

30. In one minute pipe A can fill $\frac{1}{12}$ part

In one minute pipe B can empty $\frac{1}{6}$ part

When both A and B are opened, in 1 minute

they can empty $(\frac{1}{6} - \frac{1}{12})$ part = $\frac{2-1}{12}$ part

or $\frac{1}{12}$ part.

Before opening both the pipes, $\frac{1}{2}$ of the tank was full of water.

$(1 - \frac{1}{2})$ part or $\frac{2}{2}$ part of the tank has to empty.

\therefore Time needed to empty the tank

$$\text{is } (\frac{2}{\frac{1}{12}}) \text{ minutes} = \frac{2}{\frac{1}{12}} = 2 \times 12 = 24 = 8 \text{ mins.}$$

32. In one minute pipes A, B and C can fill $\frac{1}{10}$ part of the tank.

In 1 minute pipe A can fill $\frac{1}{30}$ part

and in 1 minute pipe B can fill $\frac{1}{40}$ part

\therefore In 1 minute pipe A and B can fill $(\frac{1}{30} + \frac{1}{40})$ part = $\frac{4+3}{120}$ part = $\frac{7}{120}$ part

In 1 minute pipe C can fill $(\frac{1}{10} - \frac{7}{120})$ part = $\frac{12-7}{120}$ part = $\frac{5}{120}$ part = $\frac{1}{24}$ part

\therefore Pipe C can fill the tank in 24 minutes.

34. 7 men and 7 women can do the work in 2 days.

\therefore 1 man and 1 woman can do the work in (2×7) days = 14 days

\therefore 1 man and 1 woman will be able to do the work in 14 days

36. According to the question,

the work of 3 women = the work of 5 boys.

$$1 \text{ woman} = \frac{5}{3} \text{ boys}$$

$$6 \text{ women} = \frac{5}{3} \times 6 = 10 \text{ boys}$$

6 women and 2 boys can do the work in 50 days

or 10 boys + 2 boys can do it in 50 days

or 12 boys can do the work in 50 days

\therefore 1 boy can do the work in $50 \times 12 = 600$ days

Similarly, the work of 1 woman = the work of $\frac{5}{3}$ boys

\therefore 12 women = $\frac{5}{3} \times 12 = 20$ boys

1 boy can do the work in 600 days

$(20 + 4)$ boys or 24 boys can do the work in $600 \div 24 = 25$ days

\therefore 12 women and 4 boys can do the work in 25 days

38. 4 men is equivalent to 5 women
1 man $\sim \frac{5}{4}$ women

6 men $\sim \frac{5}{4} \times 6 = \frac{15}{2}$ women

5 women can do working 8 hours a day can do the work in 27 days.

1 woman working 8 hours a day can do the work in 27×5 days

1 woman working 1 hour a day can do the work in $27 \times 5 \times 8$ days

Now 6 men and 6 women = $(\frac{15}{2} + 6)$ women

$\frac{15 + 12}{2} = \frac{27}{2}$ women

$\frac{27}{2}$ women working 6 hours a day can do the work in $(27 \times 5 \times 8 \div \frac{27}{2} \div 6)$ days

$= 27 \times 5 \times 8 \times \frac{2}{27} \times \frac{1}{6} = \frac{40}{3}$

6 men and 6 women working 6 hours a day can do $\frac{1}{2}$ times of the previous work

$\frac{40}{3} \times \frac{1}{2} = \frac{20}{3} = 6\frac{2}{3}$ days

40. A is equivalent to (B + C)

A and B can do the work in $9 \frac{26}{60}$ hours = $\frac{48}{5}$ hrs

In 1 hour A + B can do $\frac{5}{48}$ part.

or in 1 hour $\{(B+C) + B\}$ or $2B + C$ can do $\frac{5}{48}$ part

Again, in 1 hour C can do $\frac{1}{48}$ part.

∴ In 1 hour $2B$ can do $(\frac{5}{48} - \frac{1}{48})$ part.

or In 1 hour $2B$ can do $\frac{4}{48}$ part = $\frac{1}{12}$ part

or In 1 hour B can do $\frac{1}{12} \div 2 = \frac{1}{24}$ part.

∴ B can do the work alone in 24 hours.
