

\* Warm up practice Time and Work (Sheet Solutions).

12 → 15 → 20 → 12

60

$$\text{Q. } \underline{\text{L801A}} \quad M + S = 5 + 4 = 9 = \frac{60}{9} = 6 \frac{6}{9} \text{ days.}$$

$$\text{Q.2 Soln} \quad M + S + (-R) = 5 + 4 + (-3) = 6 = \frac{60}{6} = 10 \text{ days}$$

$$\begin{array}{l}
 \text{Q3.81^n} \\
 M + S = 9 \text{ unit} \rightarrow 2 \text{ days} \\
 \frac{S}{5} \quad \underline{\times 6} \quad \frac{\cancel{S}}{5} \quad \underline{\times 6} \\
 \text{M start} \rightarrow \frac{54 \text{ unit}}{+ 5 \text{ unit}} - \frac{12 \text{ day}}{- 13 \text{ day}} \\
 \qquad\qquad\qquad \underline{59 \text{ unit}} \quad \underline{13 \text{ day}} \\
 \text{S come} \rightarrow \frac{+ 1 \text{ unit}}{60 \text{ unit}} \quad \underline{13 \frac{1}{4} \text{ days (Ans)}}
 \end{array}$$

$$\text{equ soln} \quad M + S + (-R) = 9 - 3 \rightarrow 3 \text{ days}$$

6 unit  $\rightarrow$  3 days

$\frac{x}{10}$ 60 unit-	$\frac{x}{10}$ 30 days
----------------------------	---------------------------

Ans

$$0.5 \text{ def } \begin{array}{l} \text{Bunne} \rightarrow 10 \\ \text{Kaffee} \rightarrow 12 \\ \text{Romi} \rightarrow 15 \end{array} \begin{array}{c} \nearrow 6 \\ \searrow 5 \\ \swarrow 4 \end{array} \begin{array}{l} 6 \\ 0 \\ 60 \end{array} \quad \text{Amount} = 1500$$

$$B : C : R = 6 : 5 : 4$$

Total =  $6+5+4 = 15$

$$\text{Gaffer's Share} = \frac{5}{15} \times 1500$$

$$= 500 \approx 400$$

$$\text{Q.6 soln} \quad A \rightarrow 9 \quad B \rightarrow 12 \quad \frac{9}{3} = 3 \text{ units}$$

$$A+B = 4+3 = 7 \text{ unit} \rightarrow 2 \text{ days} \\ \times 5 \quad \times 5 \\ 35 \text{ unit} \quad 10 \text{ days}$$

A's beginning  $\rightarrow \frac{1}{36} \text{ unit} \rightarrow 10 \frac{1}{4} \text{ days Ans}$

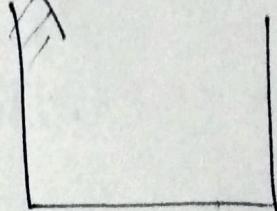
Q.7 soln

$$A \rightarrow 10 \quad B \rightarrow 12 \quad C \rightarrow 15 \quad \frac{6}{4} = 6 \text{ units}$$

$$A \rightarrow 10 \quad B \rightarrow 12 \quad C \rightarrow 15 \quad \frac{6}{4} = 6 \text{ units}$$

$$\cancel{A} \rightarrow 9 \text{ units} \rightarrow 9 \times 2 = 18 \text{ units}$$

$$\text{Remaining work} = 60 - 18 = 42 \text{ units}$$



$$B+C = \frac{48}{9} = 5 \frac{3}{9} = 5 \text{ hr } 20 \text{ min}$$

9 a.m start + 5hr 20min = 2.20 p.m. Ans

Q.8 soln

$$A \rightarrow 10 \quad B \rightarrow 20 \quad C \rightarrow 30 \quad \frac{6}{2} = 6 \text{ units} \quad A+B+C = 6+3+2 = 11$$

$$\text{Together} = \frac{60}{11} = 5 \frac{5}{11} \text{ days Ans} \\ \text{or} \quad 5.45 \text{ days}$$

Q.9 soln

$$M \rightarrow 5 \quad M+S \rightarrow 3 \quad \frac{3}{5} = 15$$

$$M=3 \\ M+S=5 \\ 3+S=5$$

$$\text{Son alone} = \frac{15}{2} \text{ or } 7.5 \text{ days}$$

Ans

\* Warm Up Set 02

$$\text{Q1 soln} \quad R - 12 \quad S - 8. \quad \begin{array}{r} 12 \\ \times 8 \\ \hline 96 \end{array}$$

$$\begin{array}{r} 18 \\ \times 8 \\ \hline 144 \end{array} \quad 6 \quad \begin{array}{r} 12 \\ \times 5 \\ \hline 60 \end{array}$$

$$R + S = 12 + 8 = 20$$

$$\text{Together} = \frac{144}{20} = 7 \frac{4}{20} \text{ days or } 7.2 \text{ days}$$

