

Time & Work

Short Tricks Tips &

Practice Sets

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Time & Work Short Tricks & Tips With Practice Sets

'Time and work' is where you are required to think about work efficiencies of at least two people and utilize it to compute work consummation time and in view of that characterize wages of every person. Time and work is important topic for any exam, and for the most part, 2-3 Questions show up from this subject. What's more imperative is that this is extremely easy topic and you can enhance your score by illuminating them in a matter of seconds.

We are giving various shortcuts for solving particular types of questions below:

TYPE 1 :

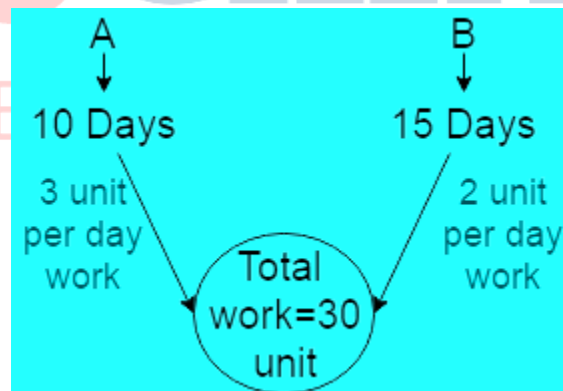
If A can do a certain work in x days and B can complete same work in y days if they work together then they will complete the work in

$$= \frac{xy}{x+y} \text{ days}$$

For Example:

A can do a certain work in 10 days and B can complete same work in 15 days if they work together then in how many days work gets done.

Solution:



$(A+B)$'s 1 day work $= 3+2=5$ unit

Time taken by $(A+B) = 30/5$

$= 6$ days Ans.

Rough: [L.C.M of 10 and 15=30 now $30/10=3$ unit and $30/15=2$ unit]

BY TRICK:

$$\begin{aligned} \text{Time taken by } (A+B) &= \frac{10 \times 15}{10+15} \\ &= \frac{10 \times 15}{25} \\ &= 6 \text{ Days Ans.} \end{aligned}$$

TYPE 2:

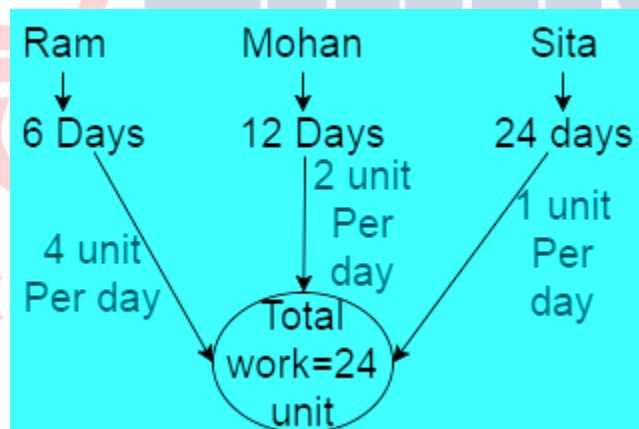
If A, B, and C can do a certain work in x days, y days, and z days respectively. if they work together then they will complete the work in

$$= \frac{xyz}{xy+yz+zx} \text{ days}$$

For Example:

Ram, Mohan, and Sita can do a work in 6, 12 and 24 days respectively. In what time will they finish the work while working together?

Solution:



(Ram+Mohan+Sita) 1 day work=4+2+1

=7 unit

Required Time=24/7=3 ³/7 Ans.

BY TRICK:

$$\begin{aligned} \text{Required Time} &= \frac{(6 \times 12 \times 24)}{(6 \times 12) + (12 \times 24) + (24 \times 6)} \\ &= \frac{(6 \times 12 \times 24)}{504} \\ &= 24/7 = 3\frac{3}{7} \text{ Days Ans} \end{aligned}$$

TYPE 3 :

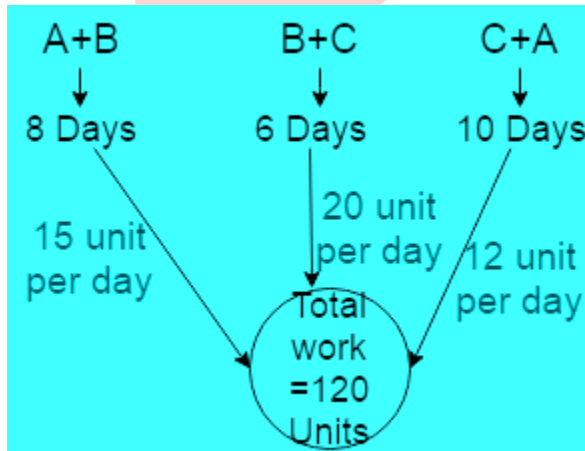
A and B together can do a work in x days, B and C together in y days, while C and A together in z days. If they all work together, the work will be completed in.

$$= \frac{2xyz}{xy+yz+zx} \text{ days}$$

For Example:

A and B together can do a work in 8 days, B and C together in 6 days, while C and A together in 10 days. If they all work together, the work will be completed in.

Solution:



$$(A+B)+(B+C)+(C+A) \text{ 1 day work} = 15+20+12=47 \text{ units}$$

$$\text{i.e } 2(A+B+C) \text{ 1 day work} = 47 \text{ units}$$

$$\therefore (A+B+C) \text{ 1 day work} = 47/2 \text{ units}$$

$$\text{Time Taken by } (A+B+C) = 120 / (47/2)$$

$$= 5\frac{5}{47} \text{ Days Ans.}$$

BY TRICK:

$$\begin{aligned} \text{Required Time} &= \frac{2(8 \times 6 \times 10)}{(8 \times 6) + (6 \times 10) + (10 \times 8)} \\ &= \frac{2(8 \times 6 \times 10)}{188} \\ &= 5 \frac{5}{47} \text{ Days Ans.} \end{aligned}$$

TYPE 4 :

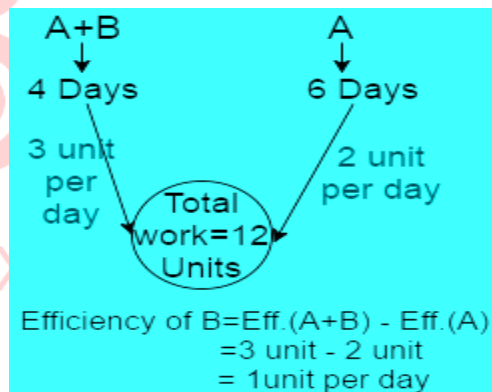
A and B together can do a piece of work in x days. If A alone can do it in y days, in how many days B can alone complete the same piece of work

$$= \frac{xy}{y-x} \text{ days}$$

For Example:

a. A and B together can do a piece of work in 4 days. If A alone can do it in 6 days, in how many days B can alone complete the same piece of work?

Solution:



Time taken by B = 12/1

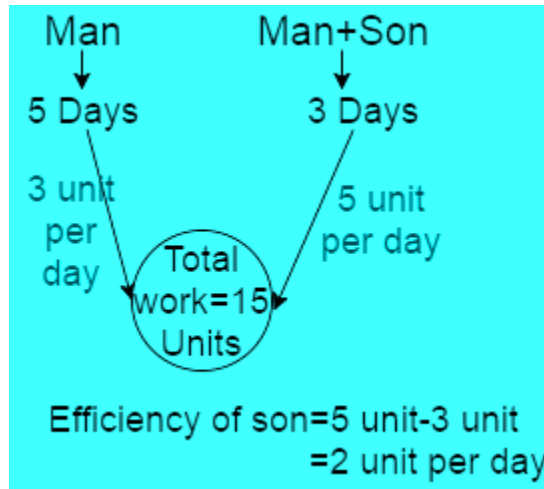
= 12 Days Ans.

