

Chapter - 10

Time and Work

Foundation

Solutions

1. (a); Here,
- $M_1 = 18, M_2 = 27, D_1 = 24$

By the formula

$$M_1 D_1 = M_2 D_2 \Rightarrow 18 \times 24 = 27 \times D_2$$

$$\therefore D_2 = \frac{18 \times 24}{27} = 16 \text{ days}$$

2. (a); Let 1648 persons can construct a dam in
- x
- days

Given, $M_1 = 1648, M_2 = 721$ $D_1 = x$ days, $D_2 = 48$ days

$$\therefore M_1 D_1 = M_2 D_2 \Rightarrow 1648 \times x = 721 \times 48$$

$$x = \frac{721 \times 48}{1648} = 21 \text{ days}$$

\therefore 1648 persons require 21 days to construct a dam.

3. (a); Efficiency is inversely proportional to time.

$$\left. \begin{array}{l} \text{Efficiency } 2 : 1 \\ \text{Persons } 20 : 10 \end{array} \right\} \therefore 20 : x$$

$$\therefore x = \frac{1 \times 10 \times 20}{20 \times 2} = 5 \text{ days.}$$

4. (d);
- $(A + B)$
- 's 1 day's work =
- $\frac{1}{6} + \frac{1}{12} = \frac{2+1}{12} = \frac{1}{4}$

\therefore A and B together will complete the work in 4 days.

5. (b); Work done by 12 men in 6 days =
- $\frac{1}{2}$

$$\text{Remaining work} = 1 - \frac{1}{2} = \frac{1}{2}$$

By the formula

$$\frac{M_1 D_1}{W_1} = \frac{M_2 D_2}{W_2}, \quad \frac{12 \times 12}{1} = \frac{6 \times x}{\frac{1}{2}}$$

$$12 \times 12 = 12 \times x \Rightarrow x = 12$$

Extra days to complete the work = $12 - 6 = 6$ days

Shortcut:

$$12 \times 12 = 12 \times 6 + 6 \times x$$

$$6x = 12 \times 6 \Rightarrow x = 12$$

6. (c); 1 day's work of A =
- $\frac{1}{12}$

$$1 \text{ day's work of B} = \frac{1}{15}$$

Part of the work done by A and B in 4 days

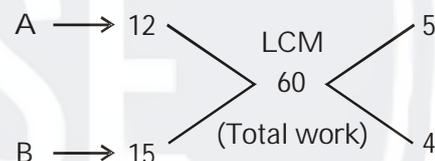
$$= 4 \left(\frac{1}{12} + \frac{1}{15} \right) = 4 \left(\frac{5+4}{60} \right) = 4 \times \frac{9}{60} = \frac{3}{5}$$

$$\text{Remaining work} = 1 - \frac{3}{5} = \frac{2}{5}$$

\therefore Time taken by B to complete the remaining

$$\text{work} = \frac{2}{5} \times 15 = 6 \text{ days}$$

Shortcut:



In 4 days, work done by $(A + B) = 4(5 + 4) = 36$ units

$$\text{Remaining work done by B} = \frac{24}{4} = 6 \text{ days}$$

7. (d); Working efficiencies are in the ratio 3 : 4
-
- \therefore
- ratio of time taken by them = 4 : 3

8. (b); By using MDH formula

$$M_1 D_1 H_1 W_2 = M_2 D_2 H_2 W_1$$

$$\text{Here, } 5 \times 6 \times 6 \times 16 = 12 \times D_2 \times 8 \times 10$$

$$\therefore D_2 = \frac{5 \times 6 \times 6 \times 16}{12 \times 8 \times 10} = 3 \text{ days}$$

9. (b);
- $(A + B)$
- 's 1 day's work =
- $\frac{1}{18}$

$$(B+C)\text{'s 1 day's work} = \frac{1}{9}$$

$$(A+C)\text{'s 1 day's work} = \frac{1}{12}$$

Adding all the above three,



$$= \frac{1}{18} + \frac{1}{9} + \frac{1}{12} = \frac{2+4+3}{36} = \frac{9}{36} = \frac{1}{4}$$

$$\therefore (A + B + C)'s\ 1\ day's\ work = \frac{1}{8}$$

$$\therefore B's\ 1\ day's\ work = (A + B + C)'s\ 1\ day's\ work -$$

$$(A + C)'s\ 1\ day's\ work = \frac{1}{8} - \frac{1}{12} = \frac{3-2}{24} = \frac{1}{24}$$

Hence, B alone can do the work in 24 days.

10. (a); Let the total work be 11 units
According to question (P + Q) finish 7 units works means R will finish the remaining 4 units works

$$\therefore R\ will\ get\ an\ amount = \frac{4}{11} \times 550 = Rs.\ 200$$

11. (a); Let the total work be 7 units

Then, P + Q → 5 units

R does → (7 - 5) = 2 units

$$So,\ R\ will\ get = \frac{2}{7} \times 707 = Rs.\ 202$$

12. (d); Total amount = 30000

$$A's\ 1\ day's\ work = \frac{1}{15},\ B's\ 1\ day's\ work = \frac{1}{10}$$

$$Ratio = \frac{1}{15} : \frac{1}{10} = 2 : 3\ (taking\ LCM)$$

$$Sum\ of\ the\ ratios = 2 + 3 = 5$$

$$\therefore A's\ share = \frac{2}{5} \times 30000 = Rs.\ 12000$$

13. (b); It is required to find the H.C.F. of 5750 and 5000, because his daily wage is their common factor.
Hence, the daily wage is Rs. 250.

