



#### Time and Work Ex 11.1 Q9

**Answer :**

Time taken by (A + B + C) to do the work =  $15\frac{3}{4}$  days =  $\frac{63}{4}$  days

Time taken by (B + C + D) to do the work = 14 days

Time taken by (C + D + A) to do the work = 18 days

Time taken by (D + A + B) to do the work = 21 days

Now,

$$\text{Work done by (A + B + C)} = \frac{4}{63}$$

$$\text{Work done by (B + C + D)} = \frac{1}{14}$$

$$\text{Work done by (C + D + A)} = \frac{1}{18}$$

$$\text{Work done by (D + A + B)} = \frac{1}{21}$$

$$\therefore \text{Work done by working together} = (A + B + C) + (B + C + D) + (C + A + D) + (D + A + B)$$

$$= \frac{4}{63} + \frac{1}{14} + \frac{1}{18} + \frac{1}{21}$$

$$= \frac{4}{63} + \left(\frac{9+7+6}{126}\right) = \frac{4}{63} + \frac{22}{126}$$

$$= \frac{4}{63} + \frac{11}{63} = \frac{15}{63}$$

$$\therefore \text{Work done by working together} = 3(A + B + C + D) = \frac{15}{63}$$

$$\therefore \text{Work done by (A + B + C + D)} = \frac{15}{63 \times 3} = \frac{5}{63}$$

Thus, together they can do the work in  $\frac{63}{5}$  days or  $12\frac{3}{5}$  days.

#### Time and Work Ex 11.1 Q10

**Answer :**

It is given that A and B can polish the floors of the building in 10 days.

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

Now, A alone can do  $\frac{1}{4}$ th of the work in 12 days.

$$\therefore \text{Time taken by A alone to do the complete work} = (4 \times 12) = 48 \text{ days}$$

$$\Rightarrow \text{Work done by A in 1 day} = \frac{1}{48}$$

Now, work done by B in 1 day = Work done by (A + B) in 1 day – Work done by A in 1 day

$$= \frac{1}{10} - \frac{1}{48}$$

$$= \frac{24-5}{240} = \frac{19}{240}$$

Thus, B alone can polish the floor in  $\frac{240}{19}$  days or  $12\frac{12}{19}$  days.

#### Time and Work Ex 11.1 Q11

**Answer :**

It is given that A and B can finish the work in 20 days.

$$\therefore \text{Work done by (A + B) in 1 day} = \frac{1}{20}$$

Now, A alone can do  $\frac{1}{5}$ th of the work in 12 days.

$$\therefore \text{Time taken by A alone to complete the work} = (5 \times 12) = 60 \text{ days}$$

$$\Rightarrow \text{Work done by A in 1 day} = \frac{1}{60}$$

Now, work done by B in 1 day = Work done by (A + B) in 1 day work – Work done by A in 1 day

$$= \frac{1}{20} - \frac{1}{60}$$

$$= \frac{3-1}{60} = \frac{2}{60}$$

Thus, B alone can polish the floor in  $\frac{60}{2}$  days or 30 days.

#### Time and Work Ex 11.1 Q12

Answer :

It is given that A can finish the work in 20 days and B can finish the same work in 15 days.

$$\therefore \text{Work done by A in 1 day} = \frac{1}{20}$$

$$\text{Work done by B in 1 day} = \frac{1}{15}$$

$$\begin{aligned}\therefore \text{Work done by (A + B) in 1 day} &= \frac{1}{20} + \frac{1}{15} \\ &= \frac{3+4}{60} = \frac{7}{60}\end{aligned}$$

$$\therefore \text{Work done by (A + B) in 2 days} = \frac{14}{60} = \frac{7}{30}$$

$$\text{Remaining work} = 1 - \frac{7}{30} = \frac{23}{30}$$

It is given that the remaining work is done by B.

$\therefore$  Complete work is done by B in 15 days.

$\therefore \frac{23}{30}$  of the work will be done by B in  $\left(15 \times \frac{23}{30}\right)$  days or  $\frac{23}{2}$  days or  $11\frac{1}{2}$  days.

Thus, the remaining work is done by B in  $11\frac{1}{2}$  days.

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