By Trick:

$$\begin{aligned} \text{Time taken by B} &= \frac{4 \times 6}{6 - 4} \\ &= 12 \text{ days Ans.} \end{aligned}$$

b. A man can do a piece of work in 5 days, but with the help of his son he can do it in 3 days. In what time can the son do it alone?

Solution:



Time taken by son alone= $15/2$

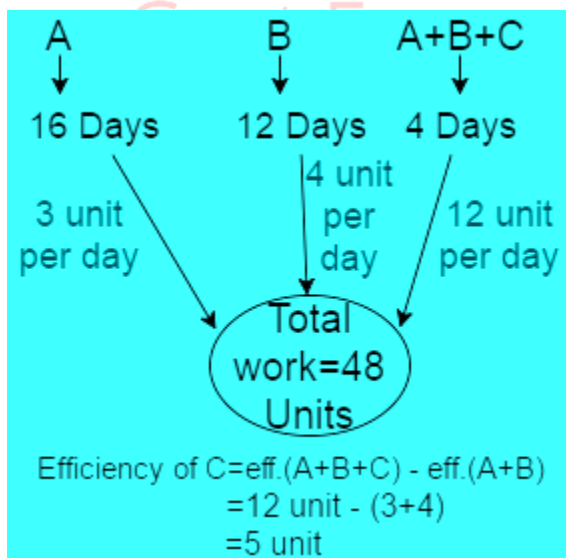
=7.5 Days Ans.

By Trick:

$$\text{Time taken by Son} = \frac{5 \times 3}{5 - 3} = 7.5 \text{ days Ans.}$$

c. A can do a piece of work in 16 days and B can do the same piece of work in 12 days. With the help of C, they did in 4 days only. Then, C alone can do the job in?

Solution:



Time taken by C= $48/5$ days Ans.

TYPE 5:

If A and B together can complete a piece of work in x days; B and C together in y days; and C and A together in z days. How many days will each take separately to complete the same work?

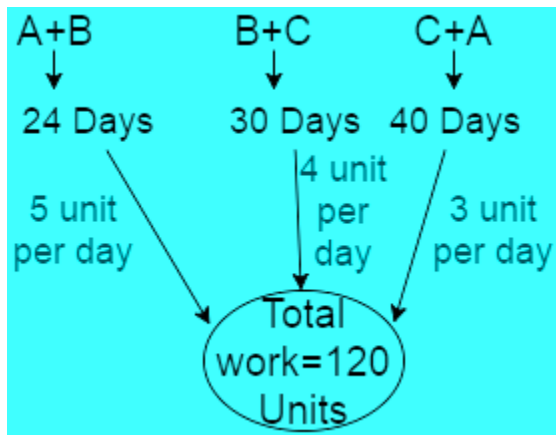
$$\text{Time taken by A} = \frac{2xyz}{xy+yz-zx} \text{ days}$$

$$\text{Time taken by B} = \frac{2xyz}{yz+xz-xy} \text{ days}$$

$$\text{Time taken by C} = \frac{2xyz}{xy+xz-yz} \text{ days}$$

a. A and B together can complete a piece of work in 24 days; B and C together in 30 days; and C and A together in 40 days. How many days will each take separately to complete the same work?

Solution:



$$(A+B)+(B+C)+(C+A) \text{ 1 day work} = 5+4+3 = 12 \text{ units}$$

$$\text{i.e } 2(A+B+C) \text{ 1 day work} = 12 \text{ units}$$

$$\therefore (A+B+C) \text{ 1 day work} = 12/2 \text{ units}$$

$$= 6 \text{ units.}$$

$$\text{Efficiency of A} = (A+B+C) - (B+C)$$

$$= 6 \text{ Units} - 4 \text{ Units}$$

$$= 2 \text{ Units}$$

$$\text{Efficiency of B} = (A+B+C) - (C+A)$$

$$= 6 \text{ Units} - 3 \text{ Units}$$

$$= 3 \text{ Units}$$

$$\text{Efficiency of C} = (A+B+C) - (A+B)$$

$$=6 \text{ Units} - 5 \text{ Units}$$

$$=1 \text{ Units}$$

$$\text{Time taken by A} = 120/2$$

$$=60 \text{ Days}$$

$$\text{Time taken by B} = 120/3$$

$$=40 \text{ Days}$$

$$\text{Time taken by A} = 120/1$$

$$=120 \text{ Days}$$

BY TRICK:

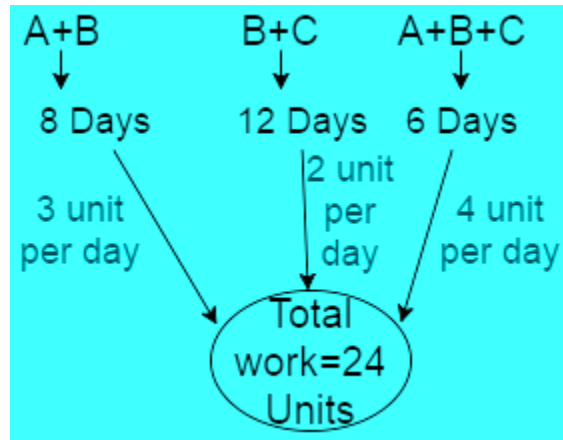
$$\begin{aligned} \text{Time taken by A} &= \frac{2 \times 24 \times 30 \times 40}{(24 \times 30) + (30 \times 40) - (40 \times 24)} \\ &= \frac{2 \times 24 \times 30 \times 40}{720 + 1200 - 960} \\ &= 60 \text{ Days Ans.} \end{aligned}$$

$$\begin{aligned} \text{Time taken by B} &= \frac{2 \times 24 \times 30 \times 40}{(30 \times 40) + (40 \times 24) - (24 \times 30)} \\ &= \frac{2 \times 24 \times 30 \times 40}{1200 + 960 - 720} \\ &= 40 \text{ Days Ans.} \end{aligned}$$

$$\begin{aligned} \text{Time taken by C} &= \frac{2 \times 24 \times 30 \times 40}{(24 \times 30) + (40 \times 24) - (30 \times 40)} \\ &= \frac{2 \times 24 \times 30 \times 40}{720 + 960 - 1200} \\ &= 120 \text{ Days Ans.} \end{aligned}$$

b. A and B can do a given piece of work in 8 days, B and C can do the same work in 12 days and A, B, C complete it in 6 days. Number of days required to finish the work by A and C is.

Solution:



Efficiency of $A=(A+B+C)-(B+C)$

=4 Units – 2 Units

=2 Units

Efficiency of $C=(A+B+C)-(A+B)$

=4 Units – 3 Units

=1 Unit

$(A+C)$'s 1 day work=2+1=3 unit

Time taken by $(A+C)=24/3$

=8 days Ans.

c. **Ram can complete a piece of work in 15 days. He worked for 5 days and left. Mohan alone completed the remaining work in 20 days. How long would Mohan take to complete the whole work?**

Solution:

Let Ram per day done 1 unit work

Total work done by Ram in 15 days=15 unit

Total work done by Ram in 5 days=5 unit

Remaining work=15-5=10 unit

work done by Mohan in 20 days=10 unit

work done by Mohan in 1 day=10/20=0.5

Time taken by Mohan=15/0.5

=30 days Ans.

d. Ram alone can complete a piece of work in 40 days. He worked for 8 days and left. Sita alone completed the remaining work in 16 days. How long would Ram and Sita together take to complete the work?

Solution:

Let Ram per day done 1 unit work

Total work done by Ram in 40 days=40 unit

Total work done by Ram in 8 days=8 unit

Remaining work=40-8=32 unit

work done by Sita in 16 days=32 unit

work done by Sita in 1 day=32/16

=2 unit per day

Total work done by Ram and Sita in 1 day=(1+2)=3unit per day

Time taken by Ram+Sita=40/3

=13 ¹/₃ Ans.

e. A can finish a work in 18 days and B can do the same work in 15 days. B worked for 10 days and left the job. In how many days, A alone can finish the remaining work?