14. (c); Work done by (B+C) in 3 days

$$= 3 \times \left(\frac{1}{9} + \frac{1}{12} \right) = \frac{1}{3} + \frac{1}{4} = \frac{4+3}{12} = \frac{7}{12}$$

$$Remaining\ work = 1 - \frac{7}{12} = \frac{5}{12}$$

This part of work is done by A alone.

Now, $\frac{1}{24}$ part of work is done by A in 1 day.

$$\therefore \frac{5}{12}\ part\ of\ work\ will\ be\ done\ in$$

$$= 24 \times \frac{5}{12} = 10\ days.$$

15. (c); 3m = 6w

$$\therefore 1m = 2w$$

$$12m + 8w = (12 \times 2w) + 8w = 32w$$

Since, 6 women can do the work in 16 days,

$$\therefore 32\ women\ can\ do\ the\ work\ in\ \frac{16 \times 6}{32} = 3\ days.$$

16. (a); A's work per day = $\frac{1}{15}$

$$B's\ work\ per\ day = \frac{1}{20}$$

$$(A+B)'s\ work\ per\ day = \frac{1}{15} + \frac{1}{20} = \frac{7}{60}$$

$$\therefore (A+B)'s\ work\ in\ 4\ days = 4 \times \frac{7}{60} = \frac{7}{15}$$

$$\Rightarrow\ fraction\ of\ work\ left = 1 - \frac{7}{15} = \frac{8}{15}$$

17. (c); Here, $M_1 = 270, M_2 = 180, D_1 = 10, D_2 = x$
By the formula

$$M_1 D_1 = M_2 D_2 \Rightarrow 270 \times 10 = 180 \times x$$

$$x = \frac{270 \times 10}{180} = 15\ Days$$

18. (d); Given, $M_1 = 4, D_1 = 4, W_1 = 4$
 $M_2 = 8, D_2 = 8, W_2 = ?$

$$\frac{M_1 D_1}{W_1} = \frac{M_2 D_2}{W_2} \Rightarrow \frac{4 \times 4}{4} = \frac{8 \times 8}{W_2}$$

$$4W_2 = 64 \Rightarrow W_2 = 16$$

19. (c); A's one day's work = $\frac{1}{6}$

$$B's\ one\ day's\ work = \frac{1}{12}$$

$$(A + B)'s\ one\ day's\ work = \frac{1}{6} + \frac{1}{12} = \frac{2+1}{12} = \frac{1}{4}$$

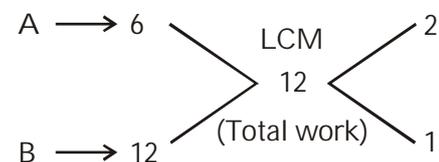
$$(A + B)'s\ three\ day's\ work = \frac{3}{4}$$

\therefore Required number of days = Remaining work \times

$$B's\ time = \frac{1}{4} \times 12 = 3$$

Hence, total days = 3 + 3 = 6

Shortcut:



In 3 days, (A + B) done = 9 units
 Remaining work = 12 - 9 = 3 unit

B done remaining work = $\frac{3}{1} = 3$ days

Total work completed in = 3 + 3 = 6 days

20. (c); A's one day's work = $\frac{1}{18}$

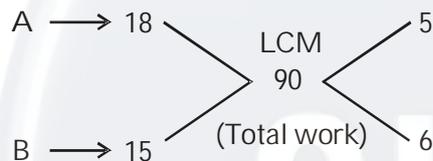
B's one day's work = $\frac{1}{15}$

Part of work done by B in 10 days $10 \times \frac{1}{15} = \frac{2}{3}$

Remaining work = $1 - \frac{2}{3} = \frac{1}{3}$

∴ Time taken by A = $\frac{1}{3} \times 18 = 6$ days.

Shortcut:



Work done by B 10 in days = $10 \times 6 = 60$ units

Remaining work = $(90 - 60) = 30$ units

Remaining work completed by A in $\frac{30}{5} = 6$ days.

21. (b); 10 men require 8 days to plough 20 acres of land
 Let x men require 10 days to plough 100 acres of land

$\frac{(10 \times 8)}{20} = \frac{x \times 10}{100} \Rightarrow x = 40$

22. (a); Given, A's 1 day's work = $\frac{1}{20}$

A's 4 day's work = $\frac{4}{20} = \frac{1}{5}$

Remaining work = $1 - \frac{1}{5} = \frac{4}{5}$

This part is completed by A and B together.

Now, (A + B)'s 1 day's work = $\frac{1}{20} + \frac{1}{12}$

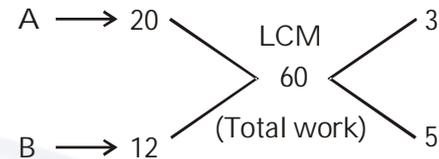
= $\frac{3+5}{60} = \frac{8}{60} = \frac{2}{15}$

Now, $\frac{2}{15}$ work is done by (A + B) in 1 day

∴ $\frac{4}{5}$ work is done in = $\frac{15}{2} \times \frac{4}{5} = 6$ days

Hence, the work lasted for 4 + 6 = 10 days.

