the tank is filled in 6 hours.**
a) 3
b) 4
c) 5
d) 7
e) None of these
Answer & Explanation
Answer – c) 5
Explanation :
Let water pipes are x and waste pipe are Y.
x + y = 10
(x/15 – y/30)*6 = 1
Solve both equation to get x and y

• **Pipe A is 4 times as fast as B in filling a tank. If A takes 20 minutes to fill a tank, then what is the time taken by both the pipe A and B to fill the tank?**
a) 12
b) 16
c) 18
d) 20
e) None of these
Answer & Explanation
Answer – b) 16
Explanation :
A takes 20 minutes and it is 4 times faster than B, it means B will take 80 minutes to fill the tank.
(1/20 + 1/80)*t = 1. We get t = 16

• **Pipe A is 4 times faster than pipe B and takes 45 minutes less to fill a tank. When both the pipes are opened together than the time in which the tank will be full.**
a) 10 min
b) 12 min
c) 15 min

d) 18 min
e) None of these

Answer & Explanation

Answer – b) 12 min

Explanation :

Let A take X minute to fill a tank then B will take 4x time.
4x – x = 45 (given), X = 15.
*Time taken to fill the tank together = (1/15 + 1/60)*t =1*
T = 12 minute

- **Two pipes P and Q can fill a tank in 20 minutes and 30 minutes respectively. There is a waste pipe which withdraws water at the rate of 8 litres per minute. Now the tank is full and If all the pipes are opened simultaneously the tank is emptied in 60 minutes. Find the capacity of the tank.**
a) 60ltr
b) 70ltr
c) 80ltr
d) 90ltr
e) None of these

Answer & Explanation

Answer – c) 80ltr

Explanation :

*(1/20 + 1/30 – 1/t)*60 = -1*
'-1' is taken because the work is negative. T is the time taken by the waste pipe to empty the tank alone.
We will t = 10
*So capacity = 10*8 = 80ltr*

- **There are 4 filling pipes and 3 emptying pipes capable of filling and emptying in 12 minutes and 15 minutes respectively. If all the pipes are opened together and as a result they fill 10 litres of water per minute. Find the capacity of the tank.**
a) 65ltr
b) 70ltr
c) 75ltr
d) 80ltr
e) None of these

Answer & Explanation

Answer – c) 75ltr

Explanation :

*(4/12 – 3/15)*t = 1*
*t = 15/2 minute – in this time the tank will be filled. So the capacity = (15/2)*10 = 75 litre*

-
Two taps can separately fill the tank in 10m and 15min respectively. They fill the tank in 12 minutes when a third pipe which empties the tank is also opened. What is the time taken by the third pipe to empty the whole tank?
A) 14 minutes
B) 15 minutes
C) 12 minutes
D) 20 minutes
E) 16 minutes

Answer & Explanation

C) 12 minutes

Explanation:

1/10 + 1/15 – 1/x = 1/12
Solve, x = 12

• *Two pipes A and B can fill a tank in 12 hours and 15 hours respectively. If they are opened on alternate hours with pipe A opened first, then in how many hours the tank will be full?*
A) 13 hrs
B) 14 1/2 hrs
C) 12 hrs
D) 12 1/2 hrs
E) 10 2/3 hrs
Answer & Explanation
D) 12 1/2 hrs
Explanation:
A = 12 hours, B = 15 hours
Total work = LCM(12,15) = 60
So efficiency of A = 60/12 = 5, efficiency of B = 60/15 = 4
2 hrs work of (A+B) = 5+4 = 9
*2*6(12) hours work of (A+B) = 9*6 = 54*
So remaining work = 60-54 = 6
Now A's turn at 13th hour, he will do remaining work(6) in 6/12 hr
So total 12 1/2 hrs