Solution:

Let A= A unit work per day

B= B unit work per day

Now,

$$\begin{array}{l} \text{Eqn-1} \quad \text{Eqn-2} \\ (A) \times 18 = (B) \times 15 \\ \frac{A}{B} = \frac{15}{18} = \frac{5}{6} \end{array}$$

Put the value of A in eqn-1, you will get total work

so, total work= $5 \times 18 = 90$ unit

Total work done by B in 10 days= $10 \times 6 = 60$ unit

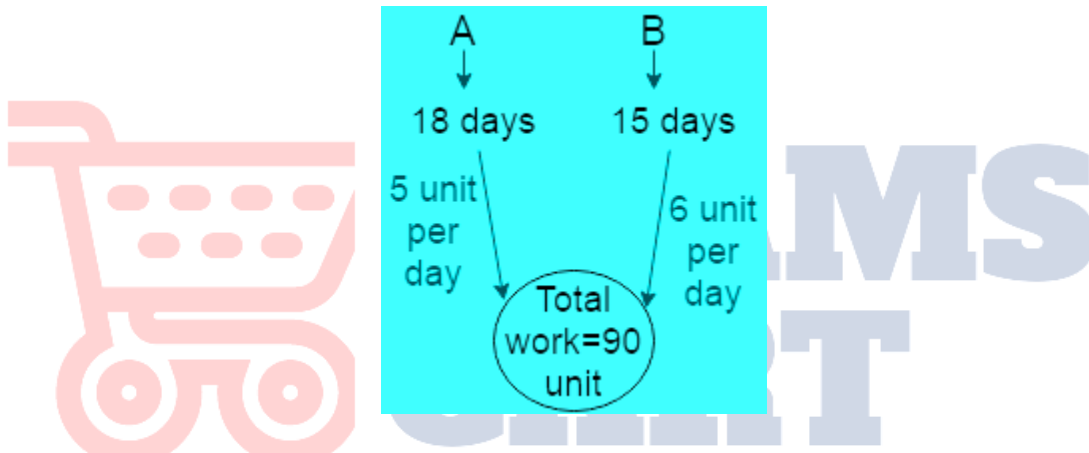
Remaining work= $90 - 60$

=30 unit

Time taken by A= $30/5$

=6 days Ans.

Method-2



Total work done by B in 10 days= $10 \times 6 = 60$ unit

Remaining work= $90 - 60 = 30$ unit

=30 unit

Time taken by A= $30/5$

=6 days Ans.

f. A can do a certain work in 10 days and B can do same work in 12 days. They started work together but after 5 days A left and B finish the remaining work. In how many days B can complete the remaining work?

Solution:

Let A= A unit work per day

B= B unit work per day

Now,

$$\begin{array}{l} \text{Eqn-1} \quad \text{Eqn-2} \\ (A) \times 10 = (B) \times 12 \\ \frac{A}{B} = \frac{12}{10} = \frac{6}{5} \end{array}$$

Put the value of A in eqn-1, you will get total work

so, total work = $6 \times 10 = 60$ unit

Total work done by A and B in 1 day = $(6+5) = 11$ unit

work done by A and B in 5 days = $11 \times 5 = 55$ unit

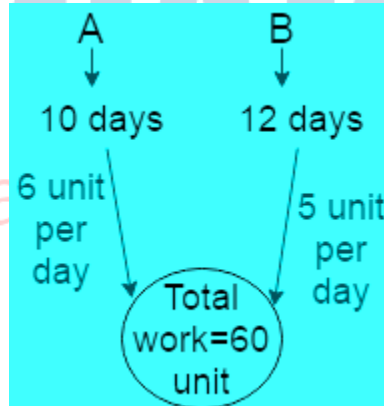
Remaining work = $60 - 55$

= 5 unit

Time taken by B = $5/5$

= 1 day Ans.

Method-2



Total work done by A and B in 1 day = $(6+5) = 11$ unit

work done by A and B in 5 days = $11 \times 5 = 55$ unit

Remaining work = $60 - 55$

= 5 unit

Time taken by B = $5/5$

= 1 day Ans.

g. A and B can complete a work in 15 days and 10 days respectively. They started doing the work together but after 2 days B had to leave and A alone completed the remaining work. The whole work was completed in:

Solution:

Let A= A unit work per day

B= B unit work per day

Now,

$$\begin{array}{l} \text{Eqn-1} \quad \text{Eqn-2} \\ (A) \times 15 = (B) \times 10 \\ \frac{A}{B} = \frac{10}{15} = \frac{2}{3} \end{array}$$

Put the value of A in eqn-1, you will get total work

so, total work = $2 \times 15 = 30$ unit

Total work done by A and B in 1 day = $(2+3) = 5$ unit

Total work done by A and B in 2 days = $5 \times 2 = 10$ unit

Remaining work = $30 - 10$

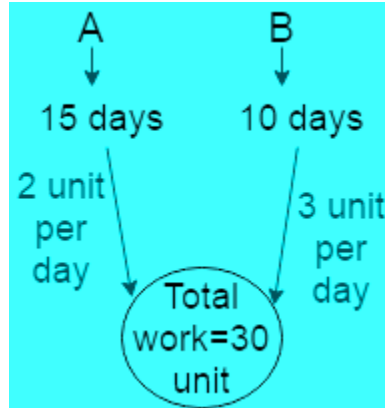
= 20 unit

Time taken by A = $20/2$

= 10 days

Hence, total time taken = $(2+10) = 12$ days Ans.

Method-2



Total work done by A and B in 1 day $= (2+3) = 5$ unit

Total work done by A and B in 2 days $= 5 \times 2 = 10$ unit

Remaining work $= 30 - 10$

$= 20$ unit

Time taken by A $= 20/2$

$= 10$ days

Hence, total time taken $= (2+10) = 12$ days Ans.

h. A and B can do a piece of work in 45 and 40 days respectively. They began the work together but A left after some days and B finished the remaining work in 23 days. A left after.

Solution:

Let A = A unit work per day

B = B unit work per day

Now,

$$\begin{array}{l} \text{Eqn-1} \quad \text{Eqn-2} \\ (A) \times 45 = (B) \times 40 \\ \frac{A}{B} = \frac{40}{45} = \frac{8}{9} \end{array}$$

Put the value of A in eqn-1, you will get total work

so, total work $= 8 \times 45 = 360$ unit

Total work done by B in 23days= $23 \times 9 = 207$ unit

Total Work done by (A+B)= $360 - 207$

=153 unit

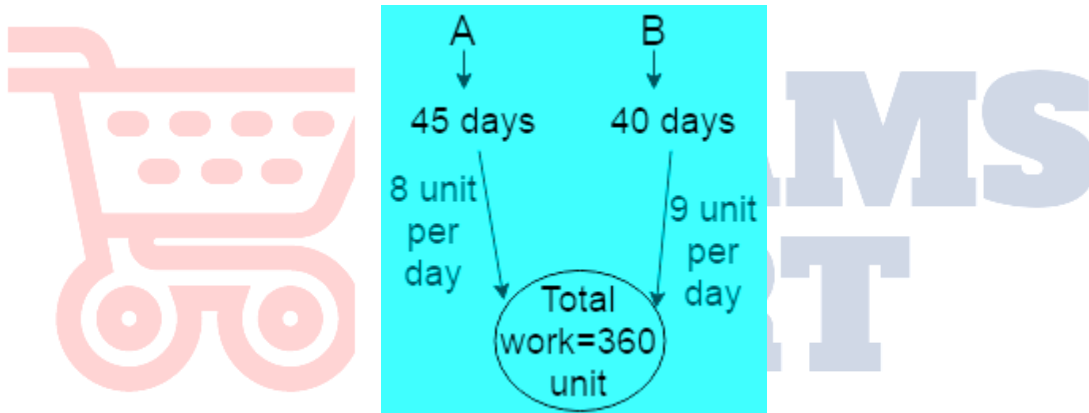
Total work done by A+B in 1 day= $(8+9) = 17$ unit

Time taken by A+B= $153/17$

=9 days

hence, A left after 9 days Ans.