Shortcut:



In 4 days A done = $4 \times 3 = 12$

Remaining work = 48

(A + B) done remaining work = $\frac{48}{5+3} = 6$ days

Work completed in (4 + 6) = 10 days

23. (a); 1 day's work of A = $\frac{1}{12}$

1 day's work of B = $\frac{1}{15}$

1 day's work of A and B = $\frac{1}{12} + \frac{1}{15}$
 = $\frac{5+4}{60} = \frac{9}{60} = \frac{3}{20}$

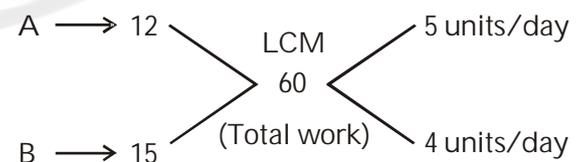
5 day's work of A and B = $\frac{15}{20}$

Remaining work = $1 - \frac{15}{20} = \frac{20-15}{20} = \frac{5}{20} = \frac{1}{4}$

Time taken by A to complete $\frac{1}{4}$ work

= $\frac{1}{4} \times 12 = 3$ days

Shortcut:



In 5 days,

(A + B) completed = $5(5 + 4) = 45$ units

Remaining work done by A only

= $\frac{60-45}{5} = 3$ days



24. (b); (A + B)'s 1 day's work = $\frac{1}{12}$... (i)

(B + C)'s 1 day's work = $\frac{1}{15}$... (ii)

(C + A)'s 1 day's work = $\frac{1}{20}$... (iii)

By eq. (i) + eq. (ii) + eq. (iii)

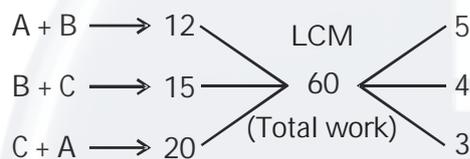
We get 2(A + B + C)'s 1 day's work

$$= \frac{1}{12} + \frac{1}{15} + \frac{1}{20} = \frac{5+4+3}{60} = \frac{12}{60} = \frac{1}{5}$$

$$\therefore (A + B + C)'s 1 day's work = \frac{1}{5 \times 2} = \frac{1}{10}$$

\therefore The time taken by A, B and C together to do the same work = 10 days

Shortcut:



2(A + B + C) 1 day work = 5 + 4 + 3 = 12

(A + B + C) 1 day work = $\frac{12}{2} = 6$

Total work completed by (A + B + C) in

$$= \frac{60}{6} = 10 \text{ days}$$

25. (a); 18 w's one day's work = $\frac{1}{12}$... (i)

12 m's one day's work = $\frac{1}{9}$... (ii)

Now dividing equation (i) by equation (ii), we have

$$\frac{18w}{12m} = \frac{1}{12} \times \frac{9}{1} = \frac{9}{12}$$

$$\Rightarrow 2w = 1m$$

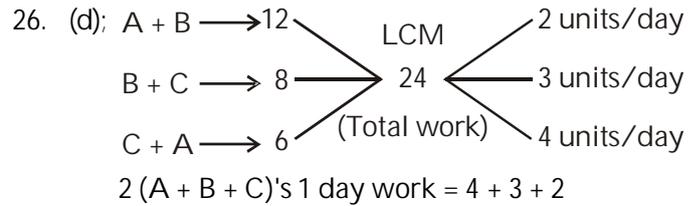
Or, 1 man = 2 women \Rightarrow 8 men = 16 women

\therefore 8 men and 8 women = 16 + 8 = 24 women

Since, 18 women can complete the work in 12 days

\therefore 24 women can complete the work in

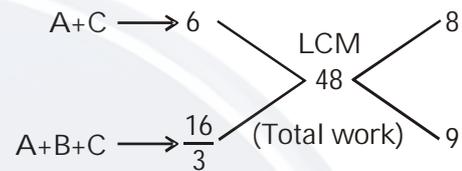
$$= \frac{12 \times 18}{24} = 9 \text{ days.}$$



(A + B + C)'s 1 day work = $\frac{9}{2}$

(A + B + C) completed the work in

$$= \frac{24 \times 2}{9} = \frac{16}{3}$$



1 day work of B = 1 unit

B completed the work in 48 days.

27. (b); Suppose there were x men originally
Then by using formula, $M_1 D_1 = M_2 D_2$
we have $10x = 12(x - 5)$

$$\therefore x = \frac{(12 \times 5)}{12 - 10} = 30 \text{ men}$$

28. (a); Let B alone can do the work in x days.

\therefore A can do the work in $\frac{3x}{2}$ days.

According to the question,

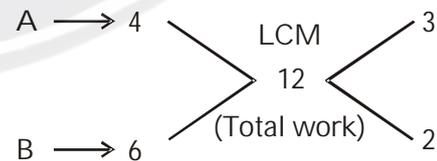
$$\frac{1}{x} + \frac{2}{3x} = \frac{1}{18} \Rightarrow 3x = 18 \times 5 \Rightarrow \frac{18 \times 5}{3} = 30 \text{ days}$$

29. (a); A's one day's work = $\frac{1}{4}$, B's one day's work = $\frac{1}{6}$

\therefore Required no. of days to complete the work by

A and B together = $\frac{12}{5} = 2\frac{2}{5}$ days.

