Time & Work

- The time and work is the basis of how work gets done at a particular time. The problems with time and work give us the exact relationship between those who are working and the time it takes to fulfill the work.

- Going by basic mathematical definitions, time can be defined as the duration during which a certain activity takes place, whereas work is defined as the set of tasks completed to achieve a desired activity or result. It goes without saying that to complete a work, an amount of time is consumed. It means that there exists a certain relation between time and work.

Time: Time is the duration during which any activity or work happens or continues.

Work: Work is a task or set of activities to achieve a certain result.

We can define happening of work as:

If a person A completes a work in X days, then the amount of work completed by him in 1 day will be = 1/X

Similarly, if a person B completes work in Y days, then the amount of work completed by him in 1 day will be = 1/Y

From the above two points, we can say that in one day A and B together can complete (1/X + 1/Y) amount of work. Thus, together A and B can complete the work in XY/X+Y days.

Let us understand the concept through a question

Example 1 : - The time taken by Ram and Shyam alone to complete a piece of work is 24 days and 40 days, respectively. What is the time taken by Ram and Shyam together to complete the same amount of work?

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Example 1 : - The time taken by Ram and Shyam alone to complete a piece of work is 24 days and 40 days, respectively. What is the time taken by Ram and Shyam together to complete the same amount of work?

Solution: -

Ram complete the whole work in 24 days

So, part of the work done by Ram in one day = 1/24

Shyam complete the whole work in 40 days

So, part of the work done by Shyam in one day = 1/40

Therefore, one day work of Ram and Shyam together will be

1/24 + 1/40 = 8/120

As Ram and Shyam together can complete 8/120 part of the work in 1 day

So, time taken by Ram and Shyam together to complete the work will be = 120/8 = 15 days

Example 2: A can do a bit of work in 8 days, which B alone can do in 10 days in how long . In how long both working together can do it?

A - 40/9 days

B - 41/9 days

C - 42/9 days

D - 43/9 days

Alternative Method:

Work done = Efficiency × Time taken

LCM method to solve time and work problems

Step 1 : Find LCM for all the given days/hours/minutes

Step 2 : LCM to be considered as total amount of work to be completed

Step 3 : Then, use the formulas given below to solve the problem

$$\text{No. of days} = \frac{\text{Total work units}}{\text{No. of units completed per day}}$$

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Step 1: Assuming a total work Let us assume the total work be LCM of (24 and 40) = 120 units

Step 2: Calculating the efficiency of each individual We know, Work done = time taken × Efficiency(or one-day work)

⇒ Efficiency of Ram = 120/24 = 5 units/day

⇒ Efficiency of Shyam = 120/40 = 3 units/day

Step 3: Calculating the combined efficiency

Efficiency of Ram and Shyam together will be = 5 + 3 = 8 units/day Now,

Time taken by Ram and Shyam to complete the work = Total Work / Efficiency

⇒ 120/8 = 15 days

Concept of Efficiency

Efficiency denotes the amount of work done by any person in 1 day.

The ratio of the efficiencies of two workers is inversely proportional to the time taken by them to complete a work.

- If a worker is less efficient than he/she will take more time to complete the work.
- If a worker is more efficient than he/she will take less time to complete the work.
- The number of workers is inversely proportional to the time taken to complete the work

Time taken to Paint a house

= 1 day

= 4 day

Example 3: - A is 3 times as efficient as B. If B alone can complete the work in 12 days, then A alone can complete the work in how many days?

Example 3: - A is 3 times as efficient as B. If B alone can complete the work in 12 days, then A alone can complete the work in how many days?

Solution: - According to the question, the ratio of the efficiency of A and B is 3 : 1

We know that the ratio of the efficiency is inversely proportional to the ratio of the time taken

So, the ratio of the time taken by A and B to complete the work will be 1 : 3

Let us assume A alone completes the work in x days and B alone completes the work in 3x days

3x = 12

x = 4

Therefore, A alone can complete the work in 4 days.