Method-2



Total work done by B in 23days= $23 \times 9 = 207$ unit

Total Work done by (A+B)= $360 - 207$

=153 unit

Total work done by A+B in 1 day= $(8+9) = 17$ unit

Time taken by(A+B)= $153/17$

=9 days

hence, A left after 9 days Ans.

h. A can do a piece of work in 20 days while B can finish it in 25 days. B started working and A joined him after 10 days. The whole work is completed in.

Solution:

Let A= A unit work per day

B= B unit work per day

Now,

$$\begin{array}{l} \text{Eqn-1} \quad \text{Eqn-2} \\ (A) \times 20 = (B) \times 25 \\ \frac{A}{B} = \frac{25}{20} = \frac{5}{4} \end{array}$$

Put the value of A in eqn-1, you will get total work

so, total work = $5 \times 20 = 100$ unit

work done by B in 10 days = $10 \times 4 = 40$ unit

Remaining work = $100 - 40 = 60$ unit

Total work done by A+B in 1 day = $(5+4) = 9$ unit

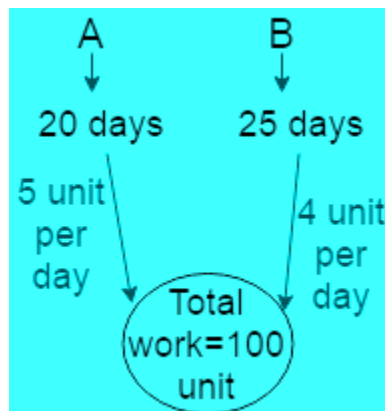
Time taken by (A+B) = $60/9$

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

Total time = $10 + 6 \frac{2}{3}$

= $16 \frac{2}{3}$ days Ans.

Method-2



work done by B in 10 days = $10 \times 4 = 40$ unit

Remaining work = $100 - 40 = 60$ unit

Total work done by A+B in 1 day= $(5+4)=9$ unit

Time taken by(A+B)= $60/9$

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

Total time= $10+6\frac{2}{3}$

= $16\frac{2}{3}$ days Ans.

i. A and B can together finish a work in 30 days. They worked at it for 20 days and then B left. The remaining work was done by A alone in 20 more days. A alone can finish the work in.

Solution:

Let work done by (A+B) in per day=1 unit

Total work done by (A+B) in 30 days=30 unit

Total work done by (A+B) in 20 days=20 unit

Now,

Remaining work= $30-20=10$ unit

work done by A in 20 days=10 unit

∴work done by A in 1 day= $10/20$ unit

=0.5 unit

Time taken by A= $30/0.5$

=60 days Ans.

j. A can do a piece of work in 24 days. When he had worked for 4 days. B joined him. If complete work was finished in 16 days, B can alone finish that work in.

Solution:

Let work done by A in per day=1 unit

Total work done by A in 24 days=24 unit

work done by A in 4 days=4 unit

remaining work= $24-4=20$ unit

work done by A+B in 12 days=20 unit

work done by A+B in 1 days= $20/12$

Now,

$$A+B=20/12$$

$$1+B=20/12$$

$$\therefore B=2/3$$

Time taken by B= $24/(2/3)$

=36 days Ans.

k. A and B alone can complete work in 9 days and 18 days respectively. They worked together; however 3 days before the completion of the work A left. In how many days was the work completed?

Solution:

Let A = A unit work per day

B = B unit work per day

Now,

$$\begin{array}{l} \text{Eqn-1} \quad \text{Eqn-2} \\ (A) \times 9 = (B) \times 18 \\ \frac{A}{B} = \frac{18}{9} = \frac{2}{1} \end{array}$$

Put the value of A in eqn-1, you will get total work

so, total work= $2 \times 9 = 18$ unit

work done by B in 3 days= $3 \times 1 = 3$ unit

Remaining work= $18 - 3 = 15$ unit

Total work done by A+B in 1 day= $(2+1) = 3$ unit

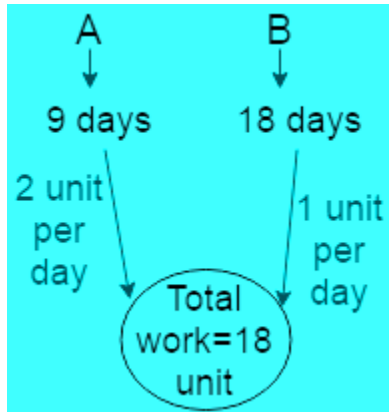
Time taken by(A+B)= $15/3$

=5 days

Total time= $3+5$

=8 days Ans.

Method-2



Work done by B in 3 days = $3 \times 1 = 3$ unit

Remaining work = $18 - 3 = 15$ unit

Total work done by A+B in 1 day = $(2+1) = 3$ unit

Time taken by (A+B) = $15/3$

=5 days

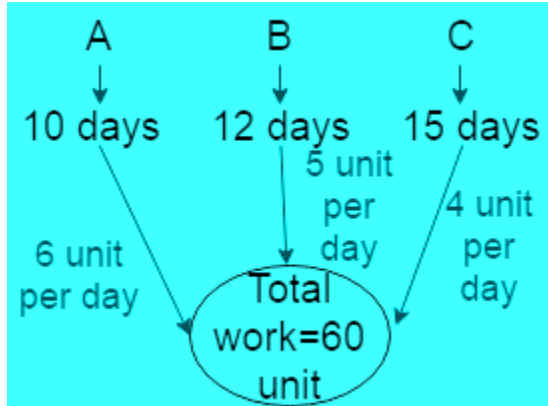
Total time = $3+5$

=8 days Ans.

Govt Exams ? Crack with Us...

I. A, B, and C can do a piece of work in 10, 12, and 15 days respectively. They began the work together but B leaves after two days, how long would it take A and C to finish the Remaining work?

Solution:



Note: [L.C.M of 10,12,15=60 and $60/10=6$, $60/12=5$, $60/15=4$]

Total work done by A, B, and C in 1 day= $(6+5+4)$ unit=15 unit

Total work done by A, B, and C in 2 day= $15 \times 2=30$ unit

Remaining work= $60-30=30$ unit

When B left the job then

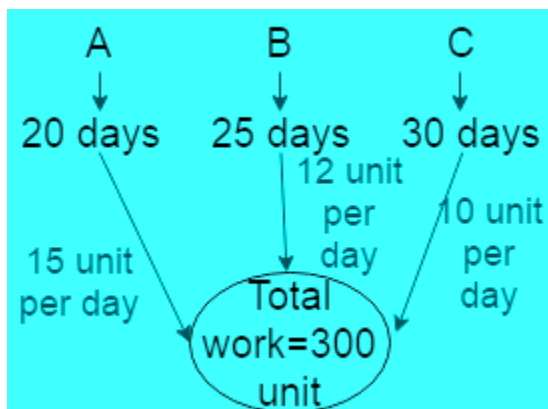
Total work done by A and C in 1 day= $6+4=10$ unit

Time taken by A and C= $30/10$

=3 days Ans.

m. A, B, and C can do a piece of work in 20, 25, and 30 days respectively. They began the work together but C leaves after 3 days. In how many days the whole work was completed?