Shortcut:



Work completed in = $\frac{12}{3+2} = \frac{12}{5} = 2\frac{2}{5}$ days

30. (c); Work done by (A + B) in 1 day = $\frac{1}{18}$... (i)

Work done by (B + C) in 1 day = $\frac{1}{24}$... (ii)



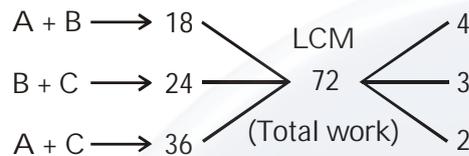
Work done by (C + A) in 1 day = $\frac{1}{36}$... (iii)

On adding equation (i), (ii) and (iii)
Work done by 2(A + B + C) in 1 day

$$= \frac{1}{18} + \frac{1}{24} + \frac{1}{36} = \frac{4+3+2}{72} = \frac{9}{72} = \frac{1}{8}$$

∴ Work done by (A + B + C) in 1 day = $\frac{1}{8 \times 2} = \frac{1}{16}$

∴ A, B and C together finish the work in 16 days
Shortcut:



2(A + B + C)'s 1 day work = 4 + 3 + 2 = 9 units

(A + B + C)'s 1 day work = $\frac{9}{2}$

Total work completed by (A + B + C) in $\frac{72}{\frac{9}{2}}$

$$= \frac{72 \times 2}{9} = 16 \text{ days}$$

31. (a); Let A and B worked together for x days
According to the question,
Part of work done by A for (x + 10) days + part of work done by B for x days = 1

$$\frac{x+10}{20} + \frac{x}{30} = 1 \Rightarrow \frac{3x+30+2x}{60} = 1$$

$$5x + 30 = 60 \Rightarrow 5x = 30 \Rightarrow x = \frac{30}{5} = 6 \text{ days}$$

32. (b); A can complete the work in 6 days.
B can complete the work in 5 days.
We know that there is inverse relation between time and work and amount of Rs. 220 will be distributed in the ratio of their work.

B will get an amount = $\frac{6}{11} \times 220 = \text{Rs. } 120$.

33. (c); Let the total work be 11 units
Then, P + Q → 8 units
R does → (11 - 8) units = 3 units

R's share = $\frac{3}{11} \times 660 = \text{Rs. } 180$

34. (b); Given, $H_1 = 6\text{h}$, $D_1 = 18$, $H_2 = ?$, $D_2 = 12$
By the Formula

$$H_1 D_1 = H_2 D_2 \Rightarrow H_2 = \frac{6 \times 18}{12} = 9\text{h}$$

35. (b); B's 1 day's work = [(A + B)'s 1 day's work] - [A's 1 day's work]

$$\left(\frac{1}{2} - \frac{1}{6}\right) = \frac{2}{6} = \frac{1}{3}$$

∴ B alone can finish the job in 3 days.

36. (b); According to question.

$$(6M+8B) \times 10 = (26M + 48B) \times 2$$

$$\therefore 60M + 80B = 52M + 96B \text{ or, } 1M = 2B$$

$$\therefore 15M + 20B = (30 + 20) B = 50 \text{ boys}$$

$$6M + 8B = (12 + 8) \text{ boys} = 20 \text{ boys}$$

$$20 \text{ boys can finish the work in } 10 \text{ days.}$$

∴ 50 boys can finish the work in

$$= \frac{20 \times 10}{50} = 4 \text{ days}$$

37. (a); 10 men = 20 boys

$$\therefore 1 \text{ man} = 2 \text{ boys} \Rightarrow 8 \text{ men} = 16 \text{ boys}$$

$$(8M + 4B) = (16 + 4) \text{ boys} = 20 \text{ boys}$$

Hence 8 men and 4 boys will make 260 shirts in 20 days.

38. (c); Work done by A in 3 days = $\left(3 \times \frac{1}{12}\right) = \frac{1}{4}$.

$$\text{Remaining work} = \left(1 - \frac{1}{4}\right) = \frac{3}{4}$$

Now, (A + B)'s 1 day's work

$$= \left(\frac{1}{12} + \frac{1}{15}\right) = \frac{9}{60} = \frac{3}{20}$$

Remaining work will be finished in

$$x = \frac{3}{4} \times \frac{20}{3} = 5 \text{ days.}$$

39. (d); Man : boy = 3 : 1

$$\therefore \text{Boy's share} = \frac{1}{4} \times 800 = \text{Rs. } 200$$

$$\therefore \text{The daily wages of boy} = \text{Rs. } \left(\frac{200}{5}\right) = \text{Rs. } 40$$

40. (a); (A + B)'s 1 day's work = $\left(\frac{1}{30} + \frac{1}{60}\right) = \frac{1}{20}$

∴ Both working together can finish the work in 20 days.

