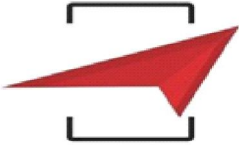
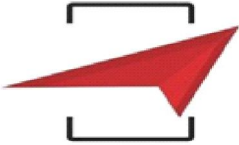


## TIME AND WORK

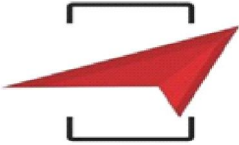
- A does a work in 10 days and B does the same work in 15 days. In how many days will they finish the work when working together?  
(a) 7 days (b) 8 days  
(c) 6 days (d) 5 days
- A can finish a work in 18 days and B can do the same work in half the time taken by A. Then, working together what part of the same work can they finish in a day?  
(a)  $\frac{1}{6}$  (b)  $\frac{2}{5}$   
(c)  $\frac{1}{9}$  (d)  $\frac{2}{7}$
- 'A' can complete a piece of work in 12 days. 'A' and 'B' together can complete the same piece of work in 8 days. In how many days can 'B' alone complete the same piece of work?  
(a) 15 days (b) 18 days  
(c) 24 days (d) 28 days
- A, B and C can finish the work in 1 day, 6 days and 12 days respectively. In how many days can they finish the work if they work together ?  
(a)  $\frac{4}{5}$  days (b)  $\frac{5}{7}$  days  
(c)  $\frac{2}{3}$  days (d)  $\frac{3}{5}$  days
- X can do one-fourth of a work in 10 days, Y can do 40% of the work in 40 days and Z can do one-third of the work in 13 days. Who will complete the work first ?  
(a) X (b) Z  
(c) Y (d) Data inadequate
- A works as fast as B. If B alone can complete the work in 12 days, the number of days in which A and B together can complete the work is  
(a) 6 days (b) 5 days  
(c) 4 days (d) 8 days
- A man can do a job in 15 days. His father takes 20 days and his son takes 25 days to finish the work. In how many days can they finish the work if they work together?  
(a) 5.2 days (b) 6.4 days  
(c) 3.5 days (d) 4.4 days
- A can do a piece of work in 80 days. He works at it for 10 days and then B alone finishes the work in 42 days. In how many days working together they could complete the work?  
(a) 24 days (b) 25 days  
(c) 30 days (d) 35 days
- 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) 15 days (b) 12 days  
(c) 10 days (d) 17 days
- A and B can do a work in 10 days and 15 days respectively. A started working alone after what time B should join him so that work would be completed in 8 days?  
(a) 4 days (b) 6 days  
(c) 5 days (d) 8 days
- A and B can do a work in 20 days and 30 days respectively. A and B started working together. A left the work after working 8 days and B completed the remaining work. In what time work will be completed?  
(a) 16 days (b) 12 days  
(c) 18 days (d) 14 days
- A is twice as good a workman as B and together they finish a piece of work in 14 days. The number of days taken by A alone to finish the work is  
(a) 21 days (b) 18 days  
(c) 25 days (d) 16 days
- A and B can do a job together in 7 days. A is  $1\frac{3}{4}$  times as efficient as B. The same job can be done by A alone in  
(a) 10 days (b) 12 days  
(c) 8 days (d) 11 days
- Sakshi can do a piece of work in 20 days. Tanya is 25% more efficient than Sakshi. The number of days