• *Pipes P and Q can fill the tank in 24 minutes and 32 minutes respectively. Both piped are opened together. To have the tank full in 18 minutes, after how many minutes the pipe P must be closed?*
A) 22 minutes
B) 21 minutes
C) 15 minutes
D) 12.5 minutes
E) 10.5 minutes
Answer & Explanation
E) 10.5 minutes
Explanation:
P is to be closed before 18 minutes, let it is closed after x minutes, then Q worked for all 18 minutes. So,
*(1/24)*x + (1/32)*18 = 1*
Solve, x = 10.5

• *Three pipes, A, B and C are opened to fill a tank such that A and B cam fill the tank alone in 36 min. and 45 min. respectively and C can empty it in 30 min. After 6 minutes the emptying pipe is closed. In how many minutes the tank will be full in this way?*
A) 20
B) 25
C) 18
D) 24
E) 30
Answer & Explanation
D) 24
Explanation:
Let the tank full in x minutes, then A and B opened for x minutes and C for 6 minutes.
*(1/36 + 1/45)*x – (1/30)*6 = 1*
*(1/20)*x = 6/5*
Solve, x = 24

• *A and B are pipes such that A can empty the tank in 60 minutes and B can fill in 30 minutes. The tank is full of water and pipe A is opened. If after 18 minutes, pipe B is also opened, then in how much total time the tank will be full again?*
A) 32 minutes

B) 29 minutes
C) 36 minutes
D) 23 minutes
E) 18 minutes

Answer & Explanation

B) 36 minutes
Explanation:
Emptying pipe A is opened first for 18 minutes, so in 18 minutes the part of tank it has emptied is (1/60)*18 = 9/30
Now filling pipe is also opened, now since only 9/30 of the tank is empty so 9/30 is only to be filled by both pipes, let it take now x minutes, so
(1/30 – 1/60)*x = 9/30
Solve, x= 18
So total = 18+18 = 36 minutes [total time is asked – 18 minutes when emptyimh pipe was only opened, 18 minutes when both were operating.]

• **Two pipes A and B can alone fill a tank in 20 minutes and 30 minutes respectively. But due to a leak at the bottom of tank, it took 3 more minutes to fill the tank. In how many hours, the leak can alone empty the full tank?**
A) 60
B) 30
C) 48
D) 56
E) 72

Answer & Explanation

A) 60
Explanation:
A and B can fill tank in (1/20 + 1/30) = 1/12 so 12 minutes
But it took 3 more minutes, this means the tank got full in 12+3 = 15 minutes
So (1/20 + 1/30 – 1/x) = 1/15
Solve, x = 60

• **Pipes A and B can fill a cistern in 15 hours together. But if these pipes operate separately A takes 40 hours less than B to fill the tank. In how many hours the pipe A will fill the cistern working alone?**
A) 60
B) 20
C) 40
D) 15
E) 25

Answer & Explanation

B) 20
Explanation:
Let A takes x hours, then B = (x+40) hours
1/x + 1/(x+40) = 1/15
Solve, x = 20

• **Three pipes A, B and C can fill the cistern in 10, 12, and 15 hours respectively. In how much time the cistern will be full if A is operated for the whole time and B and C are operated alternately which B being first?**
A) 10 hours 32 minutes
B) 6 hours
C) 5 1/2 hours
D) 5 7/10 hours
E) 9 2/11 hours

Answer & Explanation
D) 5 7/10 hours
Explanation:
In first hour, part of cistern filled is (1/10 + 1/12) = 11/60
In second hour, part of cistern filled is (1/10 + 1/15) = 1/6
So in 2 hours, part of cistern filled is 11/60 + 10/60 = 21/60 = 7/20
now in 2*2 (4) hours, part of cistern filled is (7/20)*2 = 14/20 = 7/10
now in the 5th hour, A+B's turn which fill 11/60 in that hour, but the cistern remaining to be filled is (1 – 7/10) = 3/10, since 3/10 is more than 11/60, so after 5th hour remaining part to be filled is 3/10 – 11/60 = 7/60
now in 6th hour, (A+C)'s turn, it will fill remaining 7/60 in (7/60)*(6/1) = 7/10
so total 5 7/10 hours

