TIME AND WORK

$$A \to n \to \frac{1}{5} - \frac{1}{5}$$

$$A \to 1 \to \frac{1}{5}$$

$$\to 1 \text{ day's} \boxed{\frac{1}{5}} \to 5 \leftarrow$$

Worker A takes 8 hours to do a job. Worker B takes 10 hours to do the same job. How long should it take both A and B, working together but independently, to do the same job? (IGNOU, 2003)

As per the given question ⑤

A takes 8 hours to do a job

∴ The one hour's work of A = $\frac{1}{8}$ kha.

B takes 10 hours to do the same job

∴ The one hour's work of B = $\frac{1}{10}$ hr

As per question we found the total timing of A & B 1hrs. work

$$\Rightarrow A + B = \frac{1}{A} + \frac{1}{B} = \frac{1}{8} + \frac{1}{10} = \frac{5+4}{40}$$

$$\Rightarrow \frac{9}{40} \text{ hr}$$

∴ The total work of A & B $\left(\frac{1}{8} + \frac{1}{10}\right)$

$$\Rightarrow \frac{40}{9} \text{hr} = 4\frac{4}{9} = 4\frac{4}{9} \text{ hr}$$

A, B and C can complete a piece of work in 24, 6 and 12 days respectively. Working together, they will complete the same work in : (C.B.I. 2003)

$$\boxed{\frac{1}{24} + \frac{1}{6} + \frac{1}{12}}$$

As per the given question

A can complete a piece of work 24 days.

∴ A's one day's work = $\frac{1}{24}$ days.

B can complete a piece of work in 6 days

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

C can complete a piece of work in 12 days

∴ C's one day's work = $\frac{1}{12}$ day

As per the question we found the

'Complete 1 day's work' A, B & C.

$\rightarrow$ A + B + C = $\frac{1}{A} + \frac{1}{B} + \frac{1}{C}$ = $\frac{1}{24} + \frac{1}{6} + \frac{1}{12}$

$\Rightarrow$ $\frac{1 + 4 + 2}{24}$ = $\frac{7}{24}$

$\therefore$ The A, B, C's complete work in $\frac{24}{7}$ days

$\Rightarrow$ $3\frac{3}{7}$ days

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 ? (S.S.C. 2004)

$\frac{1}{3} - \frac{1}{5} =$

As per the given question

A man can do a piece of work in 5 days

$\therefore$ The 1 day's work of man = $\frac{1}{5}$ days

As per the question, with the help of his son he Complete the work within 3 days.

$\therefore$ we found the Son's work in 1 day's

$\Rightarrow$ $\frac{1}{3} - \frac{1}{5}$ = $\frac{5-3}{15}$ = $\frac{2}{15}$

$\therefore$ The Son's The complete work of his son alone $\frac{15}{2}$ = $7\frac{1}{2}$ days.

Ronald and Elan are working on an assignment. Ronald takes 6 hours to type 32 pages on a computer, while Elan takes 5 hours to type 40 pages. How much time will they take, working together on two different computers to type an assignment of 110 pages ?

As per the given question

Roland takes 6 hours to type 32 pages

Number of pages typed in 1 hour by Roland is = $\frac{32}{6}$ = $\frac{16}{3}$ $\frac{16}{3}$ per

Elan takes 5 hours to type 40 pages

Number of pages typed in 1 hour by Elan is = $\frac{40}{5}$ = 8 per

Number of pages typed in 1 hour by

Number of pages types in 1 hour by
Roland and Elan $= \frac{16}{3} + 8$

$\frac{16 + 24}{3} = \frac{40}{3}$ p

∴ The complete tommitypy Roh & Eu $\frac{3}{40}$

∴ Time takes to by both to type of 110

pages

$\Rightarrow 110 \times \frac{3}{40} = \frac{33}{4}$ hr $\Rightarrow 8\frac{1}{4}$ hr

∴ The time taken by Roland & Elan to

type the 110 pages is $8\frac{1}{4}$ hour

P can complete a work in 12 days working 8 hours a day. Q can complete the same work in 8 days working 10 hours a day. If both P and Q work together, working 8 hours a day, in how many days can they complete the work ?   (Bank P.O. 1999)

$8-\frac{1}{4}$

As per the given question

P can comple a work in 12 days working

8 hours a day

P can comple the work in $= 12 \times 8 = 96$ hour

Q can comple the same work in 8 days when

in 10 hours per day

Q can complete the work in $= 10 \times 8 = $

$\Rightarrow 80$ hr

∴ P's 1 hours work $= \frac{1}{96}$

∴ Q's 1 hour work $= \frac{1}{80}$ hr

∴ (P + Q)'s 1 day work $= \frac{1}{96} + \frac{1}{80}$

$\Rightarrow \frac{11}{480}$ hr

P + Q's comple work is $\frac{480}{11}$ days

hour

As per question if P + Q work 8 hour

per day the we found the comp work

$\Rightarrow$ Number of days of 8 hours

each.