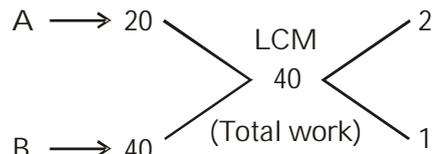


Moderate

1. (d); Let $M_1 = x$ and $D_1 = 18$ days
 But 6 men went on leave and it took 20 days to complete the work.
 $\therefore M_2 = (x - 6)$ and $D_2 = 20$ days
 By the formula
 $M_1 D_1 = M_2 D_2 \Rightarrow (x \times 18) = (x - 6) \times 20$
 $18x = 20x - 120 \Rightarrow 20x - 18x = 120$
 $2x = 120 \Rightarrow x = 60$ men.
 $= 2 \times 3 = 6$ days
 \therefore B's 1 days' work $= \frac{1}{3} - \frac{1}{6} = \frac{2-1}{6} = \frac{1}{6}$
 \therefore B alone can do the work in 6 days.
 Shortcut:
 $A + B \rightarrow 3 \xrightarrow{1} 3$
 In 2 days (A + B) done 2 unit of work Remaining work done by A in 2 days 1 days work of
 $A = \frac{1}{3}$ unit
 1 days work of B $= \frac{1}{2}$ unit
 Work is completed by B in $= \frac{3}{\frac{1}{2}} = 6$ days
2. (a); $3(5\text{men} + 5\text{women}) = 660$
 $(5\text{ men} + 5\text{ women}) = \frac{660}{3} = 220$... (i)
 $5(10\text{ men} + 20\text{ women}) = 3500$
 $(10\text{ men} + 20\text{ women}) = \frac{3500}{5} = 700$... (ii)
 On solving 1 and 2
 $10w = 700 - 440 = 260 \Rightarrow 1w = 26$
 Similarly,
 $5m + 5 \times 26 = 220$
 $1m = \frac{220 - 130}{5} = \frac{90}{5} = \text{Rs. } 18$
 Required no. of days
 $= \frac{1060}{(18 \times 6 + 26 \times 4)} = \frac{1060}{212} = 5$ days
3. (a); 7 men = 10 women, 1 man = $\frac{10}{7}$ women
 14 men + 20 women
 $= \left(\frac{10 \times 14}{7} + 20 \right) = 40$ women
 By the formula
 $\frac{M_1 D_1}{W_1} = \frac{M_2 D_2}{W_2} \Rightarrow \frac{10 \times 10}{100} = \frac{40 \times D_2}{600}$
 $D_2 = \frac{600}{40} \Rightarrow D_2 = 15$ days
4. (b); Work done by A and B in 2 days $= \frac{1}{3} \times 2 = \frac{2}{3}$
 Remaining work $= 1 - \frac{2}{3} = \frac{1}{3}$
 Now, $\frac{1}{3}$ work is done by A in 2 days
 \therefore Whole work will be done by A in
5. (b); Time taken by P in completing whole work
 $= 10 \times 4 = 40$ days.
 Time taken by Q in completing whole work
 $= \frac{15 \times 5}{2} = \frac{75}{2}$ days $= 37 \frac{1}{2}$ days
 Time taken by R in completing 1 work
 $= 13 \times 3 = 39$ days
 Time taken by S in completing 1 work
 $= 7 \times 6 = 42$ days
 Clearly, Q took the least time
 i.e., $37 \frac{1}{2}$ days.
 Work done time ratio of P, Q, R, S to complete the whole work will be (total time/one day's work)
 $P : Q : R : S = \frac{10}{\frac{1}{4}} : \frac{15}{\left(\frac{40}{100}\right)} : \frac{13}{\frac{1}{3}} : \frac{7}{\frac{1}{6}}$
 $= 40 : 37 \frac{1}{2} : 39 : 42$
 Hence, Q will be able to complete the work first.
6. (a); (A + B)'s 1 day's work $= \frac{1}{20} + \frac{1}{40} = \frac{2+1}{40} = \frac{3}{40}$
 \therefore (A + B)'s 5 day's work $= 5 \times \frac{3}{40} = \frac{3}{8}$
 \therefore Remaining work $= 1 - \frac{3}{8} = \frac{5}{8}$



Shortcut:



5 days work of (A + B) = 5(2 + 1) = 15

Remaining work = $\frac{25}{40} = \frac{5}{8}$

7. (b); C's efficiency = $\frac{1}{20}$

∴ The efficiency of (A + B) = $2 \times \frac{1}{20} = \frac{1}{10}$

∴ A's efficiency + B's efficiency = $\frac{1}{10}$

∴ A's efficiency + 2 × A's efficiency = $\frac{1}{10}$

3 × A's efficiency = $\frac{1}{10}$

∴ A's efficiency = $\frac{1}{10 \times 3} = \frac{1}{30}$

∴ B's efficiency = $\frac{1}{10} - \frac{1}{30} = \frac{3-1}{30} = \frac{2}{30} = \frac{1}{15}$

∴ (A + B + C)'s efficiency

= $\frac{1}{30} + \frac{1}{15} + \frac{1}{20} = \frac{2+4+3}{60} = \frac{9}{60} = \frac{3}{20}$

∴ A, B and C together can do the work in

$\frac{20}{3} = 6\frac{2}{3}$ days.

8. (a); 12 men = 18 women ⇒ 2 men = 3 women
⇒ 8 men = 12 women

∴ 8 men and 16 women = 12 women + 16 women
= 28 women

∴ 18 women can make a wall in 14 days

Let 28 women can make the same wall in x days

∴ $18 \times 14 = 28 \times x \Rightarrow x = \frac{18 \times 14}{28} = 9$ days

9. (d); Let the original number of men be x
 $x \times 160 = (x + 18)(160 - 20)$

Original number of men, x

= $\frac{18 \times (160 - 20)}{20} = 126$

10. (a); 35 men do the rest of the job in = (38 - 25 - 1) days
= 12 days

∴ 30 men can do the rest of the job in

= $\frac{12 \times 35}{30} = 14$ days

Thus the work would have been finished in 25 + 14 = 39 days, that is 39 - 38 = 1 days after the scheduled time.

11. (d); If each child takes twice the time taken by a man, 8 children = 4 men.

∴ 8 children + 12 men = 16 men do the work in 9 days

∴ 12 men finish the work in $\frac{9 \times 16}{12} = 12$ days.

12. (a); 18(A + B + C) → Rs. 2700

A + B + C → 150 ... (i)

10(A + C) → 940

A + C → 94 ... (ii)

20(B + C) → 1520

B + C → 76 ... (iii)

On solving (i) and (ii)

(A + B + C) - (A + C) = 150 - 94

Daily wages of B = Rs. 56

B + C = 76 ⇒ C = Rs. 20

13. (a); In the first hour Sita mows $\frac{1}{8}$ of the field.