- **A cistern is 1/4th full. Two pipes which fill the cistern in 15 minutes and 20 minutes respectively are opened simultaneously. After 5 minutes, a third pipe which empties the full cistern in 30 minutes is also opened. In how many minutes the cistern will be full?**
A) 6 1/2
B) 2
C) 5
D) 7
E) 8

Answer & Explanation
D) 7
Explanation:
Since 1/4th is already filled, 3/4th is to filled now.
So
(1/15 + 1/20)*(5+x) – (1/30)*x = 3/4
(7/60)*5 + (7/60 – 1/30)*x = 3/4
(5/60)*x = 2/12
Solve, x = 2 mins
So total 7 minutes

- **Pipes A, B and C which fill the tank together in 6 hours are opened for 2 hours after which pipe C was closed. Find the number of hours taken by pipe C to fill the tank if the remaining tank is filled in 7 hours.**
A) 16
B) 14
C) 20
D) 22
E) Cannot be determined

Answer & Explanation
B) 14
Explanation:
1/A + 1/B + 1/C = 1/6
Now given that first all open for 2 hours, then C closed and A+B completes in 7 hours, so
(1/A + 1/B + 1/C) *2 + (1/A + 1/B)*7 = 1
Put 1/A + 1/B = 1/6 – 1/C
(1/6 – 1/C + 1/C) *2 + (1/6 – 1/C)*7 = 1
2/6 + 7/6 – 7/C = 1
Solve, C = 14

-
Three pipes A, B and C can fill a cistern in 6 hours. After working at it together for 2 hours, C is closed and A and B can fill the remaining part in 6 hours. The number of hours taken by C alone to fill the

cistern is
A.12hrs
B.10hrs
C.18hrs
D.8hrs
E.None of these
Answer & Explanation
Answer – C.18hrs
Explanation :
A+B+C in 1h = 1/6
A+B+C in 2h = 2/6 = 1/3
Remaining = 1-1/3 = 2/3
A+B in 6hrs = 2/3
A+B in 1hr = 2/18
C alone to fill the cistern = 1/6 – 2/18 = 3-2/18 = 1/18

• **Pipes A and B can fill a tank in 5 and 3 hrs respectively. Pipe C can empty empty it in 15 h. The tank is half full. All the three pipes are in operation simultaneously. After how much time the tank will be full ?**
A.1(7/15)hrs
B.2(1/11)hrs
C.1(1/14)hrs
D.2(3/11)hrs
E.None of these
Answer & Explanation
Answer – C.1(1/14)hrs
Explanation :
In 1 hr = 1/5+1/3 – 1/15 = 3+5-1/15 = 7/15
*½ tank filled by 3 pipes = 15/7*1/2 = 15/14 =1(1/14)*

• **Two pipes A and B can fill a tank in 10 minutes and 20 minutes respectively. Both the pipes are opened together but after 4 minutes, Pipe A is turned off. What is the total time required to fill the tank ?**
A.12m
B.10m
C.8m
D.16m
E.None of these
Answer & Explanation
Answer – A.12mExplanation :
A + B in 4 minute = 4 (1 / 10 + 1 / 20) = 4(2+1/20) = 12/20 = 3/5
Part remaning = 1 – (3 / 5) = 2 / 5
1 / 20 part is filled by B in 1 minute
2 / 5 part will be filled in = (20) (2 / 5) = 8 minutes*
Total = 8+4 = 12m

• **Two pipes A and B can fill a tank in 6 hours and 5 hours respectively. If they are turned on alternatively for 1 hour each, find the time in which the tank is full. (Assume pipe A is opened first)**
A.4hrs 30min
B.5hrs
C.6hrs 25min
D.5hrs 30min
E.None of these
Answer & Explanation

Answer – D. 5hrs 30min
Explanation :
Total= 30, A = 30/6 =1/5, B = 30/5 =1/6
In 2 hrs = 5+6 =11
In 4hrs = 22
Remaining = 30-22 =8
1hr Pipe A = 8-5= 3,Remaining B = 3*1/6 = 30min
Total = 5hrs 30min

