Answer & Solutions

Level-I

1. (a) $(A + B)$'s 1 day's work = $\frac{1}{12}$ th part of whole work.

B's 1 day's work = $\frac{1}{28}$th part of whole work.

$\therefore$ A's 1 day's work = $\frac{1}{12}-\frac{1}{28}=\frac{1}{21}$th part of whole work.

$\therefore$ A alone can finish the work in 21 days

2. (d) $\because$ A can do $\frac{3}{4}$of the work in 12 days

$\therefore$ A can do $\frac{1}{8}$ of the work in $12\times\frac{4}{13}\times\frac{1}{8}$days $= 2$ days

3. (a) A's 1 day's work = $\frac{1}{18}$ and B's 1 day's work = $\frac{1}{9}$.

$\therefore$ $(A + B)$'s 1 day's work = $\left(\frac{1}{18}+\frac{1}{9}\right)=\frac{1}{6}$.

4. (b) Let the man alone do the work in x days.
Then, the woman alone do the work in $2x$ days.

Their one day's work = $\frac{1}{8}$ th part of whole work

i.e., $\frac{1}{x}+\frac{1}{2x}=\frac{1}{8}$

$\Rightarrow x = 12$ days

$\therefore$ man takes 12 days and woman $2x = 24$ days.

5. (b) Ratio of times taken by A and B = 100 : 130 = 10 : 13.
Suppose B takes x days to do the work.

Then, $10 : 13 :: 23 : x \Rightarrow x=\left(\frac{23\times13}{10}\right)\Rightarrow x=\frac{299}{10}$.

A's 1 day's work = $\frac{1}{23}$; B's 1 days work = $\frac{10}{299}$.

$(A + B)$'s 1 day's work = $\left(\frac{1}{23}+\frac{10}{299}\right)=\frac{23}{299}=\frac{1}{13}$.

$\therefore$ A and B together can complete the job in 13 days.

6. (a) 50 men complete 0.4 work in 25 days.

Applying the work rule, $m_1\times d_1\times w_2 = m_2\times d_2\times w_1$
we have,

$50\times25\times0.6 = m_2\times25\times0.4$

or $m_2=\frac{50\times25\times0.6}{25\times0.4}=75$ men

Number of additional men required = (75 – 50) = 25

7. (d) In 1 day, work done by 12 men = $\frac{1}{18}$

In 6 days, work done by 12 men = $\frac{6}{18}=\frac{1}{3}$

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

Now, $m_1\times d_1\times w_2 = m_2\times d_2\times w_1$

or $12\times18\times\frac{2}{3}=16\times d_2\times1$

or $d_2=\frac{4\times18\times2}{16}=9$ days

8. (b) Man's two day's work = $2\times\frac{1}{20}$th work $=\frac{1}{10}$th work

Woman's two days's work

$=2\times\frac{1}{30}$th work $=\frac{1}{15}$th work

Boy's two day's work $=2\times\frac{1}{60}$th work $=\frac{1}{30}$th work

Now, let 2 men, 8 women and x boys can complete work in 2 days. Then ,
2 men's work + 8 women's work + x boy's work =1

$2\left(\frac{1}{10}\right)+8\left(\frac{1}{15}\right)+x\left(\frac{1}{30}\right)=1$

$\Rightarrow x=\left(1-\frac{1}{5}-\frac{8}{15}\right)\times30 \Rightarrow x = 8$ boys

9. (c) 10 men's 1 day's work = $\frac{1}{15}$;

15 women's 1 day's work = $\frac{1}{12}$.

(10 men + 15 women)'s 1 day's work

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

$\therefore$ 10 men and 15 women will complete the work in $\frac{20}{3}=6\frac{2}{3}$days.

10. (c) In 8 days, Anil does $=\frac{1}{3}$rd work.

$\therefore$ in 1 day, he does $=\frac{1}{24}$th work.