- taken by Tanya to do the same piece of work is
- (a) 12 days (b) 10 days  
(c) 16 days (d) 15 days
15. A and B together can do a work in 8 days, B and C together in 6 days, while C and A together in 4 days. If they all work together, then the work will be completed in
- (a)  $3\frac{3}{4}$  days (b)  $3\frac{9}{13}$  days  
(c)  $5\frac{1}{13}$  days (d)  $6\frac{1}{2}$  days
16. A and B can do a piece of work in 12 days, B and C in 8 days and C and A in 6 days. How long would B take to do the same work alone?
- (a) 24 days (b) 32 days  
(c) 40 days (d) 48 days
17. A can do a piece of work in 4 hours, B and C together can do it in 3 hours while A and C together can do it in 2 hours. How long will B alone take to do it?
- (a) 10 hrs (b) 12 hrs  
(c) 14 hrs (d) 16 hrs
18. A and B can do a work in 20 hours and 30 hours respectively each of them work for hour alternatively starting with A, the work will be completed?
- (a) 24 hrs (b) 23 hrs  
(c) 26 hrs (d) 18 hrs
19. A and B can do a work in 10 days and 20 days respectively, each of them work for one days alternatively, then in how many days work will completed if
- (i) Work started by A  
(a) 13 days (b) 12 days  
(c) 16 days (d) 18 days
- (ii) Work started by B  
(a)  $12\frac{1}{2}$  days (b)  $13\frac{1}{2}$  days  
(c) 16 days (d) 14 days
20. A, B and C can do a work in 20 hours, 30 hours and 40 hours respectively. A starts working with help of B or C on every alternate hour, then in what time work would complete?
- (a) 12 hrs 40 min (b) 16 hrs 8 min  
(c) 12 hrs 36 min (d) 18 hrs 30 min
21. If 3 men or 4 women can plough a field in 43 days, how long will 7 men and 5 women take to plough it?
- (a) 10 days (b) 11 days  
(c) 9 days (d) 12 days
22. 8 men can complete a piece of work in 12 days, 4 women can complete the same piece of work in 48 days and 10 children can complete the piece of work in 24 days. In how many days can 10 men, 4 women and 10 children together complete the piece of work?
- (a) 5 days (b) 10 days  
(c) 8 days (d) 6 days
23. A, B and C can do a work in 4 days, 6 days and 10 days respectively. They finish the work together and earn Rs 310. What is the share of each?
- (a) Rs 150, Rs 100, Rs 60  
(b) Rs 140, Rs 110, Rs 60  
(c) Rs 160, Rs 90, Rs 60  
(d) Rs 150, Rs 110, Rs 50
24. A, B and C contract to do a work for Rs 4200. A can do the work in 6 days, B in 10 days and C in 12 days. If they work together to do the work, what is the share of C?
- (a) Rs 2000 (b) Rs 1200  
(c) Rs 1000 (d) Rs 1500
25. Suresh can do a work in 15 days. Suresh and Ramesh together do the same work in 10 days. If they are paid Rs 1500 for the work, how should the money be divided between them?
- (a) Rs 1000, Rs 500 (b) Rs 700, Rs 800  
(c) Rs 1200, Rs 300 (d) Rs 800, Rs 500
26. A and B are working together and complete the job in 50 days. It is also known that B is 20% less efficient than A. If the contract of the work is Rs.5400, then what is the share of A and B in the amount?
- (a) Rs. 3000, Rs. 2400 (b) Rs. 2500, Rs. 2000  
(c) Rs. 3500, Rs. 2400 (d) Rs. 3000, Rs. 2000
27. Two men undertake to do a piece of work for Rs. 3200. First man alone can do this in 15 days while the second man alone can do this work in 16 days. If they work together to complete this work in 6