• *Pipes A, B and C can fill a tank in 3, 4 and 6 hours respectively. If all the pipes are opened together and after 30 minutes pipes B and C are turned off, find the total time in which the tank is full.*
A.2(3/8)hrs
B.1(1/7)hrs
C.2(2/7)hrs
D.3(1/3)hrs
E.None of these

Answer & Explanation

Answer – A.2(3/8)hrs
Explanation :
In 1 hr A, B, C = 1/3+1/4+1/6 = 8+6+4/24 = 18/24 = 6/8 = ¾
Filled in 30m = 3/8
Remaining = 1-3/8 =5/8
Pipe A = 3*5/8 = 15/8
Total = 15/8+1/2 = 15+4/8 = 19/8 = 2(3/8) hrs

• *Two pipes M and N can fill a tank in 30 and 45 minutes respectively. If both the pipes were open for few minutes after N was closed and the tank was full in 25 minutes, find the time for pipe N was open.*
A.8.16m
B.7.5min
C.5min
D.10.2m
E.None of these

Answer & Explanation

Answer – B.7.5min
Explanation :
X(1/30+1/45) + 1/30(25-x) = 1
x/45+25/30 =1
x/45 = 5/30 =1/6
x=45/6
x=7.5m

• *A cistern is filled by 3 pipes A, B and C with uniform flow. The second pipe B takes3/2 times the time taken by A to fill the tank, while C takes twice the time taken by B to fill the tank. If all the three pipes can fill the tank in 7 hours, find the time required by pipe A alone to fill the tank.*
A.10hrs
B.12hrs
C.14hrs
D.15hrs
E.None of these

Answer & Explanation

Answer – C.14hrs
Explanation :
1/x + 1/ (3/2x) + ½(3x/2) = 1/7
6/3x = 1/7

3x/6 = 7
3x=42
X=14

• *Two pipes P and Q can fill a tank in 8 hours. If only pipe P is open then it would take 4 hours longer to fill the tank. Find how much longer would it take if only pipe Q is open.*
A.16hrs
B.12hrs
C.10hrs
D.8hrs
E.None of these

Answer & Explanation

Answer – A.16hrs
Explanation :
P= 8+4 = 12
P+Q= 1/8
Q= 1/8 – 1/12 = 3-2/24 = 1/24
Q= 24
Q alone= 24-8 = 16

• *Two pipes P and Q can fill a tank in 20m and 30m respectively. If both the pipes are opened simultaneously, after how much time should Q be closed so that the tank is full in 16minutes ?*
A.12min
B.6min
C.10min
D.7min
E.None of these

Answer & Explanation

Answer – B.6min
Explanation :
X(1/20+1/30) +(16-x)1/20 = 1
5x/60+16-x/20 =1
5x+48-3x/60 =1
2x+48 = 60
2x=12
X=12/2 = 6

• *A tap can fill a tank in 12 minutes and another tap can empty the tank in 6 minutes.If the tank is already full and then both the taps are opened the tank will be*
A.Filled in 6 minutes
B.Emptied in 6 minutes
C.Filled in 6 minutes
D.Emptied in 12 minutes
E.None of these

Answer & Explanation

Answer – D.Emptied in 12 minutes
Explanation :
1/12 – 1/6 = 1-2/12 = -1/12

•
Two taps can separately fill the tank in 18m and 12min respectively and when the waste pipe is open, they can together fill the tank in 9minutes.The waste pipe can empty the tank in
A.20min
B.25min

C.36min
D.30min
E.None of these

Answer & Explanation

Answer – C.36min

Explanation :
1/18 + 1/12 = 3+2/36 = 5/36
5/36 – 1/9 = 5-4/36 = 1/36 => 36min

• *Two pipes can fill the tank in 4hrs 5hrs respectively while the third pipe can empty the tank in 20hrs, if all the pipes are opened together, then the tank will be filled in*
A.2.30hrs
B.2.50hrs
C.3.20hrs
D.3.30hrs
E.None of these