Solution:



Note: [L.C.M of 20,25,30=300 and $300/20=15$, $300/25=12$, $300/30=10$]

Work done by A, B, and C in 1 day = $(15+12+10)$ unit = 37 unit

Total work done by A, B, and C in 3 day = $37 \times 3 = 111$ unit

Remaining work = $300 - 111 = 189$ unit

When C left the work then

Work done by A+B in 1 day = $15+12 = 27$ unit

Time taken by (A+B) = $189/27$

= 7 days

The whole work was completed in = $3+7$

= 10 days Ans.

n. A, B, and C together can do a piece of work in 40 days. After working with A, B and C for 16 days, A leaves and then B and C complete the remaining work in 40 days more. A alone could do the work in.

Solution:

Let work done by (A+B+C) in per day = 1 unit

Total work done by (A+B+C) in 40 day = 40 unit

Total work done by (A+B+C) in 16 day = 16 unit

Now,

Remaining work = $40 - 16 = 24$ unit

work done by B and C in 40 days = 24 unit

work done by B and C in 1 day = $24/40$

= 0.6 unit

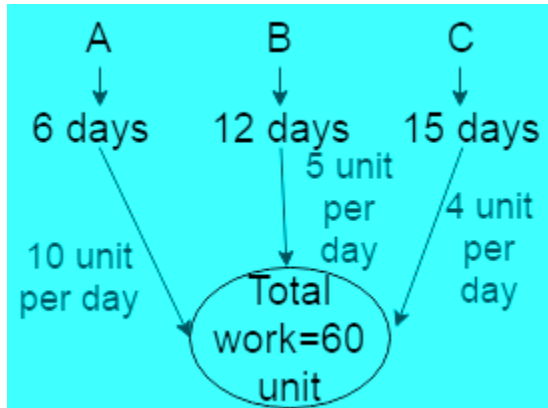
Efficiency (eff.) of A = Eff. of (A+B+C) - Eff. of (B+C)

= $1 - 0.6 = 0.4$ unit per day

Time taken by A = $40/0.4 = 100$ days Ans.

o. A, B, and C can do a job in 6 days, 12 days and 15 days respectively. After $\frac{1}{8}$ of the work is completed, C leaves the job. Rest of the work is done by A and B together. Time taken to finish the work is.

Solution:



Now,

$$60 \times \left(\frac{1}{8}\right) = 7.5 \text{ unit}$$

$$\text{Remaining work} = 60 - 7.50 = 52.50 \text{ unit}$$

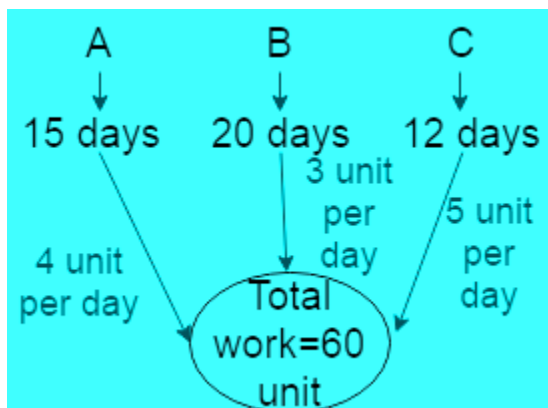
$$\text{Work done by A + B in 1 days} = 10 + 5 = 15 \text{ unit}$$

$$\text{Time taken by (A+B)} = 52.50 / 15$$

$$= 7/2 = 3 \frac{1}{2} \text{ days Ans.}$$

p. A, B, and C can do a piece of work in 15, 20, and 12 days respectively. They began the work together but A left 5 days before completion of the work. In how many days was the work done?

Solution:



Note: [L.C.M of 15,20,12=60 and $60/15=4$, $60/20=3$, $60/12=5$]

Work done by B and C in 1 day= $(3+5)$ unit=8 unit

Total work done by B and C in 5 day= $8 \times 5=40$ unit

Remaining Work= $60-40=20$ unit

Work done by A, B, and C in 1 day= $(4+3+5)$ unit=12 unit

Now,

20 unit work is done by A, B and C so,

Time taken by $(A+B+C)=20/12$

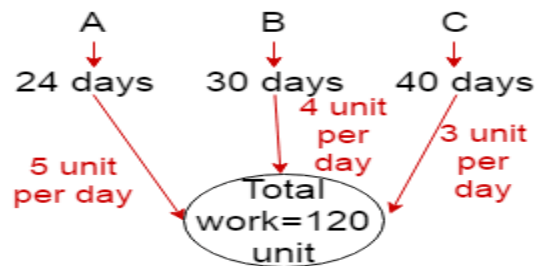
$$=5/3 \text{ days}$$

Total time= $5+(5/3)$

$$=20/3 \text{ days Ans.}$$

q. A, B, and C can do a piece of work in 24, 30, and 40 days respectively. They began the work together but C left 4 days before completion of the work. In how many days was the work done?

Solution:



Work done by A and B in 1 day= $(5+4)$ unit=9 unit

Total work done by A and B in 4 day= $9 \times 4=36$ unit

Remaining Work= $120-36=84$ unit

Work done by A, B, and C in 1 day= $(5+4+3)$ unit=12 unit

Now,

84 unit work is done by A, B and C so,

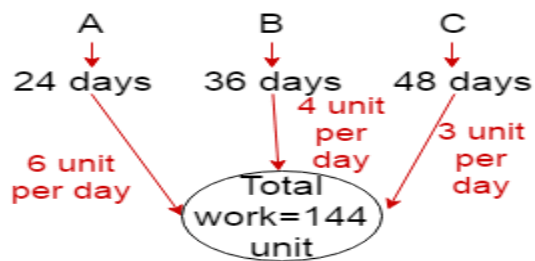
Time taken by $(A+B+C)=84/12$

$=7$ days

Total time= $4+7=11$ days Ans.

r. A, B, and C can complete a work separately in 24, 36, and 48 days respectively. They started work together but C left after 4 days of start and A left 3 days before the completion of the work. In how many days will the work be completed.

Solution:



Work done $(A+B+C)$ in 1 day= $(6+4+3)=13$ unit

Work done $(A+B+C)$ in 4 day= $13 \times 4=52$ unit

Remaining work= $144-52=92$ unit.

Now,

Work done by B in 3 days= $3 \times 4=12$ unit

Remaining work= $92-12=80$ unit

Work done by $(A+B)$ in 1 day= $(6+4)=10$ unit

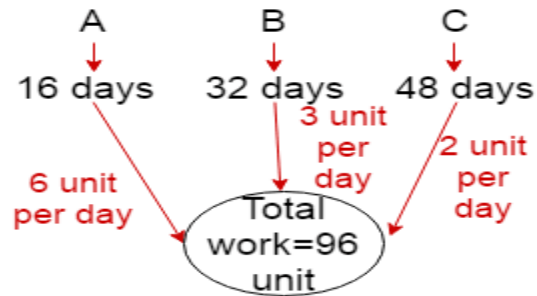
Time taken by $(A+B)=80/10$

$=8$ days

Total time= $(4+3+8)=15$ days Ans.

s. A, B, and C can do a work separately in 16, 32, and 48 days respectively. They started the work together but B left off 8 days and C 6 days before the completion of the work. In what time is the work finished?

Solution:



Work done by (A+C) in 1 day = $6+2=8$ unit

\therefore Work done by (A+C) in 2 day = $8 \times 2 = 16$ unit.

Remaining work = $96 - 16 = 80$ unit.

Work done by A in 6 day = $6 \times 6 = 36$ unit

Remaining work = $80 - 36 = 44$ unit.

Time taken by (A+B+C) = $44/11$

= 4 days

Total days = $2 + 6 + 4 = 12$ days Ans.