Example 4: A is thrice as good as workman as B and therefore is able to finish a job in 60 days less than B. Working together, they can do it in:

a) 20 days
b) 22.5 days
c) 25 days
d) 30 days

Leaving and Joining type:

Example 5: A can do a bit of work in 25 days which B can complete in 20 days. Both together labor for 5 days and afterward A leaves off. How long will B take to complete the remaining work?

Solution:

Total Work
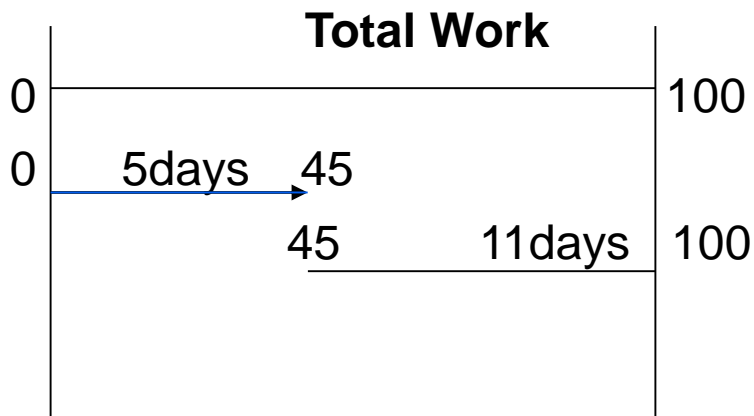
```
0 |_____| 100        A=25
0 |  5days   45                     B=20
          45        11days | 100
```

Total Efficiency= 9

(A+B)'s 5 days work = 5*9=45 units of work

Remaining work = (100-45) = 55 units of work

So, the remaining work will be done by B only.

55/5 =11 days

Example 6: Ram can do a piece of work in 20 days which Shyam can do in 30 days. They begin together with the condition that Ram shall leave the job 3 days before the actual completion of work. What is the total number of days required to complete the work?

[1] 14 days

[2] 19 days

[3] 27 days

[4] 9 days

Working on alternate days

Example 7: A can do some work in 10 days, B can do the same work in 5 days. If they are working on alternate days, In how much time the work will be done.

Solution: A=10

  B=5

Total Work=10 units

A start the work and complete 1 unit of work, and on the next day B will complete 2 units of work. In 2 days 3 units of work be done. In 6 days 9 units of work will be completed. On the 7th day A will complete the remaining work.

In 7 days whole work will be completed.

Example 8: A, B and C can do a piece of work in 20, 30 and 60 days respectively. In how many days can A do the work if he is assisted by B and C on every third day?

a) 12 days

b) 15 days

c) 16 days

d) 18 days

Negative Work Done:

Example 9: A can do some work in 5 days, B can destroy the same work in 10 days. If they are working together, In how much time the work will be done.

Solution: A=5

  B=10

A can complete 2 units of work in 1 day, B can destroy 1 unit of work in the same time. If they are working together they can complete 1 unit of work in 1 day.

10 units of work will be completed in 10 days.

Example 10: A can do some work in 5 days, B can do the same work in 8 days, C can destroy it in 10 days. If they are working together, In how much time the work will be done.

a) 40/9 days
b) 20/3 days
c) 5 days
d) 16/3 days

Constructive and destructive work on alternate days:

Example 11: A can do some work in 2 days, B can destroy the same work in 3 days. If they are working on alternate days ,In how much time the work will be done.

**Constructive and destructive work on alternate days:**

Example 11: A can do some work in 2 days, B can destroy the same work in 3 days. If they are working on alternate days ,In how much time the work will be done.

Solution: A=2

    B=3

A will complete 3 units of work in 1 day and
B will destroy 2 units of work on the next day.
In 2 days 1 unit of work will be completed,
and they will complete 3 units of work in 6
days. On the 7th day A will work and
complete the remaining work.