- days with the help of a boy. What is the share of the boy.
- (a) Rs. 600                      (b) Rs. 300  
(c) Rs. 250                      (d) Rs. 720
28. There is a leak in the bottom of a cistern. When the cistern is thoroughly repaired, it would be filled in 12 minutes. It now takes 18 minutes longer. If the cistern is full, how long would the leak take to empty the cistern?
- (a) 20 minutes                      (b) 24 minutes  
(c) 26 minutes                      (d) 30 minutes
29. Tap A can fill a water tank in 25 minutes, tap B can fill the same tank in 40 minutes and tap C can empty the tank in 30 minutes. If all the three taps are opened together, in how many minutes will the tank be completely filled up or emptied?
- (a)  $13\frac{2}{19}$                       (b)  $11\frac{31}{19}$   
(c)  $19\frac{11}{31}$                       (d)  $31\frac{11}{19}$
30. Two pipes A and B can fill a cistern in 12 minutes and 15 minutes respectively. There is also a pipe C. If all the three pipes are opened together, the tank is full in 10 minutes. How much time will be taken by C to empty the full tank?
- (a) 10 min                      (b) 20 min  
(c) 15 min                      (d) Data inadequate
31. Two pipes A and B can fill a cistern in 24 minutes and 30 minutes respectively. There is also an outlet C. If all the three pipes are opened together, the tank is full in 20 minutes. How much time will be taken by C to empty the full tank?
- (a) 30 min                      (b) 40 min  
(c) 45 min                      (d) 1 hour
32. Two pipes A and B can fill a tank in 12 minutes and 16 minutes respectively. If both the pipes are opened simultaneously, after how much time should B be closed so that the tank is full in 9 minutes?
- (a) 8 min                      (b) 6 min  
(c) 4 min                      (d) 10 min
33. Two pipes A and B can separately fill in 15 minutes
- and 10 minutes respectively and a waste pipe C can carry off 7 liters per minute. If all the pipes are opened together a full cistern is emptied in 2 hours. How many litres does the cistern hold?
- (a) 40 litres                      (b) 20 litres  
(c) 25 litres                      (d) 30 litres



## TIME AND WORK

1. (c) 2. (a) 3. (c) 4. (a) 5. (b) 6. (a)  
 7. (b) 8. (c) 9. (c) 10. (c) 11. (c) 12. (c)  
 13. (d) 14. (c) 15. (b) 16. (d) 17. (b) 18. (a)  
 19. (i)(a) (ii) (b) 20. (c) 21. (d) 22. (c) 23. (a)  
 24. (c) 25. (a) 26. (a) 27. (d) 28. (a) 29. (d)  
 30. (b) 31. (b) 32. (c) 33. (a)

## HINTS & SOLUTION

1. 
$$\begin{array}{l} A \rightarrow 10 \\ B \rightarrow 15 \end{array} \rightarrow 30 \left\{ \begin{array}{l} 3 \\ 2 \end{array} \right.$$

\ Required Time =  $\frac{30}{3+2} = \frac{30}{5} = 6$  days

2. 
$$\begin{array}{l} A \rightarrow 18 \\ B \rightarrow 9 \end{array} \rightarrow 18 \left\{ \begin{array}{l} 1 \\ 2 \end{array} \right.$$

Efficiency of A = 1, Efficiency of B = 2  
 Now work done in a day =  $1+2 = 3$

\ Part of work done =  $\frac{3}{18} = \frac{1}{6}$

3. 
$$\begin{array}{l} A \rightarrow 12 \\ A+B \rightarrow 8 \end{array} \rightarrow 24 \left\{ \begin{array}{l} 2 \\ 3 \end{array} \right.$$

\ Efficiency of B =  $3 - 2 = 1$

\ Time taken by B to complete the work =  $\frac{24}{1} = 24$  days

4. 
$$\begin{array}{l} A \rightarrow 1 \\ B \rightarrow 6 \\ C \rightarrow 12 \end{array} \rightarrow 12 \left\{ \begin{array}{l} 12 \\ 2 \\ 1 \end{array} \right.$$

\ Required Time =  $\frac{12}{15} = \frac{4}{5}$  days.

5. As X, can do  $\frac{1}{4}$  of total work in 10 days.

So, time required to finish complete work =  $4 \times 10 = 40$  days.

As, Y can do 40% of total work in 40 days.

So, time required to finish complete work =  $\frac{40}{40\%} \times 100\%$   
 $= 100$  days

As, Z can do  $\frac{1}{3}$  of total work in 13 days.

So, time required to finish complete work =  $\frac{13}{\frac{1}{3}} \times 1 =$

$13 \times 3 = 39$  days

Obviously, Z first will complete the work.