Method-2

Let the whole work be completed in x days

According to the question,

$$\frac{x}{16} + \frac{x-8}{32} + \frac{x-6}{48} = 1$$

$$\frac{6x + 3(x-8) + 2(x-6)}{96} = 1$$

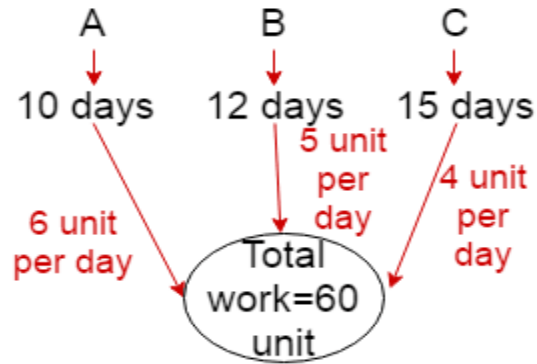
$$6x + 3x - 24 + 2x - 12 = 96$$

$$11x - 36 = 96$$

$$x = 12 \text{ days Ans.}$$

t. A, B and C can complete a work in 10, 12 and 15 days respectively. A left the work 5 days before the work was completed and B left 2 days after A had left. Number of days required to complete the whole work is:

Solution:



Work done by (B+C) in 1 day = $5+4=9$ unit

\therefore Work done by (B+C) in 2 day = $9 \times 2 = 18$ unit.

Remaining work = $60 - 18 = 42$ unit

now,

Work done by C in 3 day = $4 \times 3 = 12$ unit

Remaining work = $42 - 12 = 30$ unit

Time taken by (A+B+C) = $30/15$
= 2 days

Total days = $2 + 3 + 2 = 7$ days Ans.

Method-2

Let the whole work be completed in x days

According to the question,

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

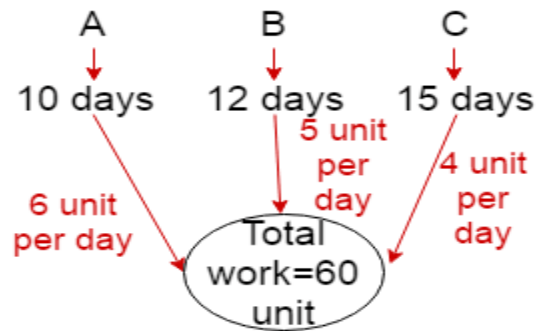
$$\frac{6(x-5) + 5(x-3) + 4x}{60} = 1$$

$$6x - 30 + 5x - 15 + 4x = 60$$

$$15x - 45 = 60$$

$$x = 7 \text{ days Ans.}$$

u. A, B, and C can do a piece of work in 10, 12, and 15 days respectively. They began the work together but B leaves after two days, how long would it take A and C to finish the Remaining work?

Solution:

Note: [L.C.M of 10,12,15=60 and $60/10=6$, $60/12=5$, $60/15=4$]

Total work done by A, B, and C in 1 day= $(6+5+4)$ unit=15 unit

Total work done by A, B, and C in 2 day= $15 \times 2=30$ unit

Remaining work= $60-30=30$ unit

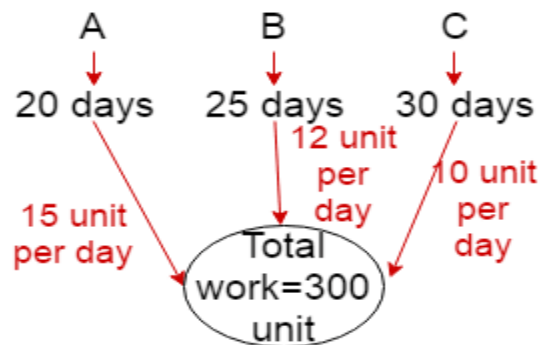
When B left the job then

Total work done by A and C in 1 day= $6+4=10$ unit

Time taken by A and C= $30/10$

=3 days Ans.

v. A, B, and C can do a piece of work in 20, 25, and 30 days respectively. They began the work together but C leaves after 3 days. In how many days the whole work was completed?

Solution:

Note: [L.C.M of 20,25,30=300 and $300/20=15$, $300/25=12$, $300/30=10$]

Work done by A, B, and C in 1 day= $(15+12+10)$ unit=37 unit

Total work done by A, B, and C in 3 day = $37 \times 3 = 111$ unit

Remaining work = $300 - 111 = 189$ unit

When C left the work then

Work done by A+B in 1 day = $15 + 12 = 27$ unit

Time taken by (A+B) = $189 / 27$

$$= 7 \text{ days}$$

The whole work was completed in = $3 + 7$

$$= 10 \text{ days Ans.}$$

w. A, B, and C together can do a piece of work in 40 days. After working with A, B and C for 16 days, A leaves and then B and C complete the remaining work in 40 days more. A alone could do the work in.

Solution:

Let work done by (A+B+C) in per day = 1 unit

Total work done by (A+B+C) in 40 day = 40 unit

Total work done by (A+B+C) in 16 day = 16 unit

Now,

Remaining work = $40 - 16 = 24$ unit

work done by B and C in 40 days = 24 unit

work done by B and C in 1 day = $24 / 40$

$$= 0.6 \text{ unit}$$

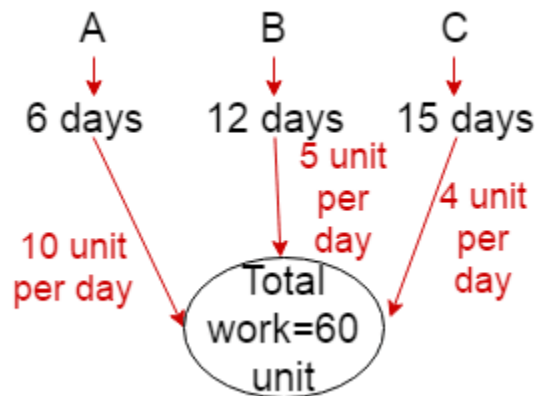
Efficiency (eff.) of A = Eff. of (A+B+C) - Eff. of (B+C)

$$= 1 - 0.6 = 0.4 \text{ unit per day}$$

Time taken by A = $40 / 0.4 = 100$ days Ans.

x. A, B, and C can do a job in 6 days, 12 days and 15 days respectively. After $1/8$ of the work is completed, C leaves the job. Rest of the work is done by A and B together. Time taken to finish the work is.

Solution:



Now,

$$60 \times (1/8) = 7.5 \text{ unit}$$

$$\text{Remaining work} = 60 - 7.5 = 52.50 \text{ unit}$$

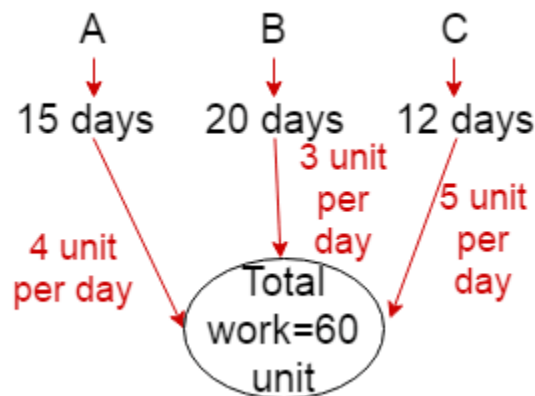
$$\text{Work done by A + B in 1 days} = 10 + 5 = 15 \text{ unit}$$

$$\text{Time taken by (A+B)} = 52.50 / 15$$

$$= 7/2 = 3 \frac{1}{2} \text{ days Ans.}$$

y. A, B, and C can do a piece of work in 15, 20, and 12 days respectively. They began the work together but A left 5 days before completion of the work. In how many days was the work done?