0	Total work=6	6
0	3	6
0	3-2=1	6
0	1+3=4	6
0	4-2=2	6
0	2+3=5	6
0	5-2=3	6
0	3+3=6	6
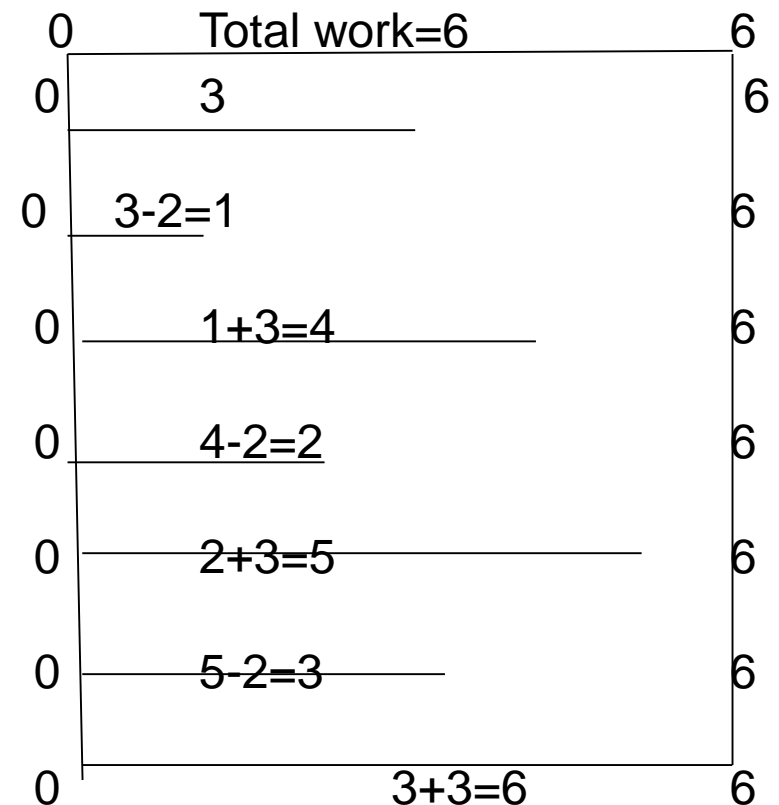
Example 12: A can do some work in 10 days, B can do the same work in 15 days, C can destroy it in 12 days. If they are working together, In how much time the work will be done.

a) 58 days
b) 57 days
c) 59 days
d) None of these

PRACTICE QUESTIONS

1: A and B can do a work in 12 days, B and C in 15 days and C and A in 20 days. If A, B and C work together, they will complete the work in :

a) 5days
b) 7 5/6 days
c) 10 days
d) 15 2/3 days

2: A can do a work in 6 days and B in 9 days. How many days will both take together to complete the work?

(a) 7.5 days

(b) 5.4 days

(c) 3.6 days

(d) 3 days

3: A can do a piece of work in 4 hours; B and C can do it in 3 hours. A and C can do it in 2 hours. How long will B alone take to do it ?

a) 10 hours
b) 12 hours
c) 8 hours
d) 24 hours

4: A and B can do a given piece of work in 8 days, B and C can do the same work in 12 days and A, B, C complete it in 6 days. Number of days required to finish the work by A and C is

a) 16
b) 8
c) 12
d) 24

5: A can do a piece of work in 12 days and B in 20 days. If they together work on it for 5 days, and remaining work is completed by C in 3 days, then in how many days can C do the same work alone?

a) 10 days
b) 9 days
c) 12 days
d) 15 days

6: A and B together can do a piece of work in 9 days. If A does thrice the work of B in a given time, the time A alone will take to finish the work is

a) 4 days
b) 6 days
c) 8 days
d) 12 days

7: A can finish a work in 24 days, B in 9 days and C in 12 days. B and C start the work but are forced to leave after 3 days. The remaining work was done by A in :

a) 5 days
b) 6 days
c) 10 days
d) 10.5days

8: A and B working separately can do a piece of work in 10 days and 15 days respectively. If they work on alternate days beginning with A, in how many days will the work be completed ?

a) 18 days
b) 13 days
c) 12 days
d) 6 days

9: A and B can complete a work in 15 days and 10 days respectively. They started doing the work together but after 2 days, B had to leave and A alone completed the remaining work. The whole work was completed in :

a) 10 days
b) 8 days
c) 12 days
d) 15 days

10: A can do a piece of work in 18 days and B in 12 days. They began the work together, but B left the work 3 days before its completion. In how many days, in all, was the work completed?