6. Ratio of efficiency of A : B = 1 : 1

Total work =  $1 \times 12 = 12$

\ Required Time =  $\frac{12}{1+1} = \frac{12}{2} = 6$  days.

7. 
$$\begin{array}{l} M \rightarrow 15 \\ F \rightarrow 20 \\ S \rightarrow 25 \end{array} \rightarrow 300 \left\{ \begin{array}{l} 20 \\ 15 \\ 12 \end{array} \right.$$

\ Required Time =  $\frac{300}{47} = 6.4$  days approx.

8.  $10A + 70A = 80$  days

$10A + 42B$

Efficiency of A : B =  $42 : 70 = 3 : 5$

Total work =  $80 \times 3 = 240$

\ Required Time =  $\frac{240}{8} = 30$  days.

9. 
$$\begin{array}{l} A \rightarrow 24 \\ B \rightarrow 9 \\ C \rightarrow 12 \end{array} \rightarrow 72 \left\{ \begin{array}{l} 3 \\ 8 \\ 6 \end{array} \right.$$

Work done by B and C in 3 days =  $(8+6) \times 3 = 14 \times 3 = 42$

Remaining work =  $72 - 42 = 30$

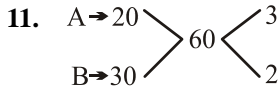
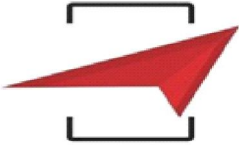
Required time taken by A =  $\frac{30}{3} = 10$  days

10. 
$$\begin{array}{l} A \rightarrow 10 \\ B \rightarrow 15 \end{array} \rightarrow 30 \left\{ \begin{array}{l} 3 \\ 2 \end{array} \right.$$

Remaining work when A work for 8 days =  $30 - (3 \times 8) = 6$

Time required to finish remaining work =  $\frac{6}{2} = 3$

Days after which B will join =  $8 - 3 = 5$  days.



Work done by A and B in 8 days =  $(3+2) \times 8 = 40$   
 Remaining work =  $60 - 40 = 20$

Time taken by B to finish remaining =  $\frac{20}{2} = 10$  days.

Total time required =  $8 + 10 = 18$  days.

12. Ratio of efficiency of A : B = 2 : 1  
 Total work =  $(2 + 1) \times 14 = 42$

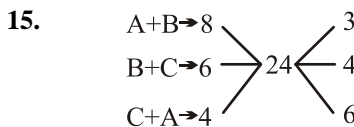
\ Required Time =  $\frac{42}{2} = 21$  days.

13. Ratio of efficiency of A : B = 7 : 4  
 Total work =  $(7 + 4) \times 7 = 77$

\ Required time taken by A to finish it alone =  $\frac{77}{7} = 11$  days.

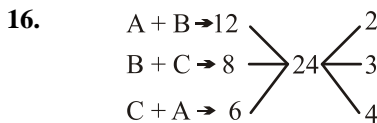
14. Ratio of efficiency of T : S = 125 : 100 = 5 : 4

\ Required Time =  $\frac{4 \times 20}{5} = 16$  days.



$2(A + B + C) = 13$        $P A + B + C = \frac{13}{2}$

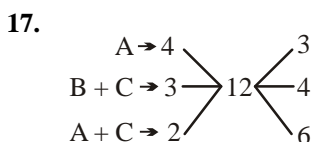
\ Required Days =  $\frac{24}{13/2} = \frac{48}{13} = 3\frac{9}{13}$  days



Efficiency of A + B + C =  $\frac{9}{2} = 4.5$

Efficiency of B =  $(A+B+C) - (C+A) = 4.5 - 4 = 0.5$

\ Required Days =  $\frac{24}{0.5} = 48$  days

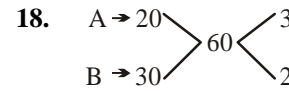


Efficiency of A = 3

Efficiency of C =  $6 - 3 = 3$

Efficiency of B =  $4 - 3 = 1$

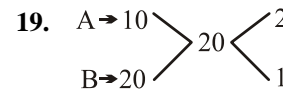
\ Required time taken by B working alone =  $\frac{12}{1} = 12$  days



In 2 hrs.  $(3+2) = 5$  work will be completed.