$\therefore$ Rakesh's one day's work = 60% of $\frac{1}{24}=\frac{1}{40}$th work.

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

(Anil and Rakesh)'s one day's work

$= \frac{1}{24}+\frac{1}{40}=\frac{1}{15}$th work

Now, $\frac{1}{15}$th work is done by them in one day

$\therefore \frac{2}{3}$rd work is done by them in $15\times\frac{2}{3}=10$ days

11. (a) A's one day's work $=\frac{1}{3}$rd work.

B's one day's work $=\frac{1}{6}$th work.

$(A + B)$'s one day's work $=\frac{1}{3}+\frac{1}{6}=\frac{1}{2}$nd work

$\therefore$ A and B together can complete the work (knit a pair of socks) in 2 days.
$\therefore$ They together knit two pair of socks in 4 days.

12. (b) A's one day's work $=\frac{1}{8}$th work

B's one day's work $=\frac{1}{3}$rd work

$\therefore$ A's 4 day's work $=4\times\frac{1}{8}=\frac{1}{2}$nd work

$\therefore$ In next two days, total wall $=\frac{1}{2}+2\left(\frac{1}{8}\right)-2\left(\frac{1}{3}\right)$

$=\frac{1}{12}$th wall

Remaining wall $=1-\frac{1}{12}=\frac{11}{12}$th

Now, $\frac{1}{8}$th wall is built up by A in one day.

$\therefore \frac{11}{12}$th wall is built up by A in $8\times\frac{11}{12}=7\frac{1}{3}$ days.

13. (b) Sakshi's one day's work $=\frac{1}{20}$th work

Tanya's one day's work

$=\frac{1}{20}+25\%$ of $\frac{1}{20}=\frac{1}{16}$th work

Hence, Tanya takes 16 days to complete the work.

14. (a) Let 1 woman's 1 day's work = x.

Then, 1 man's 1 day's work = $\frac{x}{2}$

and 1 child's 1 day's work = $\frac{x}{4}$.

So, $\left(\frac{3x}{2}+4x+\frac{6x}{4}\right)=\frac{1}{7}\Rightarrow x=\left(\frac{1}{7}\times\frac{4}{28}\right)=\frac{1}{49}$.

$\therefore$ 1 woman alone can complete the work in 49 days.
So, to complete the work in 7 days, women required

$=\left(\frac{49}{7}\right)=7$.

15. (a) Sunil takes 5 days and Pradeep takes 15 days to do the work.

In a day they would complete $\frac{1}{5}+\frac{1}{15}$ i.e., $\frac{4}{15}^{\text{th}}$ work.
The remaining $11/15^{\text{th}}$ work would be completed by Pradeep in $\frac{11}{15}\times 15$ i.e. 11 days.

16. (c) Suresh, working alone 42 days = 1 unit of work.
Mahesh is 1/5 times more efficient that Suresh. So Mahesh is 6/5 times as efficient as Suresh. Hence Mahesh should require 5/6th of the time, the time taken by Suresh.
Therefore time taken by Mahesh = 5/6 × 42 = 35 days.

17. (a) Given 6 BSF = 10 CRPF $\Rightarrow$ 4 BSF + 9 CRPF

$= 4 + (9 \times 6/10)$ BSF $= \frac{94}{10}$ BSF

Now work = 6 × 2 BSF days $=\frac{94}{10}\times X$ BSF days

We have $6 \times 2 = \frac{94}{10}\times X \Rightarrow X = 1.27$ days

18. (a) Let 1 man's 1 days' work = x and 1 boy's 1 day's work = y

Then, $2x + 3y = \frac{1}{10}$ and $3x + 2y = \frac{1}{8}$

Solving, we get : $x=\frac{7}{200}$ and $y=\frac{1}{100}$

$\therefore$ (2 men + 1 boy)'s 1 day's work

$=\left(2\times\frac{7}{200}+1\times\frac{1}{100}\right)=\frac{16}{200}=\frac{2}{25}$

So, 2 men and 1 boy together can finish the work in $12\frac{1}{2}$ days.