a) 12 days
b) 10 days
c) 9.6 days
d) 9 days

11: A can do a certain job in 12 days. B is 60% more efficient than A. Then B can do the same piece of work in

a) 8 days
b) 7.5 days
c) 6.25 days
d) 6 days

12: A can do a piece of work in 70 days and B is 40% more efficient than A. The number of days taken by B to do the same work is

a) 40 days
b) 60 days
c) 50 days
d) 45 days

13. 12 persons can do a piece of work in 4 days. How many persons are required to complete 8 times the work in half the time ?

a) 192
b) 190
c) 180
d) 144

14. A can do some work in 20 days, B can destroy the same in 30 days. In how much time the work will be done. If they are working on alternate days.

a) 60days
b) 120 days
c) 119 days
d) None of these

15. A and B can complete a piece of work in 15, 25 days respectively and C can destroy the same work in 30 days. A and B Work on alternative days and C works daily. In what time they completed work

a) 50

b) 100

c) 25

d) 30

16. A can complete a piece of work in 15 days and B can destroy the same piece of work in 20 days. Then in how many days the work will be completed if they are working together?

a) 30 days
b) 45 days
c) 60 days
d) None of these

Answer Key

Time and work - Examples

1	2	3	4	5	6	7	8	9	10
15 days	A	4 Days	B	B	A	7 Days	B	10 days	A
11	**12**								
7 Days	D								

Practice Questions

1	2	3	4	5	6	7	8	9	10
C	C	B	B	B	D	C	C	C	D
11	**12**	**13**	**14**	**15**					
B	C	A	D	A					

LECTURE – 2

Work and Wages

The Concept of work and wages is used to compare the work with the remuneration for the work. The wages for any amount of work is directly proportional to the work done.

- If all the workers work for the same number of days, then their wages are in the ratio of their efficiencies.
- If all the workers have the same efficiencies and do the work for the different number of days, then their wages are distributed in the ratio of the number of days for which each of them worked.
- If the workers have different efficiency and do the work for the different number of days, then their wages are in the ratio of the work done by them.

Example 1: A can fabricate a divider in 30 days , while B alone can assemble it in 40 days, If they construct it together and get an installment of RS. 7000, what B's offer?

Example 1: A can fabricate a divider in 30 days , while B alone can assemble it in 40 days, If they construct it together and get an installment of RS. 7000, what B's offer?

Solution:

A's 1 days work = 1/30,

B's 1 day work = 1/40,

Proportion of their shares = 1/30:1/40 = 4:3

B's offer = (7000*3/7) = Rs. 3000

Example 2: A alone can do a piece of work in 6 days and B alone in 8 days. A and B undertook to do it for Rs. 3200. With the help of C, they completed the work in 3 days. How much is to be paid to C?

a) Rs. 375
b) Rs. 400
c) Rs. 600
d) Rs. 800

MDH formula/ Chain Rule

It is used to compare the works of the same nature done at two different times using different manpower. The MDH formula can be represented as

$$\frac{M_1 D_1 \dot{H}_1 E_1}{W_1} = \frac{M_2 D_2 H_2 E_2}{W_2}$$

Where M denotes the number of men/women/boys, D denotes the number of days, H denotes the number of hours in a day, E denotes the efficiency of 1 man, and W denotes part of work done

Let us understand the application of this formula using a question

Example 3: 6 men can pack 12 boxes in 7 days by working for 7 hours a day. In how many days can 14 men pack 18 boxes if they work for 9 hours a day?

Example 3: 6 men can pack 12 boxes in 7 days by working for 7 hours a day. In how many days can 14 men pack 18 boxes if they work for 9 hours a day?

