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,

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

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

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

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

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

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

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

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

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

$\therefore$ 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.

$\therefore$ 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.

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

$\Rightarrow$ 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.

$\therefore$ 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.

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

$\Rightarrow$ 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.

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

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

$\therefore$ Work done by $(A + B)$ in 1 day $= \frac{1}{20} + \frac{1}{15}$

$= \frac{3+4}{60} = \frac{7}{60}$

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

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

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

$\because$ 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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