In the second hour Gita mows $\frac{1}{12}$ of the field.

∴ In first 2 hrs $\left(\frac{1}{8} + \frac{1}{12} = \frac{5}{24}\right)$ of the field is mowed.

∴ In 8 hrs $\frac{5}{24} \times 4 = \frac{5}{6}$ of the field is mowed

Field remained to be mowed = $1 - \frac{5}{6} = \frac{1}{6}$

In the 9th hour Sita mows $\frac{1}{8}$ of the field.

∴ Gita will finish the mowing of $\left(\frac{1}{6} - \frac{1}{8}\right) = \frac{1}{24}$ of

the field in $\left(\frac{1}{24} \div \frac{1}{12}\right)$ or $\frac{1}{2}$ of an hour.

∴ the total time required is $\left(8 + 1 + \frac{1}{2}\right)$ or $9\frac{1}{2}$ hrs.

Thus, the work will be finished at 6:30 pm.



14. (b); By formula

$$\frac{M_1 D_1 E_1}{W_1} = \frac{M_2 D_2 E_2}{W_2}$$

Let the number of men be x

$$x = \frac{45 \times 48 \times 17250 \times 1}{46575 \times 16 \times 2} = 25 \text{ men}$$

15. (d); 5 men = 7 women

$$\therefore 7 \text{ men} = \frac{7}{5} \times 7 = \frac{49}{5} \text{ women}$$

$$\text{and } 7 \text{ men} + 13 \text{ women} = \frac{49}{5} + 13 = \frac{114}{5} \text{ women}$$

Now,

$$\therefore 7 \text{ women get Rs. } 5250$$

$$\therefore \frac{114}{5} \text{ women get } \frac{5250}{7} \times \frac{114}{5} = \text{Rs. } 17100$$

16. (d); C's 1 day's work

$$= [(A + B + C)\text{'s } 1 \text{ day's work}] - [(A\text{'s } 1 \text{ day's work}) + (B\text{'s } 1 \text{ day's work})]$$

$$= \frac{1}{4} - \left(\frac{1}{12} + \frac{1}{18} \right) = \left(\frac{1}{4} - \frac{5}{36} \right) = \frac{4}{36} = \frac{1}{9}$$

C complete the work in 9 days

17. (a); A's 1 day's work = $\frac{1}{20}$

$$\text{A's } 4 \text{ days' work} = \frac{4}{20} = \frac{1}{5}$$

$$\text{Remaining work} = 1 - \frac{1}{5} = \frac{4}{5}$$

This part is completed by A and B together.

$$\begin{aligned} \text{Now, } (A+B)\text{'s } 1 \text{ day's work} &= \frac{1}{20} + \frac{1}{12} \\ &= \frac{3+5}{60} = \frac{8}{60} = \frac{2}{15} \end{aligned}$$

Now, $\frac{2}{15}$ work is done by (A+B) in 1 day.

$$\therefore \frac{4}{5} \text{ work is done in } = \frac{15}{2} \times \frac{4}{5} = 6 \text{ days.}$$

Hence, the work lasted for $4 + 6 = 10$ days.

18. (a); Work done by 1 woman in 1 day

$$= \frac{1}{3} - \frac{1}{6} - \frac{1}{18} = \frac{6-3-1}{18} = \frac{1}{9}$$

\therefore 1 Woman will do the work in 9 days.

19. (a); Let there be x men originally.

Now, x men do the job in 20 days.

$$\therefore (x - 12) \text{ men can do it in } \frac{20x}{(x-12)} = 32 \text{ days}$$

hence, $x = 32$

20. (d); 16 men = 20 women \Rightarrow 4 men = 5 women.

Now, according to question,

16 men complete the work in 25 days.

$$\therefore 1 \text{ man one day's work} = \frac{1}{25 \times 16}$$

$$\therefore 4 \text{ men one day's work} = \frac{1}{25 \times 4} = \frac{1}{100}$$

$$\therefore 5 \text{ women one day's work} = \frac{5}{25 \times 20} = \frac{1}{100}$$

$$\therefore 28 \text{ men} = \frac{28}{4} \times 5 = 35 \text{ women}$$

$$\therefore 50 \text{ women one day's work} = \frac{50}{25 \times 20} = \frac{1}{10}$$

Therefore, 28 men and 15 women can complete the whole work in 10 days.

21. (d); Let number of persons in beginning be x

$$M_1 = x, D_1 = 40, M_2 = (x + 45) \text{ and } D_2 = 25$$

By the formula

$$M_1 D_1 = M_2 D_2 \Rightarrow x \times 40 = (x + 45) \times 25$$

$$x \times 8 = (x + 45) \times 5 \Rightarrow 8x - 5x = 225$$

$$x = \frac{225}{3} = 75$$

22. (c); Given, $M_1 = 7, D_1 = 12, W_1 = 1$

$$\text{And } M_2 = ?, D_2 = 8, W_2 = 2$$

By the Formula

$$M_1 D_1 W_2 = M_2 D_2 W_1 \Rightarrow 7 \times 12 \times 2 = M_2 \times 8 \times 1$$

$$M_2 = \frac{7 \times 12 \times 2}{8} = 21$$

\therefore Number of additional men = $21 - 7 = 14$

23. (c); 6 men = 12 women

\therefore 1 man = 2 women

$$\text{Now, } 8 \text{ men} + 16 \text{ women} = (8 \times 2 + 16)$$

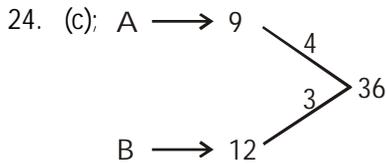
$$= 32 \text{ women}$$



According to the question,

$$\frac{M_1 D_1}{W_1} = \frac{M_2 D_2}{W_2} \Rightarrow \frac{12 \times 20}{1} = \frac{32 \times D_2}{2}$$

$$12 \times 20 = 16 D_2 \Rightarrow D_2 = 3 \times 5 \Rightarrow D_2 = 15 \text{ days}$$