Answer & Explanation

Answer – A.2.30hrs

Explanation :
1/4+1/5 -1/20 = 5+4-1/20 = 8/20
20/8 => 2(1/2)hrs

• *10 buckets of water fill a taken when the capacity of each bucked is 14 liter. How many buckets will be needed to fill the same tank, if the capacity of each bucket is 7litres ?*
A.10
B.12
C.18
D.20
E.None of these

Answer & Explanation

Answer – D.20

Explanation :
*10*14 = x*7*
*X = 10*14/7 = 20*

• *A leak in the bottom of a tank can empty the full tank in 7 hours. An inlet pipe fills water at the rate of 2 litres a minute. When the tank is full the inlet is opened and due to the leak the tank is empty in 8 hours. The capacity of the tank in litres is*
A.3450litres
B.5460litres
C.7620litres
D.6720 litres
E.None of these

Answer & Explanation

Answer – D.6720 litres

Explanation :
In 1 hr = 1/7 – 1/8 = 8-7/56 = 1/56
*In 1 min = 1/(56*60) = 1/3360*
*Inlet pipe fill water at the rate of 2 liters a minute = 2*3360 = 6720litres*

• *Two pipes P and Q can fill a tank in 6 hours and 8 hours respectively. If they are opened on alternate hours and if pipe P is opened first, in how many hours, the tank shall be full ?*
A.10 hrs
B.9.30hrs

C.6.45hrs
D.10.30hrs
E.None of these
Answer & Explanation
*Answer – **C. 6.45hrs***
Explanation :
1/6+ 1/8 = 8+6/48 = 14/48 = 7/24…………in 2 hr
= 21/24…………6hrs
P => 6 3/24 => 3/4 = 45min*
Total = 6hrs 45min

• **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
B.8hrs
C.7hrs 30 min
D.9hrs 30min
E.None of these
Answer & Explanation
*Answer – **C.7hrs 30 min***
Explanation :
Net apart filled in 1 hour = (1/10+1/12-1/20)
= 8/60 = 2/15.
Tank will be full in = 15/2 hours => 7 hrs 30 min.

• **One pipe can fill a tank 4 times as fast as another pipe. If together the two pipes can fill the tank in 15 minutes, then the slower pipe alone will be able to fill the tank in:**
A.75minutes
B.60minutes
C.55minutes
D.45minutes
E.None of these
Answer & Explanation
*Answer – **A.75minutes***
Explanation :
1/x+4/x = 1/15
5/x = 1/15
X/5= 15
X = 75minutes

• **Bucket A has thrice the capacity as bucket B. It takes 20 turns for bucket P to fill the empty drum. How many turns it will take for both the buckets A and B having each turn together to fill the empty drum**
A.12
B.10
C.15
D.16
E.None of these
Answer & Explanation
*Answer – **C.15***
Explanation :
A = 3B
A = 60, B = 20

No of turns = xy/x+y
*No of turns = 60*20/20+60 = 1200/80 = 15 turns*

• **Two pipes A and B would fill a cistern in 20m and 30min respectively, both pipes are kept open for 10min and the first pipe be turned off after that the cistern may be filled in**
A.6min
B.5min
C.8min
D.10min
E.None of these

Answer & Explanation
Answer – B.5min
Explanation :
10(1/20+1/30) = 10[3+2/60] = 50/60 = 5/6
Remaining part = 1-5/6 = 6-5/6 = 1/6
*Second pipe = 30*1/6 = 5min*

• **Tap A can fill the empty tank in 12hrs but due to leak in the bottom it is filled in 15hrs.If the tank is full ,then tap is closed.In how many hours the leak can empty the tank ?**
A.60hrs
B.50hrs
C.45hrs
D.30hrs
E.None of these

Answer & Explanation
Answer – A.60hrs
Explanation :
1/12 – 1/15 = 5-4/60 = 1/60