19. (b) Let the required number of working hours/day = x
More pumps, less working hrs per day (Indirect)
Less days, more working hrs per day (Indirect)

$\left.\begin{matrix}\text{Pumps} & 4:3\\ \text{Days} & 1:2\end{matrix}\right\} :: 8:x$

$\therefore 4 \times 1 \times x = 3 \times 2 \times 8$

$\Rightarrow x=\frac{3\times2\times8}{4}=12$

20. (d) Let required number of binders be 'x'
Less books, less binders (direct)

More days, less binders (indirect)

$$\left.\begin{matrix}\text{Books}\ 900 & :660\\ \text{Days}\ 12 & :10\end{matrix}\right\}::18:x$$

$900 \times 12 \times x = 660 \times 10 \times 18$

$$x = \frac{660\times10\times18}{900\times12} = 11$$

21. (a) 27 men mow 225 hectares in15 days

$\therefore$ 1 man mow 225 hectares in (15×27) days (indirect)

$\therefore$ 1 man mow 1 hectares in $\frac{15\times27}{225}$ days (direct)

1 man mow 165 hectares in $\frac{15\times27}{225}\times165$ days (direct)

$\therefore$ 33 men mow 165 hectares in $\frac{15\times27\times165}{225\times33} = 9$ days

22. (c) $(X + Y)$'s one day work $= \frac{1}{72}$

$(Y + Z)$'s one day work $= \frac{1}{120}$

$(Z + X)$'s one day work $= \frac{1}{90}$

$\therefore$ $2(X + Y + Z)$'s one day work $= \frac{1}{72}+\frac{1}{120}+\frac{1}{90}$

$$= \frac{5+3+4}{360} = \frac{12}{360} = \frac{1}{30}$$

$\therefore$ $(X + Y + Z)$'s one day work $= \frac{1}{2}\times\frac{1}{30} = \frac{1}{60}$

$\therefore$ They will complete the work in 60 days.

23. (b) Given $(6M + 8B) \times 10 = (26M + 48B) \times 2$

$\Rightarrow 60M + 80B = 52M + 96B$

$\Rightarrow 8M = 16B$

$\Rightarrow 1M = 2B$

$\therefore 15M + 20B = 30B + 20B = 50B$

$6M + 8B = 12B + 8B = 20B$

Now	Boys	Days
	20	10
	50 ↓	x (Let)

$\therefore$ $x = \frac{20\times10}{50} = 4$ days

24. (d) 1 Man = 3 Boys and 1 Woman = 2 Boys

$\therefore$ 24 Men + 20 Women + 16 Boys

$= (24 \times 3) + (20 \times 2) + 16$

$= 72 + 40 + 16$

$= 128$ Boys

27 Men + 40 Women + 15 Boys $= (27 \times 3) + (40 \times 2) + 15$

$= 81 + 80 + 15 = 176$ Boys.

Now,

No. of Boys	Duration	Wages
128 ↑	1 ↑	224
176	52	x (Let)

$\therefore$ $x = \frac{176}{128}\times\frac{52}{1}\times224$

$x = ₹\ 16,016$

25. (c) Part of the cistern filled by first pipe in 1 minute $= \frac{1}{6}$

Part of the cistern filled by second pipe in 2 minutes $= \frac{1}{7}$

Part of the cistern filled in first 2 minutes $= \frac{1}{6}+\frac{1}{7} = \frac{13}{42}$

Part of the cistern filled in 6 minutes $= \frac{3\times13}{42} = \frac{39}{42}$

Remaining part $= 1-\frac{39}{42} = \frac{3}{42} = \frac{1}{14}$

$\therefore$ Time taken to fill $\frac{1}{14}$ parts $= \frac{6}{14} = \frac{3}{7}$