\ In  $2 \times 12 = 24$  hrs.  $5 \times 12 = 60$  work will be completed.

\ Required Time = 24 hrs.

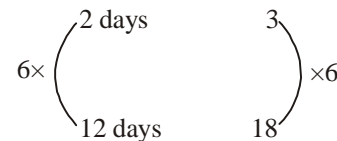


(i) When work started by A

On 1st day work completed by A = 2

On 2nd day work completed by B = 1

Total work done in 2 days = 3



Remaining work =  $20 - 18 = 2$

As next day A will work.

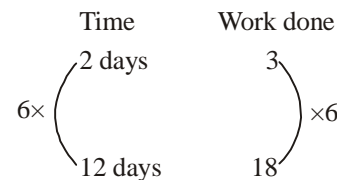
So, A will finish the work =  $\frac{2}{2} = 1$  day

Total time taken =  $12 + 1 = 13$  days.

(ii) On 1st day, work completed by B = 1

On 2nd day, work completed by A = 2

Total work done in 2 days =  $1 + 2 = 3$



Remaining work =  $20 - 18 = 2$

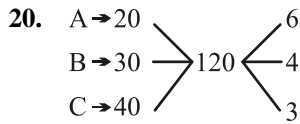
Next day B will finish = 1 work.

Work is still unfinished.

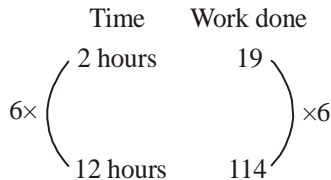
Remaining work =  $2 - 1 = 1$

Now, A will finish the work =  $\frac{1}{2}$  day

\ Total time taken =  $12 + 1 + \frac{1}{2} = 13\frac{1}{2}$  days



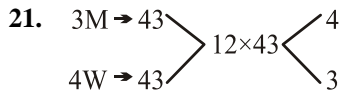
Work done by A and B on the 1st hour =  $6+4 = 10$   
 Work done by A and C on the 2nd hour =  $6+3 = 9$   
 \ Total work done in 2 hours =  $10+9 = 19$ .



Remaining work =  $120-114 = 6$   
 As next hour A and B will work.

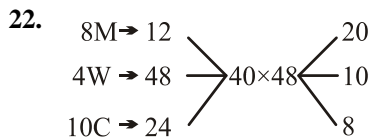
So, time taken by then =  $\frac{6}{10} = \frac{3}{5}$  hour.

\ Total time taken =  $12 + \frac{3}{5} = 12 \text{ hour } 36 \text{ mins.}$

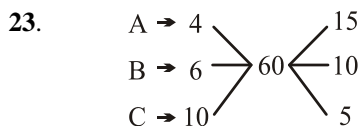


Efficiency of 7 M =  $7 \times 4 = 28$ , Efficiency of 5W =  $5 \times 3 = 15$   
 Total efficiency =  $28+15 = 43$

\ Required Time =  $\frac{12 \times 43}{43} = 12$  days.



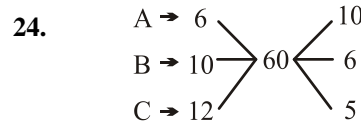
\ Required Time =  $\frac{40 \times 48}{20 \times 10 + 10 \times 4 + 8 \times 10} = 6$  days.



As, they finished the work together. So, time period invested by each of them are same and wage will be distributed according to efficiency.