A does 4 work in 1 day out of total 36 work

B does 3 work in 1 day out of total 36 work

In 2 days A and B do — 7 work

In 10 days A and B do — 35 work

Remaining 1 work A will do in $\frac{1}{4}$ days.

$$\text{Thus total no. of days} = 10\frac{1}{4}$$

25. (a): By $\frac{M_1 D_1 H_1}{W_1} = \frac{M_2 D_2 H_2}{W_2}$

$$10 M \times 15 = 15 \times 18 B$$

$$\Rightarrow 5 M = 9 B \quad \dots (i)$$

$$\text{and, } 10M \times 15 = \frac{(15M + 33B)}{2} \times D$$

$$\Rightarrow (18 B \times 15)2 = (27 B + 33 B) \times D$$

$$D = \frac{18 B \times 15 \times 2}{60 B} = 9 \text{ days}$$

26. (b): By $\frac{M_1 D_1 H_1}{W_1} = \frac{M_2 D_2 H_2}{W_2}$

$$20 W \times 16 = 16 M \times 15$$

$$\Rightarrow 4 W = 3 M$$

$$\Rightarrow \frac{M}{W} = \frac{4}{3}$$

27. (c): Change the time into hours
Ram finish in $15 \times 8 = 120$ hrs

$$\text{Hari finish in } \frac{20}{3} \times 9 = 60 \text{ hrs}$$

Both of them working together finish the work in

$$= \frac{120 \times 60}{120 + 60} = 40 \text{ hrs}$$

$$\therefore \text{number of days} = \frac{40}{10} = 4 \text{ days.}$$

28. (c): $(3 \text{ men} + 2 \text{ women}) \times 15 = (2 \text{ men} + 3 \text{ women}) \times 18$
 $(3 \text{ men} + 2 \text{ women}) \times 5 = (2 \text{ men} + 3 \text{ women}) \times 6$
 $15 \text{ men} + 10 \text{ women} = 12 \text{ men} + 18 \text{ women}$
 $\therefore 15 \text{ men} - 12 \text{ men} = 18 \text{ women} - 10 \text{ women}$

$$\therefore 3 \text{ men} = 8 \text{ women} \Rightarrow 1 \text{ man} = \frac{8}{3} \text{ women}$$

$$\therefore 1 \text{ man} + 1 \text{ women} = \left(\frac{8}{3} + 1\right) \text{ women}$$

$$= \frac{11}{3} \text{ women}$$

and $3 \text{ men} + 2 \text{ women} = (8 + 2) \text{ women} = 10 \text{ women}$

$\therefore 10 \text{ women can do a work in 15 days}$

Let $\frac{11}{3}$ women can do that work in x days

$$\therefore 10 \times 15 = \frac{11}{3} \times x \Rightarrow x = \frac{450}{11} = 40\frac{10}{11} \text{ days.}$$

29. (d): If B takes x days to finish the work

\therefore A takes $2x$ days and C takes $3x$ days to do the work

$$\therefore \frac{1}{2x} + \frac{1}{x} + \frac{1}{3x} = \frac{1}{12} = \frac{3+6+2}{6x} = \frac{1}{12}$$

$$\therefore \frac{11}{6x} = \frac{1}{12} \Rightarrow 6x = 11 \times 12 \Rightarrow x = 22 \text{ days.}$$

\therefore The no. of days taken by A = $2x = 2 \times 22 = 44$ days

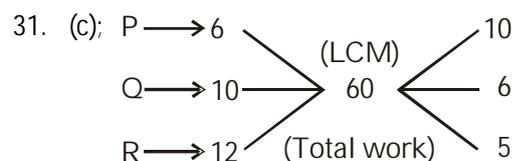
30. (a): Let 100 men only complete the work in x days

Work done by 100 men in 35 days + work done by 200 men in 5 days = 1

$$\frac{35}{x} + \frac{200 \times 5}{100x} = 1, \frac{35}{x} + \frac{10}{x} = 1$$

$$\frac{45}{x} = 1, x = 45 \text{ days}$$

Therefore, if additional men were not employed, the work would have lasted $(45 - 40) = 5$ days behind schedule time.



$$\text{The share of R} = \frac{5}{21} \times 4200 = \text{Rs. } 1000$$



32. (d); Given, 8 men = 10 women
4 men = 5 women

Now, according to the question
8 men complete the work in 50 days.

$$\therefore 28 \text{ men} = \frac{28}{4} \times 5 = 35 \text{ women}$$

$$\therefore 50 \text{ women one day's work} = \frac{50}{50 \times 10} = \frac{1}{10}$$

Required days = 10

33. (a); $7(3m + 4b) = 2100$

$$3m + 4b = \frac{2100}{7} = 300 \quad \dots(i)$$

$$8(11m + 13b) = 8300$$

$$11m + 13b = \frac{8300}{8} = 1037.50 \quad \dots(ii)$$

On solving (i) and (ii)

$$44b - 39b = 187.5 \Rightarrow 5b = 187.5$$

$$1b = \text{Rs. } 37.5$$

$$\text{Similarly, } 3m + 15b = 300$$

$$3m = 300 - 15b \Rightarrow 1m = \text{Rs. } 50$$

$$\text{Required no. of days} = \frac{11000}{7 \times 50 + 9 \times 37.5}$$

$$= \frac{11000}{687.5} = 16 \text{ days}$$

34. (b); The rest of the food will last for $31 - 28 = 3$ days if nobody leaves the place.