Solution: If 'w1' work is done by 'm1' men by working for 'h1' hours per day in 'd1' days & 'w2' is work done by men 'm2' working for 'h2' hours per day in 'd2' days, then

$$\frac{m_1 d_1 h_1}{w_1} = \frac{m_2 d_2 h_2}{w_2}$$

Since we need to find 'd2', we can re-arrange the formula as,

$$d_2 = \frac{m_1 d_1 h_1 w_1}{m_{12} h_2 w_1}$$

$$= \frac{6 \times 7 \times 7 \times 18}{14 \times 9 \times 12}$$

= 3.5 days

Example: 4 men and 5 boys can do a piece of work in 20 days while 5 men and 4 boys can do the same work in 16 days. In how many days can 4 men and 3 boys do the same work?

a. 10 days
b. 15 days
c. 20 days
d. 25 days

Provision of Food/ Fort Case

If food is available for 'a' days for 'A' men at a certain place and after 'b' days. 'B' men join, then the remaining food will serve total men for

Required time = $\dfrac{A(a-b)}{(A+B)}$ days

If food is available for 'a' days for 'A' men at a certain place, and after 'b' days 'B' men leave then the remaining food will serve remaining men for

Required time = $\dfrac{A(a-b)}{(A-B)}$ days

Example 5: In a Fort, 300 soldiers had of food provision for 90 days. after 20, days 50 soldiers left the Fort. how long would the last at the same rate?

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Solution: In a Fort, 300 soldiers had of food provision for 90 days.
After 20 days, 50 soldiers left the Fort, So, the remining soldiers 250 had the food for x days.

As soldiers increases the number of days for consuming the food decreases, it represents the indirect proportion.
So, 300 / 250 = x / 70 (Since, 90−20=70 days)
⇒x=300 / 250 × 70
∴x=84 days.
So, 250 men can have food for 84 days.

Example 6: A fort had provisions for 450 soldiers for 40 days. After 10 days, 90 more soldiers came to fort. Find for how many days will the remaining provisions last, if consumed at the same rate ?

a) 15days
b) 25days
c) 35days
d) 5days

PRACTICE QUESTIONS

1. 16 men complete one – fourth of a piece of work in 12 days. What is the additional number of men required to complete the work in 12 more days?

A] 48
B] 36
C] 30
D] 16

2. Three friends Gerard, Runey work together to dig a hole. Gerard alone can complete the work in 10 days and together they can complete it in 4 days. They earn a total of Rs.1,200. Find the share of Runey if the money that they receive is proportional to work that they do?

A] Rs 720
B] Rs 165.51
C] Rs 500
D] Rs 600

3. Susan can type 10 pages in 5 minutes. Mary can type 5 pages in 10 minutes. Working together, how many pages can they type in 30 minutes?

A] 15
B] 20
C] 25
D] 75

4. A team of 200 wagers undertakes building work of a bridge. The total time allocated to build entire bridge is 20 days. After 10 days since start, 200 more wagers join the team and together the team completes the bridge in required time. If original team do not get those 200 extra wagers, how many days they would be behind schedule to complete bridge.

A] 10 days
B] 20 days
C] 15 days
D] 1 day

5. Grass in lawn grows equally thick and in a uniform rate. It takes 24 days for 70 cows and 60 for 30 cows. How many cows can eat away the same in 96 days?

A] 18
B] 20
C] 21
D] 19

6. A group of women can finish a piece of work in 50 days. In how many days will one-third the number of women be able to finish two-third of the work?

A] 150 days
B] 75 days
C] 50 days
D] 100 days

7. Pardeep receives an export order for garments. He has 30 machines to complete the order in 60 days. How many machines would be required tom complete the job in 40 days?

A] 50
B] 25
C] 35
D] 45

8. In a farm, 50 hens give 200 eggs in 2 days. In how many days, will 20 hens give 400 eggs?

A] 15
B] 10
C] 5
D] 8

9. A customer paid you $600 for construction work, out of which, 3/5 of the total amount was spent on the purchase of materials and 1/5 of the remaining was spent on traveling. How much is left after all the deductions?

A] $120
B] $190
C] $192
D] $240

10. Babli alone can do a piece of work in 10 days Ashu alone can do it in 15 days. The total wages for the work in Rs.5000. How much should Babli be paid off they work together for entire duration of the work?