$\therefore$ Total time $= 6+\frac{3}{7} = 6\frac{3}{7}$ minutes

26. (b) Part filled by $(A + B + C)$ in 3 minutes

$$= 3\left(\frac{1}{30}+\frac{1}{20}+\frac{1}{10}\right) = 3\times\frac{11}{60} = \frac{11}{20}$$

Part filled by C in 3 minutes $= \frac{3}{10}$

$\therefore$ Required ratio $= \frac{\frac{3}{10}}{\frac{11}{20}} = \frac{3}{10}\times\frac{20}{11} = \frac{6}{11}$

27. (c) Let C completes the work in x days.

Work done by $(A + B)$ in 1 day $= \frac{1}{10}$

Work done by $(B + C)$ in 1 day $= \frac{1}{18}$

A's 5 days' work + B's 10 days' work + C's 15 days' work = 1

or $(A + B)$'s 5 days' work + $(B + C)$'s 5 days' work + C's 10 days' work = 1

or $\frac{5}{10}+\frac{5}{18}+\frac{10}{x} = 1$

$\therefore$ $x = 45$ days

28. (b) We have :

x men to the work in 60 days and $(x + 8)$ men do the work in

$(60 - 10 =)$ 50 days.

Then by "basic formula", $60x = 50(x + 8)$

$\therefore x = \frac{50 \times 8}{10} = 40$ men.

29. (c) A's one day's work $= \frac{1}{16}$ th work

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

Let the number of days B has worked alone = x days. Then,

A's amount of work + B's amount of work = 1

$\Rightarrow 4\left(\frac{1}{16}\right) + (x+4)\left(\frac{1}{12}\right) = 1$

$\Rightarrow \frac{1}{4} + \frac{x+4}{12} = 1 \Rightarrow x = \frac{3}{4} \times 12 - 4 \Rightarrow x = 5$ days

30. (a) Part filled in 7 min. $= 7 \times \left(\frac{1}{36} + \frac{1}{45}\right) = \frac{7}{20}$

Remaining part $= \left(1 - \frac{7}{20}\right) = \frac{13}{20}$

Part filled by $(A + B + C)$ in 1 min.

$= \left(\frac{1}{36} + \frac{1}{45} - \frac{1}{30}\right) = \frac{1}{60}$.

31. (b) $(A + B)$'s 5 days' work

$= 5\left(\frac{1}{25} + \frac{1}{20}\right) = \frac{45}{100} = \frac{9}{20}$

Remaining work $= \left(1 - \frac{9}{20}\right) = \frac{11}{20}$

$\frac{11}{20}$ of the work would be finished by B in

$\frac{\frac{11}{20}}{\frac{1}{20}} = 11$ days.

32. (d) In 1 day, work done by 12 men $= \frac{1}{18}$

In 6 days, work done by 12 men $= \frac{6}{18} = \frac{1}{3}$

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

Now, $m_1 \times d_1 \times w_2 = m_2 \times d_2 \times w_1$

or $12 \times 18 \times \frac{2}{3} = 16 \times d_2 \times 1$

or $d_2 = \frac{4 \times 18 \times 2}{16} = 9$ days

33. (a) Work done by A and B in 5 days $= \left(\frac{1}{10} + \frac{1}{15}\right) \times 5 = \frac{5}{6}$

Work remaining $= 1 - \frac{5}{6} = \frac{1}{6}$

$\therefore$ C alone can do the work in $6 \times 2 = 12$ days

Ratio of their share work $= \frac{5}{10} : \frac{5}{15} : \frac{2}{12} = 3 : 2 : 1$

Share of wages = ₹ 225, ₹ 150, ₹ 75.

34. (c) In 6 days A would do 25% of the work and in 8 days B would do 25% of the work himself. So C has to complete 50% of the work by himself.
In all C would require 30 days to do 50% of the work.
So, he would require 22 more days.