Number of men eating everyday = 400

So, 1200 men could eat the remaining food completely in one day.

But there are 120 men left, so they can eat the remaining food in 10 days.

35. (c); By using MDH formula $= \frac{M_1 D_1 H_1}{W_1} = \frac{M_2 D_2 H_2}{W_2}$

$$\frac{28 \times 1}{7} = \frac{x}{8} \Rightarrow x = 4 \text{ men}$$

36. (b); By Direct Formula:

$$M_1 D_1 W_2 = M_2 D_2 W_1$$

$$\text{Or, } 45 \times 200 \times 7.5 = M_2 \times 150 \times 4.5$$

$$\therefore M_2 = \frac{45 \times 200 \times 7.5}{150 \times 4.5} = 100$$

\therefore required number of persons to be added
= $100 - 45 = 55$ men.

37. (c); Total money = Rs. 4500

$$A's \text{ one day's work} = \frac{1}{8}, B's \text{ one day's work} = \frac{1}{12}$$

$$(A + B + C)'s \text{ 1 day's work} = \frac{1}{4}$$

$$C's \text{ 1 day work} = \frac{1}{4} - \left(\frac{1}{8} + \frac{1}{12} \right) = \frac{1}{4} - \left(\frac{3+2}{24} \right)$$

$$= \frac{1}{4} - \frac{5}{24} = \frac{6-5}{24} = \frac{1}{24}$$

\therefore Ratio of their one day's work

$$A : B : C = \frac{1}{8} : \frac{1}{12} : \frac{1}{24} = 3 : 2 : 1 \text{ (taking LCM)}$$

Sum of the ratio = $3 + 2 + 1 = 6$

$$C's \text{ share} = \left(\frac{1}{6} \times 4500 \right) = \text{Rs. } 750$$

38. (a); Work done by A in 1 day = $\frac{1}{16}$

$$\text{Work done by B in 1 day} = \frac{1}{24}$$

$$\text{Work done by A, B and C in 1 day} = \frac{1}{6}$$

Then, work done by C in 1 day = $(A + B + C)'s \text{ 1 day work} - (A + B)'s \text{ 1 day work} - A's \text{ 1 day work}$

$$\frac{1}{C} = \frac{1}{6} - \frac{1}{16} - \frac{1}{24} \Rightarrow \frac{1}{C} = \frac{8-3-2}{48} = \frac{3}{48} = \frac{1}{16}$$

\therefore Ratio of wages of A, B and C

$$= \frac{1}{A} : \frac{1}{B} : \frac{1}{C} = \frac{1}{16} : \frac{1}{24} : \frac{1}{16}$$

$$= 3 : 2 : 3 \text{ (taking LCM)}$$

$$\text{Share of A} = \frac{3}{3+2+3} \times 400 = \frac{3}{8} \times 400 = \text{Rs. } 150$$

$$\text{Share of B} = \frac{2}{3+2+3} \times 400 = \text{Rs. } 100$$

$$\text{Share of C} = \frac{3}{(3+2+3)} \times 400 = \text{Rs. } 150$$

39. (b); Total money = Rs. 1800

Ratio of wages of A, B and C, respectively

$$= 5 \times 6 : 6 \times 4 : 4 \times 9 = 30 : 24 : 36 = 5 : 4 : 6$$

\therefore Amount received by A



$$= \frac{A}{A+B+C} \times \text{Total money}$$

$$= \frac{5}{5+4+6} \times 1800 = \frac{5}{15} \times 1800 = \text{Rs. } 600$$

40. (a); A man can complete a work in 10 days
(Man + child) can do it in 6 days

Let the total work be 30 units
One day work of man = 3 units
One day work of (man + child) = 5 units
So, one day work of child = 2 units
Boy will get an amount = $\frac{2}{5} \times 50 = \text{Rs. } 20$

SSC CGL Exam Pattern

SSC CGL Tier 1 Exam Pattern

SSC CGL Tier-1 Exam will be conducted online, comprising 4 sections with **100 multiple-choice questions (MCQs) in total and with a maximum of 200 marks**. The entire exam needs to be completed in a time span of 60 minutes. **SSC CGL Tier 1 Exam will be of a qualifying nature and marks will not be counted in the final selection.**

The questions asked in the **SSC CGL Tier 1 Exam 2025** are from the following sections:

1. General Intelligence & Reasoning
2. General Awareness
3. Quantitative Aptitude
4. English Comprehension

SSC CGL Tier 1 Exam Pattern 2025				
S.No.	Sections	No. of Questions	Total Marks	Time Allotted
1	General Intelligence and Reasoning	25	50	A cumulative time of 60 minutes
2	General Awareness	25	50	
3	Quantitative Aptitude	25	50	
4	English Comprehension	25	50	
Total		100	200	

A Penalty for Wrong Answer: There is a negative marking of 0.50 marks for each wrong answer.