A] 5000
B] 4000
C] 3000
D] 2000

11. If 12 men or 24 boys can do a work in 66 days, the number of days in which 15 men and 6 boys can do it is

a) 44
b) 33
c) 55
d) 66

12. A certain number of men can do a work in 40 days. If there were 8 men more, it could be finished in 10 days less. How many men were there initially?

a) 20
b) 24
c) 30
d) 16

13. If 6 men and 8 boys can do a piece of work in 10 days and 26 men and 48 boys can do the same in 2 days, then the time taken by 15 men and 20 boys to do the same type of work will be :

a) 5 days
b) 4 days
c) 6 days
d) 7 days

14. 6 men or 12 women can do a piece of work in 20 days. In how many days can 8 men and 16 women do twice as big as this work ?

a) 2 days
b) 5 days
c) 15 days
d) 10 days

15. Suman can do a work in 3 days. Sumati can do the same work in 2 days. Both of them finish the work together and get 150. What is the share of Suman ?

a) 30
b) 60
c) 70
d) 75

16. Work done by (x + 4) men in (x + 5) days is equal to the work done by (x − 5) men in (x + 20) days. Then the value of x is

a) 20
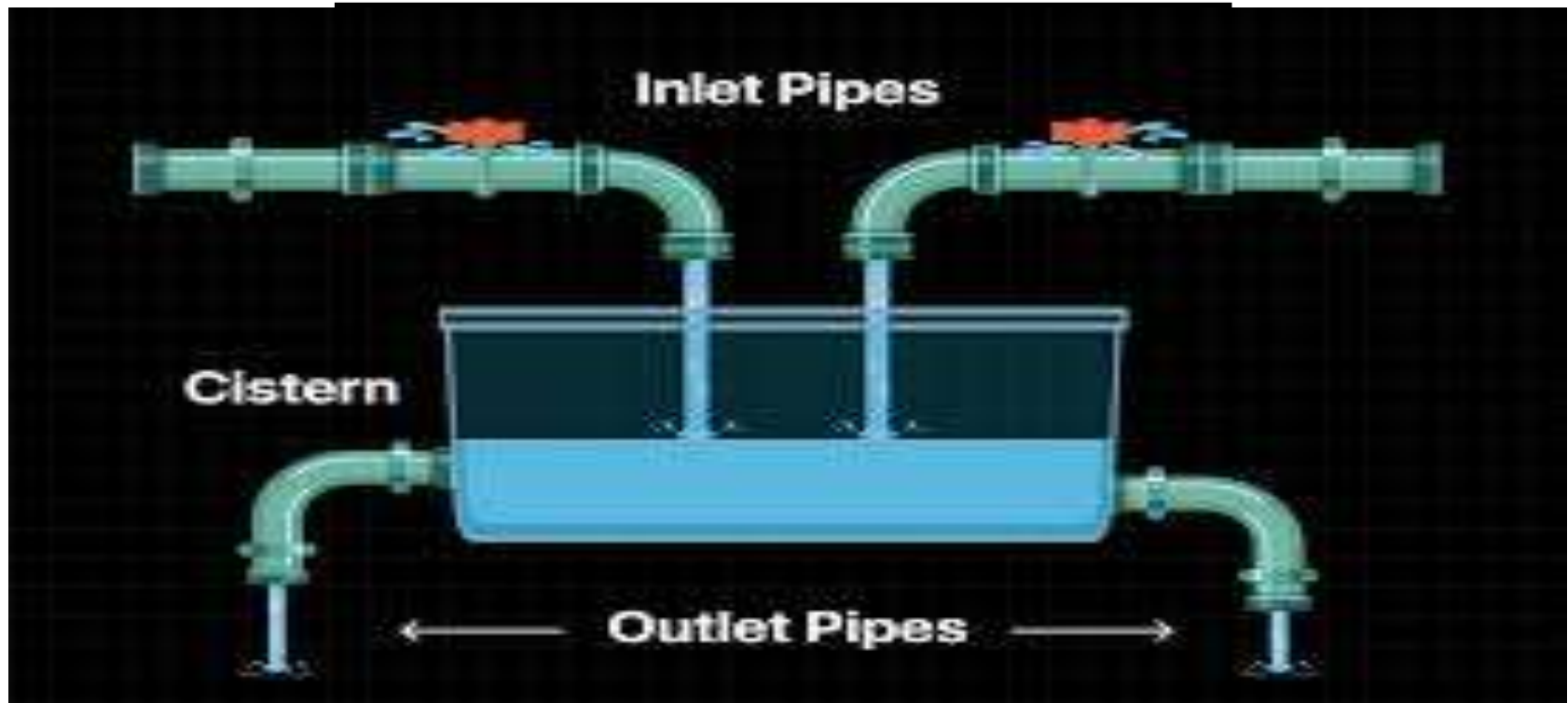b) 25
c) 30
d) 15

Answer Key

Work and wages-Examples

1	2	3	4	5	6				
3000	B	3.5 Days	C	84 Days	B				

Practice Questions

1	2	3	4	5	6	7	8	9	10
A	D	D	A	B	D	D	B	C	C
11	12	13	14	15	16				
A	B	B	C	B	A				

LECTURE-3
PIPES AND CISTERN

Pipe and cistern' is the subtopic of 'Time and work,' so we need to remember all the concepts of 'Time and work' to excel in this topic.

- Cistern: Cistern is a tank for storing liquids generally water and has inlet and outlet pipes to fill or empty itself.
- Pipe: Pipe is a section of a hollow cylinder for the discharge of water from one place to another. Pipes are generally connected to the cistern/tank for filling and emptying the cistern or tank.

Pipes are of two kinds:

- Inlet Pipe: Pipe, which fills a cistern or tank, is an inlet pipe.

- Outlet Pipe: Pipe, which empties a cistern or tank, is an outlet pipe.

Pipes working together:

Example 1: Two pipes A and B can fill a cistern in 20 and 30 minutes respectively. If both the pipes are opened together, how long will it take to fill the cistern?

Pipes working together:

Example 1: Two pipes A and B can fill a cistern in 20 and 30 minutes respectively.
If both the pipes are opened together, how long will it take to fill the cistern?

Solution: A=20
          B=30

Total work=60 units

Working together they can complete 5 units of work in 1 day, and 60 units of work

Will be completed in 12 days.

Example 2: Three pipes A,B and C can fill a tank in 20 minutes, 30 minutes and 40 minutes respectively while working alone. If, all the pipes are opened together, how long will it take to fill the tank full?

a) 9.23 mins
b) 12.23 mins
c) 8.23 mins
d) None of these

Working on alternate minutes

Example 3: A tap can fill a tank in 30 minutes. B can fill it in 45 minutes. If both the taps are opened on alternate min, in how much time the tank will be full?

Working on alternate minutes

Example 3: A tap can fill a tank in 30 minutes. B can fill it in 45 minutes. If both the taps are opened on alternate min, in how much time the tank will be full?

1st min=3units

Solution: A=30

2nd min=2units

B=45

In 2 mins=5units

In 36mins= 90 units

Assumed capacity of the tank=90units

A will fill 3units of water in the tank and on the next min. B will pour 2 units of water in the tank. In 2 mins 5 units of water will be poured in the tank, to fill 90 units of water in the tank, 36 mins are required.

Example 4: Three tapes A, B, C can fill an overhead tank in 4, 6 and 12 mins respectively. How long would the three taps take to fill the tank if it is opened on alternate minutes?

a) 3mins
b) 5mins
c) 7.5mins
d) None of these

Inlet and outlet pipes working together

Example 5: A can fill an empty tank in 15 hours and B can empty the tank in 20 hours. If all the pipes opened simultaneously, then how many hours required fill the full tank?

Inlet and outlet pipes working together

Example 5: A can fill an empty tank in 15 hours and B can empty the tank in 20 hours. If all the pipes opened simultaneously, then how many hours required fill the full tank?

Solution: A=15

B=20

A can fill 4units of water in the tank in 1 minute and in the same time B will take out 3 units of water from the tank and left with the 1 unit of water. It will take 60 mins to fill 60 units of water in the tank.