$\Rightarrow \frac{480}{11} \times \frac{1}{8} = \frac{60}{11}$ day $\Rightarrow 5\frac{5}{11}$ day

∴ The A & B can comple the work in $5\frac{5}{11}$ day

if they work togun in 8 hour day

A is 30% more efficient than B. How much time will they, working together, take to complete a job which A alone could have done in 23 days ?

As per the given question

A is 30% more efficient than B

∴ The ratio of $A : B = \dfrac{A}{B} = \dfrac{130}{100}$

$\Rightarrow \dfrac{13}{10}$

100
30
130 %

Let B takes x days do the work

∴ $A : B = 13 : 10 :: 23 : x$ ⟹ $\dfrac{13}{10}$ $\dfrac{23}{x}$

$\Rightarrow x = \dfrac{23 \times 13}{10}$

$\Rightarrow x = \dfrac{299}{10}$

∴ B takes $\dfrac{299}{10}$ days

∴ A's 1 day's work $= \dfrac{1}{23}$

B's 1 day's work $= \dfrac{10}{299}$

∴ We found the together work work of 1 day's work

$\Rightarrow A + B = \dfrac{1}{A} + \dfrac{1}{B} = \dfrac{1}{23} + \dfrac{10}{299} = \dfrac{13+10}{299}$

$= \dfrac{23}{299}$

$\Rightarrow \dfrac{1}{13}$

worry for $\dfrac{1}{13}$

They complete the work in 13 days

In the given question

A can finish a work in 18 days

∴ A's 1 day's work is $\dfrac{1}{18}$ days

B can do the same work in 15 days

∴ B's 1 day's work is $\dfrac{1}{15}$ days.

∴ B's 10 day's work is $\dfrac{1}{15} \times \dfrac{\overset{2}{10}}{1} = \dfrac{2}{3}$

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

$\Rightarrow \dfrac{3-2}{3} = \dfrac{1}{3}$

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ϕ ∴ The remaining work done by A

is $\cancel{18} \times \frac{1}{3} = 6$

∴ The remaining work done by A in
6 days.

As per the given question

X can do p a piece of work in 20days
∴ 1 days work of X = $\frac{1}{20}$ days.
Y can do a piece of work in 12 days.
∴ 1 day's work of Y = $\frac{1}{12}$ days.

∴ we found the X's 4 days work

$\Rightarrow \frac{1}{\cancel{20}} \times 4 = \frac{1}{5}$

Remaining work = $1 - \frac{1}{5} = \frac{5-1}{5}$

$= \frac{4}{5}$

Now we found the 1 day's work of
A ∧ B work together

$\Rightarrow \frac{1}{A} + \frac{1}{B} = \frac{1}{20} \quad \frac{1}{20} + \frac{1}{12} = \frac{3+5}{60}$

$= \frac{8}{60} \quad \frac{42}{}$

$= \frac{2}{15}$

They complete the work work together in $\frac{15}{2}$ of

So $\frac{4}{5}$ of work done by X ∧ y

$\Rightarrow \frac{15}{2} \times \quad \frac{\cancel{15}}{\cancel{2}} \times \frac{\cancel{4}}{\cancel{5}} = 6$

∴ Hence the total time taken by A ∧ B

$\Rightarrow 6 + 4 = 10$ days——

As per the given question

A, B ∧ C together earn of Rs. 300 per day
A ∧ C together earn Rs 188

A & C togeth earn Rs 188

& B & C tign earn Rs 152.

∴ A's daily income is 300 - 152 = 148 (148)

∴ B's daily income is 300 - 188 = 112

(A+B+C - A+C)

Now we found the C's daily income

A+B+C - (A+B)

⇒ 300 - (148 + 112)

= 300 - 260

⇒ 840

∴ The daily salary of C is Rs. 40/-

If 6 men and 8 boys can do a piece of work in 10 days while 26 men and 48 boys can do the same in 2 days, the time taken by 15 men and 20 boys in doing the same type of work will be :

(a) 4 days   (b) 5 days   (S.S.C. 1999)

As per the given question

6 men & 8 boys, can do a piece of work = 10 days

Let the a men's 1 day's work is x

& the boy's 1 day's work is y

⇒ 6x + 8y =

⇒ 1 day's work of 6 men & 8 boys

⇒ $6x + 8y = \frac{1}{10}$ days —(i)

1 day's work of 26m & 48 boys

⇒ $26x + 48y = \frac{1}{2}$ —(ii)

Solving the eqn (i) & (ii)

⇒ $6x + 8y = \frac{1}{10}$

⇒ $26x + 48y = \frac{1}{2}$

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

∴ we found the 1 day's work of 15m & 20 boys

∴ we found the 1 day's work of 15mn & 20 boys

→ $15 \times \frac{1}{100} + 20 \times \frac{1}{200}$ → $\frac{15}{100} + \frac{20}{200}$

→ $\frac{1}{4}$ ⊃ k

∴ The complete work of 15mn & 20 boys in 4 days.