35. (d) Ratio of efficiency of Mayank and Shishu = 3/2
So ratio of time taken by Mayank and Shishu = 2/3
So if Shishu takens 30 hours, then Mayank will take 20 hours
Shishu in 6 hours = 1/5 the work.
Remaining work = 1 – 1/5 = 4/5the work,
Shishu and Mayank together $= \frac{1}{20} + \frac{1}{30} = \frac{1}{12}$
So required time $= \frac{4/5}{1/12} = 9.6$ hours

36. (d) After 27 days, food left = 4 × 200 = 800 soldier days worth of food. Since, now there are only 80 soldiers, this food would last for 800/80 = 10 days. Number of extra days for which the food lasts = 10 – 4 = 6 days.

37. (b) Sambhu requires 16 days to do the work while Kalu requires 18 days to do the work.
$(1/16 + 1/18) \times n = 1$
$\rightarrow n = 288/34 = 144/17$

38. (c) $n(1/45 + 1/40) + 23/40 = 1 \rightarrow n = 9$

39. (a) The rest of the food will last for (31 – 28 =) 3 days if nobody leaves the place.

Thus, the rest of the food will last for $3\left(\frac{400}{120}\right)$ days for the 120 men left.

$\therefore = 3\left(\frac{400}{120}\right) = 10$ days

40. (c) 1 minute's work of both the punctures $= \left(\frac{1}{9} + \frac{1}{6}\right) = \frac{5}{18}$.
So, both the punctures will make the tyre flat in $\frac{18}{5} = 3\frac{3}{5}$ min.

41. (a) Let 1 man's 1 days work = x
1 boy's 1 day's work = y

$12x + 16y = \frac{1}{5}$

$13x + 24y = \frac{1}{4}$

Solving these two equation we get,

$x = \frac{1}{100}, y = \frac{1}{200}$

Required ratio = 2 : 1

42. (d) Part filled by first tap in one min $= \frac{1}{12}$th

Part filled by second tap in one min $= \frac{1}{18}$th

Now, $2\left[\frac{1}{12}+\frac{1}{18}\right]$ + unfilled part = 1

$\Rightarrow$ unfilled part = $\frac{13}{18}$th

$\because$ $\frac{1}{18}$th part of tank is filled by second tap in 1min.

$\therefore$ $\frac{13}{18}$th part of tank is filled by second tap in 1 min.

$= 18 \times \frac{13}{18}$ min $= 13$ min.

43. (b) $\because$ Cistern fill in 6 hours.

$\therefore$ in 1 hour, filled part $= \frac{1}{6}$th

Now, due to leakage, filled part in 1 hour $= \frac{1}{8}$th

Part of the cistern emptied, due to leakage in 1 hour

$= \frac{1}{6} - \frac{1}{8} = \frac{1}{24}$th

$\therefore$ The leakage will empty the full cistern in 24 hrs.

44. (c) 3 men reap $\frac{1}{43}$ rd of the field in 1 day.

$\therefore$ 1 man reaps $\frac{1}{43 \times 3}$ rd of the field in 1 day.

4 women reap $\frac{1}{43}$ rd of the field in 1 day.

$\therefore$ 1 woman reaps $\frac{1}{43 \times 3}$th of the field in 1 day.

$\therefore$ 7 men and 5 women reap $\left(\frac{7}{43 \times 3}+\frac{5}{43 \times 4}\right)$

$= \frac{1}{12}$th of the field in 1 day

$\therefore$ 7 men and 5 women will reap the whole field in 12 days.

45. (c) $M_1 \times D_1 = M_2 \times D_2$

$m \times r = (m+n) \times D_2$

$D_2 = \frac{mr}{(m+n)}$

46. (d) Part of the tank filled by the three pipes working simultaneously in one hour is $= \frac{1}{5}+\frac{1}{6}-\frac{1}{12} = \frac{17}{60}$

i.e. it takes $\frac{60}{17}$ hours to fill up the tank completely.