Solution:



Note: [L.C.M of 15,20,12=60 and $60/15=4$, $60/20=3$, $60/12=5$]

$$\text{Work done by B and C in 1 day} = (3+5) \text{ unit} = 8 \text{ unit}$$

Total work done by B and C in 5 day= $8 \times 5 = 40$ unit

Remaining Work= $60 - 40 = 20$ unit

Work done by A, B, and C in 1 day= $(4+3+5)$ unit= 12 unit

Now,

20 unit work is done by A, B and C so,

Time taken by (A+B+C)= $20/12$

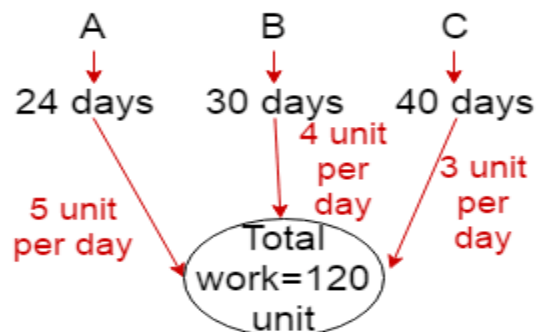
$$= 5/3 \text{ days}$$

Total time= $5 + (5/3)$

$$= 20/3 \text{ days Ans.}$$

z. A, B, and C can do a piece of work in 24, 30, and 40 days respectively. They began the work together but C left 4 days before completion of the work. In how many days was the work done?

Solution:



Work done by A and B in 1 day= $(5+4)$ unit= 9 unit

Total work done by A and B in 4 day= $9 \times 4 = 36$ unit

Remaining Work= $120 - 36 = 84$ unit

Work done by A, B, and C in 1 day= $(5+4+3)$ unit= 12 unit

Now,

84 unit work is done by A, B and C so,

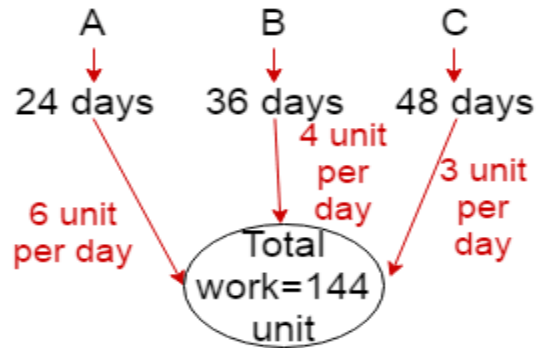
Time taken by (A+B+C)= $84/12$

$$=7 \text{ days}$$

Total time = $4+7=11$ days Ans.

A, B, and C can complete a work separately in 24, 36, and 48 days respectively. They started work together but C left after 4 days of start and A left 3 days before the completion of the work. In how many days will the work be completed.

Solution:



Work done (A+B+C) in 1 day = $(6+4+3)=13$ unit

Work done (A+B+C) in 4 day = $13 \times 4 = 52$ unit

Remaining work = $144 - 52 = 92$ unit.

Now,

Work done by B in 3 days = $3 \times 4 = 12$ unit

Remaining work = $92 - 12 = 80$ unit

Work done by (A+B) in 1 day = $(6+4)=10$ unit

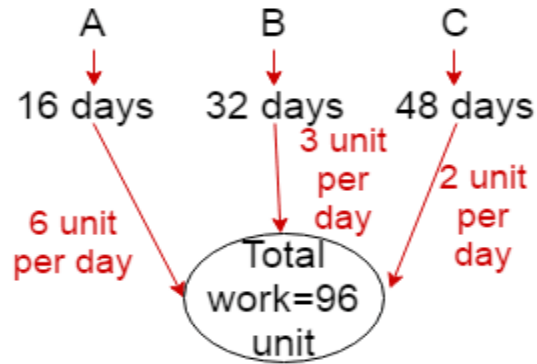
Time taken by (A+B) = $80/10$

$$=8 \text{ days}$$

Total time = $(4+3+8)=15$ days Ans.

A, B, and C can do a work separately in 16, 32, and 48 days respectively. They started the work together but B left off 8 days and C 6 days before the completion of the work. In what time is the work finished?

Solution:



Work done by (A+C) in 1 day = $6+2=8$ unit

\therefore Work done by (A+C) in 2 day = $8 \times 2 = 16$ unit.

Remaining work = $96 - 16 = 80$ unit.

Work done by A in 6 day = $6 \times 6 = 36$ unit

Remaining work = $80 - 36 = 44$ unit.

Time taken by (A+B+C) = $44/11$

= 4 days

Total days = $2 + 6 + 4 = 12$ days Ans.

Method-2

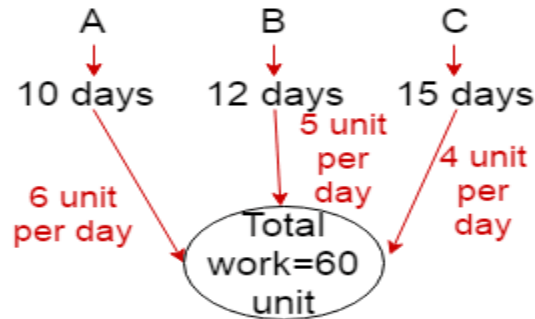
Let the whole work be completed in x days

According to the question,

$$\begin{aligned} \frac{x}{16} + \frac{x-8}{32} + \frac{x-6}{48} &= 1 \\ \frac{6x+3(x-8)+2(x-6)}{96} &= 1 \\ 6x+3x-24+2x-12 &= 96 \\ 11x-36 &= 96 \\ x &= 12 \text{ days Ans.} \end{aligned}$$

A, B and C can complete a work in 10, 12 and 15 days respectively. A left the work 5 days before the work was completed and B left 2 days after A had left. Number of days required to complete the whole work is:

Solution:



Work done by (B+C) in 1 day = $5+4=9$ unit

\therefore Work done by (B+C) in 2 day = $9 \times 2 = 18$ unit.

Remaining work = $60 - 18 = 42$ unit

now,

Work done by C in 3 day = $4 \times 3 = 12$ unit

Remaining work = $42 - 12 = 30$ unit

Time taken by (A+B+C) = $30/15$

= 2 days

Total days = $2 + 3 + 2 = 7$ days Ans.

Method-2

Govt Exams ? Crack with Us...

Let the whole work be completed in x days

According to the question,

$$\begin{aligned} \frac{x-5}{10} + \frac{x-3}{12} + \frac{x}{15} &= 1 \\ \frac{6(x-5) + 5(x-3) + 4x}{60} &= 1 \\ 6x - 30 + 5x - 15 + 4x &= 60 \\ 15x - 45 &= 60 \\ x &= 7 \text{ days Ans.} \end{aligned}$$

2 men and 3 boys can complete a work in 10 days, while 3 men and 2 boys can complete in 8 days. In how many days can 2 men and 1 boy complete the same work?

Solution:

Let 1 man = m unit work per day

1 women= w unit work per day

Now,

$$\begin{aligned} \text{Eqn-1} \quad (2m+3b) \times 10 &= \text{Eqn-2} \quad (3m+2b) \times 8 \\ 20m+30b &= 24m+16b \\ \frac{m}{b} &= \frac{7}{2} \end{aligned}$$

Note:[1 man=7 unit work per day 1 boy=2 unit work per day]

Put the value of m and b in eqn-1

$$=(2 \times 7 + 3 \times 2) \times 10$$

=200 unit i.e total work

Now,

work done by 2 men and 1 boy in 1 day

$$=2m+1b=(20 \times 3 + 6 \times 2)$$

$$=16 \text{ unit}$$

so, total time taken by 2 men and 1 boy= $200/16$

$$=12 \frac{1}{2} \text{ days Ans.}$$

10 man and 15 women together can complete a piece of work in 6 days. A man alone can complete the work in 100 days. In how many days can one woman alone complete the work?