Now, 1 unit =  $\frac{310}{31} = \text{Rs. } 10$

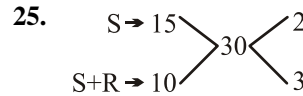
\ Share of A =  $15 \times 10 = \text{Rs. } 150$   
 Share of B =  $10 \times 10 = \text{Rs. } 100$   
 Share of C =  $6 \times 10 = \text{Rs. } 60$



As they finished the work together, so time period invested by each of them are same and wage will be distributed according to efficiency.

1 unit =  $\frac{4200}{21} = 200$

\ Share of C = 5 units =  $5 \times 200 = \text{Rs. } 1000$



Efficiency of Suresh = 2  
 Efficiency of Ramesh =  $3 - 2 = 1$

1 unit =  $\frac{1500}{3} = 500$

\ Suresh's share =  $2 \times 500 = \text{Rs. } 1000$

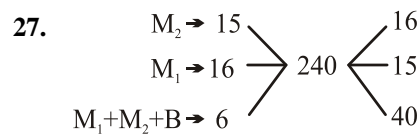
\ Ramesh's share =  $1 \times 500 = \text{Rs. } 500$

26. Ratio of efficiency of A : B =  $100 : 80 = 5 : 4$

1 unit =  $\frac{5400}{9} = 600$

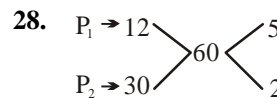
\ A's share = 5 units =  $5 \times 600 = \text{Rs. } 3000$

\ B's share = 4 units =  $4 \times 600 = \text{Rs. } 2400$



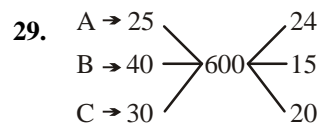
Boy's efficiency =  $40 - (16+15) = 9$

\ Boy's share =  $\frac{3200}{40} \times 9 = \text{Rs. } 720$



Efficiency of Leak =  $5 - 2 = 3$

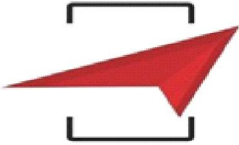
\ Required time =  $\frac{60}{3} = 20$  minute.



Net Efficiency =  $24+15-20 = 19$

\ As net efficiency is positive so tank will be full.

Required Time =  $\frac{600}{19} = 31 \frac{11}{19}$  min.



30. 
$$\begin{array}{l} A \rightarrow 12 \\ B \rightarrow 15 \\ A+B+C \rightarrow 10 \end{array} \rightarrow 60 \left\{ \begin{array}{l} 5 \\ 4 \\ 6 \end{array} \right.$$

∴ Efficiency of A+B is more than efficiency of A+B±C.

So, the nature of pipe C is outlet

\ Efficiency of C =  $5+4-6 = 3$

\ Required Time =  $\frac{60}{3} = 20$  min.

31. 
$$\begin{array}{l} A \rightarrow 24 \\ B \rightarrow 30 \\ A+B-C \rightarrow 20 \end{array} \rightarrow 120 \left\{ \begin{array}{l} 5 \\ 4 \\ 6 \end{array} \right.$$

Efficiency of C =  $5 + 4 - 6 = 3$

Required Time =  $\frac{120}{3} = 40$  min

32. 
$$\begin{array}{l} A \rightarrow 12 \\ B \rightarrow 16 \end{array} \rightarrow 48 \left\{ \begin{array}{l} 4 \\ 3 \end{array} \right.$$

∴ Pipe A was opened for total 9 min.

\ Water filled by pipe A in 9 min =  $9 \times 4 = 36$  L

Now, remaining part to be filled by pipe B =  $48 - 36 = 12$  L

\ Required time after which pipe B should be closed =

$\frac{12}{3} = 4$  min.

33. As all pipes opened for 2 hrs.

\ Number of times, pipe A will fill the tank =  $\frac{120}{15} = 8$  times

Number of times pipe B will fill the tank =  $\frac{120}{10} = 12$  times.

Total inflow =  $8+12+1$  (already filled) = 21 times

Total outflow of water =  $120 \times 7 = 840$  L

\ Capacity of the tank =  $\frac{840}{21} = 40$  L