Now, $\frac{1}{2}$ of the tank is filled with all the pipes open, simultaneously together in $\frac{60}{17} \times \frac{1}{2} = 1\frac{13}{17}$ hours

47. (c) 10 men in 15 days

$\Rightarrow$ 1 man can do the work in 150 days

$\Rightarrow$ 1 man can do twice the work in 300 days

Similarly, 18 boys in 15 days

$\Rightarrow$ 1 boy can do the work in 270 days

$\Rightarrow$ 1 boy can do twice the work in 540 days

Now, if there are 15 men and 33 boys trying to do twice the work then

$\left(15 \times \frac{1}{300}\right)+\left(33 \times \frac{1}{540}\right)$

$= \frac{1}{20}+\frac{11}{180} = \frac{9+11}{180} = \frac{20}{180} = \frac{1}{9}$

$\Rightarrow$ It will take 9 days for 15 men and 33 Boys to do twice the work.

48. (b) Ratio of new number of persons in fort : original number of persons in fort = 80 : 200 = 2 : 5

Hence the food will last for 5/2 days of the original (4 days = 31 days – 27 days)

$= \frac{5}{2} \times 4 = 10$ days

So, extra days = 6 days

49. (b) 9 hours 36 minutes

$= 9+\frac{36}{60} = 9\frac{3}{5}$ hours $= \frac{48}{5}$ hours

(A + B)'s 1 hour's work

$= \frac{5}{48}$ hours

C's 1 hour's work = $\frac{1}{48}$

(A + B + C)'s 1 hour's work = $\frac{5}{48}+\frac{1}{48} = \frac{1}{8}$ ...(1)

A's 1 hours work = (B + C)'s 1 hour's work ...(2)

2 $\times$A's 1 hour's work = $\frac{1}{8}$

A's 1 hour's work = $\frac{1}{16}$

$\therefore$ B's 1 hour's work = $\frac{5}{48}-\frac{1}{16} = \frac{5-3}{48} = \frac{1}{24}$

$\therefore$ B alone will finish the work in 24 hours

50. (d) 3×5 men $+ 7 \times 5$ women
$= 4 \times 4$ men $+ 6 \times 4$ women
$\Rightarrow$ 16 men $-$ 15 men $=$ 35 women $-$ 24 women
$\Rightarrow$ 1 man $=$ 11 women
$\therefore$ 3 men + 7 women = 40 women
Now, $M_1 D_1 = M_2 D_2$
$\Rightarrow 40 \times 5 = 10 \times D_2$
$\Rightarrow D_2 = 20$ days

51. (d) A can complete whole work in $\frac{28}{7} \times 8 = 32$ days

B can complete whole work in $\frac{20 \times 6}{5} = 24$ days

A and B together can complete whole work in

$$\frac{32 \times 24}{32+24} = \frac{32 \times 24}{56} = \frac{96}{7} = 13\frac{5}{7} \text{days}$$

52. (a) More the no. of men less time they take to complete work.
Let x men are added

$$\frac{75}{75+x} = \frac{18}{90} \quad \text{(Inverse Proportion)}$$

$$\frac{75}{75+x} = \frac{1}{5}$$

$375 - 75 = x$
$x = 300$

53. (b) A's work in 1 hour $= \frac{1}{6}$

B's work in 1 hour $= \frac{1}{4}$

(A + B)'s 2 hour's work when opened alternately

$$= \left(\frac{1}{6} + \frac{1}{4}\right) = \frac{5}{12}$$

(A + B)'s 4 hour's work when opened alternately

$$= \frac{10}{12} = \frac{5}{6}$$

$$\text{Remaining part} = \left(1 - \frac{5}{6}\right) = \frac{1}{6}$$

Now, it is A's turn and $\frac{1}{6}$ part is filled by A in 1 hour.