Example 6: Two pipes can fill a cistern in 20 minutes and 30 minutes respectively. Third pipe can empty the tank in 40 minutes. If all the three pipes are opened together, how long it will take to fill the tank full?

a) 17.14mins
b) 18.14mins
c) 17.56mins
d) None of these

Inlet and Outlet Pipes working on alternate minute:

Example 7: A pipe can fill a tank in 3 min. B can empty it in 4 min. In how much time the tank will be full if the pipes are working on alternate mins?

Inlet and Outlet Pipes working on alternate minute:

Example 7: A pipe can fill a tank in 3 min. B can empty it in 4 min. In how much time the tank will be full if the pipes are working on alternate mins?

Solution: A=3

B=4

1st min=4units

2nd min=3units removed

in 2 mins = 1 unit of water

in 16mins = 8 units of water

in 17th min = 4 units of water

A will pour 4 units of water in 1 min and B will take out 3 units of water in the next minute. In 2 mins only 1 unit of water will be left in the tank. Similarly in 16 mins 8 units of water will be poured in the tank and on 17th min, A will pour 4 units of water in the tank and the tank will be full.

Example 8: There are two pipes a and b. A and b can fill and empty in 20 minutes and 30 minutes respectively. If both are open for 1 minute alternate, then how much time will an empty tank be full?

a) 120 min
b) 117 min
c) 115 min
d) 114 min

Finding the actual capacity of the tank

Example 9: 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 litres per minute. When the tank is full, the inlet is opened and due to leak, the tank is empty in 8 hours. Find the capacity of the tank

Finding the actual capacity of the tank

Example 9: 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 litres per minute. When the tank is full, the inlet is opened and due to leak, the tank is empty in 8 hours. Find the capacity of the tank

Solution: A(outlet)=6
          B(inlet+otlet)=8

Inlet pipe can fill the tank in 24hrs. In 1 minute, it can pour 4liters of water in the tank and took 24hrs to fill the tank. So the capacity of the tank is

1min=4litre

60min=4*60

24hrs=4*60*24=5760 liters

Example 10: A leak in the bottom of a container can empty the full tank in 4 hours. An inlet pipe fills water at the rate of 3 liters a minute. When the tank is full, the inlet is opened and due to the leak, the tank is empty in 6 hours. How many litres does the container hold?

a) 3600
b) 2880
c) 2160
d) 1440

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

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

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

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

5. A pipe can fill a tank in 12 hours and another can empty it in 24 hours. If both the pipes are used, with the first pipe running for 2 hours and second pipe running for 1 hour alternatively, how long will it take to fill the tank? (Consider starting with the first pipe)

a) 22 hrs 30 min
b) 21 hrs
c) 22 hrs
d) None of these

6. Two pipes A and B can separately fill a tank in 12 minutes and 15 minutes respectively. Both the pipes are opened together but 4 minutes after the start the pipe A is turned off. How much time will it take to fill the tank?

a) 9 min
b) 10 min
c) 11 min
d) 12 min

7. 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

8. A cistern is filled by a tap in 3 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

9. 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

10. 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

11. 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 is turned off. In how many more minutes will the tank be filled?

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

12. A tap can empty a tank in 30 minutes. A second tap can empty it in 45 minutes. If both the taps operate simultaneously, how much time is needed to empty the tank?

a) 45 mins
b) 90 mins
c) 115 mins
d) None of these

13. Tap A can fill a tank in 30 minutes and tap B can fill the same tank in 60 minutes. If both the taps are opened together for 5 minutes, and after that tap A stopped working, then in how much time remaining part of the tank can be filled?

a) 20mins
b) 25 mins
c) 30mins
d) 45mins

14. A tank is fitted with two taps A and B. A can fill the tank completely in 45 minutes and B can empty the full tank in 1 hour. If both the taps are opened alternatively for 1 minute, then in how much time the empty tank will be filled completely ?

a) 117mins
b) 120mins
c) 119mins
d) None of these

Answer Key

Examples

1	2	3	4	5	6	7	8	9	10
12 days	A	36 min	D	60 min	A	17 min	C	5760 liter	c

Practice Questions

1	2	3	4	5	6	7	8	9	10
C	A	A	C	D	B	A	D	C	A
11	12	13	14						
C	D	D	D						