Solution:

Let 1 man= m unit work per day

1 women= w unit work per day

$$\begin{aligned} \text{Eqn-1} \quad (10m+15w) \times 6 &= \text{Eqn-2} \quad (1m) \times 100 \\ 60m+90w &= 100m \\ \frac{w}{m} &= \frac{4}{9} \end{aligned}$$

Note:[1 man=9 unit work per day 1 woman=4 unit work per day]

Put the value of m in eqn-2

$$=100 \times 9$$

=900 unit i.e total work

Now,

1 woman=4 unit work per day

so, the total time taken by 1 woman= $900/4$

$$=225 \text{ days Ans.}$$

If 8 men or 12 boys can do a piece of work in 16 days, the number of days required to complete the work by 20 men and 6 boys is.

Solution:

Let 1 man= m unit work per day

1 boy= b unit work per day

Now,

**EXAMS
CART**

Eqn-1

Eqn-2

$$(8m) \times \cancel{16} = (12b) \times \cancel{16}$$

Govt Exa $\frac{m}{b} = \frac{12}{8} = \frac{3}{2}$:k with Us...

Note:[1 man=3 unit work per day 1 boy=2 unit work per day]

Put the value of m in eqn-1

$$=(8 \times 3) \times 16$$

=384 i.e total work

Now,

work done by 20 men and 6 boy in 1 day

$$=20m+6b=(20 \times 3+6 \times 2)$$

$$=72 \text{ unit}$$

so, the total time taken by 20 men and 6 boy= $384/72$

= $5\frac{1}{3}$ days Ans.

If 4 men or 6 women can do a piece of work in 12 days working 7 hours a day; how many days will it take to complete a work twice as large with 10 men and 3 women working together 8 hours a day?

Solution:

Let 1 man= m unit work per day

1 boy= b unit work per day

Now,

Eqn-1 Eqn-2

$$(4m) \times 84 = (6w) \times 84$$

$$\frac{m}{w} = \frac{6}{4} = \frac{3}{2}$$

Note: [1 man=3 unit work per day 1 women=2 unit work per day]

Put the value of m in eqn-1

$$=(4 \times 3) \times 84$$

$$=1008 \text{ unit i.e total work}$$

Now,

work done by 10 men and 3 women in 1 day

$$=10m+3w=(10 \times 3+3 \times 2)$$

$$=36 \text{ unit}$$

so, the total time taken by 10 men and 3 women= $(2 \times 1008)/(36 \times 8)$

=7 days Ans.

If 1 men or 2 women or 3 boys can do a piece of work in 44 days, then the same piece of work will be done by 1 man, 1 woman and 1 boy in.

Solution:

Let 1 men= m unit work per day

1 woman= w unit work per day

1 boy= b unit work per day

Eqn-1

Eqn-2

Eqn-3

$$(1m) \times 44 = (2w) \times 44 = (3b) \times 44$$

$$1m = 2w = 3b = 6 \text{ (Note L.C.M of 1,2,3=6)}$$

$$1m=6$$

$$m=6 \text{ i.e 1 man 6 unit work per day}$$

$$2w=6$$

$$w=3 \text{ i.e 1 woman 3 unit work per day}$$

$$3b=6$$

$$b=2 \text{ i.e 1 boy 2 unit work per day}$$

put the value of m in eqn-1

$$=(1 \times 6) \times 44$$

$$=264 \text{ unit i.e total work}$$

work done by 1 man, 1 women and 1 boy in 1 day

$$=1m+1w+1b=(1 \times 6+1 \times 3+1 \times 2)$$

$$=11 \text{ unit}$$

so, the total time taken by 1 man, 1 women and 1 boy= $264/11$

$$=24 \text{ days Ans.}$$

Govt Exams ? Crack with Us...
Some staff promised to do a job in 18 days, but 6 of them went on leave. So the remaining men took 20 days to complete the job. How many men were there originally?

Solution:

Let number of men originally= x

$$\therefore M1D1 = M2D2$$

$$\Rightarrow x \times 18 = (x-6) \times 20$$

$$\Rightarrow 2x = -144$$

$$\therefore x=60 \text{ men Ans.}$$

A certain number of men can do a piece of work in 40 days. If there were 45 men more the work could have been finished in 25 days. Find the original number of men employed in the work.

Solution:

Let number of men originally= x

$$\therefore M_1D_1 = M_2D_2$$

$$\Rightarrow x \times 40 = (x+45) \times 25$$

$$\Rightarrow 15x = 1125$$

$$\therefore x = 75 \text{ men Ans.}$$

A certain number of men can do a work in 40 days. If there were 8 men more, it could be finished in 10 days less. How many men were there initially?

Solution:

Let number of men originally= x

$$\therefore M_1D_1 = M_2D_2$$

$$\Rightarrow x \times 40 = (x+8) \times 30$$

$$\Rightarrow 10x = 240$$

$$\therefore x = 24 \text{ men Ans.}$$

A company employed 200 workers to complete a certain work in 150 days. If only one-fourth of the work has been done in 50 days, then in order to complete the whole work in time, the number of additional workers to be employed was.

Solution:

Let total work=1

200 workers will do $\frac{1}{4}$ work in 50 days

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

$$\text{Remaining time} = 150 - 50 = 100 \text{ days}$$

Let number of additional workers= x

Now,

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

$$\Rightarrow \frac{200 \times 50}{\frac{1}{4}} = \frac{(200+x) \times 100}{\frac{3}{4}}$$

$x=100$ Ans.

A contractor was engaged to construct a road in 16 days. After working for 12 days with 20 labours it was found that only 5/8th of the road had been constructed. To complete the work in stipulated time the number of extra labours required is.

Solution:

Let total work=1

20 workers will do 5/8 work in 12 days

Remaining work=1-(5/8)=3/8

Remaining time=16-12=4 days

Let number of extra labours=x

Now,

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

$$\Rightarrow \frac{20 \times 12}{\frac{5}{8}} = \frac{(20+x) \times 4}{\frac{3}{8}}$$

$$\Rightarrow 20 \times 12 \times 3 = (20+x) \times 4 \times 5$$

$\therefore x= 16$ labours Ans.

Mohan completes 2/3 of his work in 10 days. Time he will take to complete 3/5 of the same work is.

Solution:

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

$$\Rightarrow \frac{10}{\frac{2}{3}} = \frac{D_2}{\frac{3}{5}}$$

D2 = 9 days Ans.

15 men take 20 days to complete a job working 8 hours a day. The number of hours a day should 20 men take to complete the job in 12 days.

Solution:

$$\begin{aligned} M_1 D_1 T_1 &= M_2 D_2 T_2 \\ 15 \times 20 \times 8 &= 20 \times 12 \times T_2 \\ T_2 &= 10 \text{ hours Ans.} \end{aligned}$$

If 90 men can do a certain job in 16 days, working 12 hours per day, then the part of that work which can be completed by 70 men in 24 days, working 8 hours per day is.

Solution:

$$\begin{aligned} \frac{M_1 D_1 T_1}{W_1} &= \frac{M_2 D_2 T_2}{W_2} \\ \Rightarrow \frac{90 \times 16 \times 12}{1} &= \frac{70 \times 24 \times 8}{W_2} \\ W_2 &= \frac{7}{9} \text{ parts Ans.} \end{aligned}$$

8 workers can build a wall 18m long, 2m broad and 12m high in 10 days, working 9 hours a day. Find how many workers will be able to build a wall 32m long, 3m broad and 9m high in 8 days working 6 hours a day.

Solution:

$$\begin{aligned} \text{Govt Ex } \frac{M_1 D_1 T_1}{W_1} &= \frac{M_2 D_2 T_2}{W_2} \text{ with Us...} \\ \Rightarrow \frac{8 \times 10 \times 9}{18 \times 2 \times 12} &= \frac{M_2 \times 8 \times 6}{32 \times 3 \times 9} \\ M_2 &= 30 \text{ Ans.} \end{aligned}$$