$\therefore$ Total time taken to fill the tank = (4 + 1) hrs. = 5 hrs.

54. (a) Suppose, the work was finished in x days. Then,
A's (x – 5) day's work + B's (x – 3) day's work
+ C's x day's work = 1.

$$\Rightarrow \frac{x-5}{10} + \frac{x-3}{12} + \frac{x}{15} = 1$$

$\Rightarrow 6(x-5) + 5(x-3) + 4x = 60.$
$\Rightarrow 6x - 30 + 5x - 15 + 4x = 60$
$\Rightarrow 15x = 60 + 30 + 15$
$\Rightarrow 15x = 105 \Rightarrow x = 7$ days.

55. (a) B's 1 day work $= \frac{1}{12}$

B's 9 day's work $= \frac{9}{12} = \frac{3}{4}$

Remaining work $= 1 - \frac{3}{4} = \frac{1}{4}$

$\therefore$ A can finish this work in $\frac{20}{4}$ days = 5 days

56. (b) 1 km = 1000 m
$D = S \times T$
a km $= S \times$ b hr

$$S = \frac{a \times 1000}{b}$$

Now, D = 200 m

$$\text{Time taken} = \frac{D}{S}$$

$$= \frac{200}{a \times 1000} \times b = \frac{b}{5a} \text{hrs}$$

57. (c) If A can finish a work = x days
B will do this work = 3x days
From question, $A - B = 3x - x = 60 \Rightarrow x = 30$
A = 30 days, B = 90 days

A's 1 day work + B's 1 day work $= \frac{1}{30} + \frac{1}{90} = \frac{4}{90}$

So, A and B working together can complete work

$$= \frac{90}{4} = 22.5 \text{ days}$$

58. (d) A's 1 day's work $= \frac{1}{20}$

B's 1 day's work $= \frac{1}{30}$

(A + B)'s 1 day's work $= \left(\frac{1}{20} + \frac{1}{30}\right) = \frac{5}{60}$

$\therefore$ Both A and B will finish the work in $\frac{60}{5} = 12$ days.

59. (b) Two days work $= \frac{1}{9} + \frac{1}{15} = \frac{5+3}{45} = \frac{8}{45}$

Ten days work $= 5 \times \frac{8}{45} = \frac{40}{45} = \frac{8}{9}$

Remaining work $= 1 - \frac{8}{9} = \frac{1}{9}$ which is done by A on 11th day.
Hence, the work will be completed in 11 days.

60. (a) In one minute (A + B) can together fill $\frac{1}{36}+\frac{1}{45}=\frac{1}{20}$ part.

In 7 minutes part of tank filled = $\frac{7}{20}$

remaining part $=1-\frac{7}{20}=\frac{13}{20}$

In 8th minutes, part filled by A, B and C altogether

$=\frac{1}{36}+\frac{1}{45}-\frac{1}{30}=\frac{1}{20}-\frac{1}{30}=\frac{1}{60}$

$\frac{13}{20}$ part of tank filled by (A + B + C)

$=60\times\frac{13}{20}=39$ minutes

61. (e) $M_1D_1 = M_2D_2$

$\Rightarrow 9 \times 19 = 18 \times D_2$

$\Rightarrow D_2 = \frac{9\times19}{18} = 9.5$ days

62. (b) 10 hr A pipe $\rightarrow$1

16 hr B pipe $\rightarrow$1

32 hr C pipe $\rightarrow$1

$\frac{1}{10}+\frac{1}{16}-\frac{1}{32}=\frac{21}{160}$

$\frac{160}{21}=7\frac{13}{21}$ hr

63. (d) Here, $M_1 = 56$, $D_1 = 14$, $M_2 = ?$, $D_2 = 8$

Using

$M_1D_1 = M_2D_2$,

$56 \times 14 = M_2 \times 8$

$\Rightarrow M_2 = 98$

Hence, extra workers to be required

$= 98 - 56 = 42$