Q2 soln

$$\begin{array}{l} A = 3 \\ B = 5 \\ C = 10 \end{array} \quad \begin{array}{r} 6 \\ \times 5 \\ \hline 30 \end{array} \quad \begin{array}{r} 3 \\ \times 10 \\ \hline 30 \end{array}$$

$$A + B + C = 10 + 6 + 3 = 19.$$

$$\text{Together} = \frac{30}{19} = 1 \frac{11}{19} \text{ day or } 1.5 \text{ days}$$

Q3 soln

$$P_1 + P_2 \rightarrow 3 \quad \begin{array}{r} 4 \\ \times 3 \\ \hline 12 \end{array}$$

$$P_1 \rightarrow 12$$

$$P_1 \rightarrow 1.$$

$$P_1 + P_2 = 4$$

$$P_2 \text{ alone} = \frac{12}{3} = 4 \text{ days}$$

$$P_2 = 3.$$

Aus

Q4 soln

$$\begin{array}{l} A + B = 6 \\ B + C = 10 \\ A + B + C = 15 \end{array} \quad \begin{array}{r} 40 \\ \times 6 \\ \hline 240 \end{array} \quad \begin{array}{r} 60 \\ \times 10 \\ \hline 600 \end{array} \quad \begin{array}{r} 15 \\ \times 15 \\ \hline 225 \end{array}$$

$$A + B + C = 45 \text{ days}$$

$$A + B = 10$$

$$B + C = 6$$

$$A + B + C = 15$$

$$A = 15 - 6 = 9$$

$$B = 1$$

$$C = 5.$$

$$A \text{ and } C = 9 + 5 = 14$$

$$= \frac{60}{14} = 4 \frac{4}{14} \text{ d}$$

$$\text{Ans} = 4 \frac{2}{7} \text{ days}$$



Q.8 Soln

$$\begin{array}{rcl}
 P = 20 & \xrightarrow{3} & P = 3 \\
 Q = 30 & \xrightarrow{2} & Q = 2 \\
 R = 60 & \xrightarrow{1} & R = 1 \\
 P + Q + R = 6 & & - 3rd day \\
 P + Q + R + S = 12 & & 
 \end{array}$$

$$\begin{array}{rcl}
 12 \text{ unit} & \longrightarrow & 3 \text{ days} \\
 \times 5 & & \times 5 \\
 \hline
 60 \text{ unit} & & 15 \text{ days} \quad \underline{\text{Ans}}
 \end{array}$$

Q.9 Soln

$$\begin{array}{rcl}
 A = 8 & \xrightarrow{18} & 144 \\
 B = 18 & \xrightarrow{8} & 
 \end{array}$$

$$\frac{8}{18} \text{ per day}$$

$$\begin{array}{rcl}
 A + B = 18 + 8 = 26 & & \frac{26}{130} \text{ per day} \\
 26 \text{ unit} & \longrightarrow & 2 \text{ days} \\
 \times 5 & & \times 5 \\
 \hline
 130 \text{ unit} & & 10 \text{ days}
 \end{array}$$

A start

$$\begin{array}{rcl}
 \underline{+ 14} & & \\
 \hline
 144 \text{ unit} & & 10 - \frac{14}{18} \text{ days}
 \end{array}$$

$$\text{or } 10 - \frac{7}{9} \text{ days} \quad \underline{\text{Ans}}$$

Q.10 Soln

$$\begin{array}{rcl}
 A + B = 30 & \xrightarrow{4} & \\
 B + C = 24 & \xrightarrow{5} & 120 \\
 C + A = 20 & \xrightarrow{6} & \frac{24}{120} \text{ per day}
 \end{array}$$

$$A + B + C = 6 + 4 + 5 = 15 \quad \text{by solving } \textcircled{1} \text{ to } \textcircled{3}$$

$$\textcircled{1} A + B = 4 - \textcircled{1} \quad A + B = 4$$

$$\textcircled{2} B + C = 5 - \textcircled{2} \quad B + C = 5$$

$$\textcircled{3} C + A = 6 - \textcircled{3} \quad \hline$$

$$A - C = -1 \rightarrow \textcircled{4}$$

By solving ③ & ④

$$A - C = -1$$

$$C + A = 6$$

$$2A = 5$$

$$A = \frac{5}{2}$$

$$B = 6 - \frac{5}{2} = \frac{3}{2}$$

$$C = 6 - \frac{5}{2} = \frac{7}{2}$$

work for 10 days

$$A + B + C = \frac{5}{2} + \frac{3}{2} + \frac{7}{2} = \frac{15}{2} \times 10 = 75$$

$$\text{Remaining work} = 120 - 75 = 45$$

$$A = \frac{45}{\frac{5}{2}} = \frac{45}{\frac{5}{2}} \times 2 = 18 \text{ days}$$

$$2(A+B+C) = 15$$

$$A+B+C = \frac{15}{2} \text{ x 10}$$

$$10 \text{ day's} = \frac{15}{2} \times 10 = 75$$

$$\text{Remaining} = 120 - 75 = 45$$

$$A \text{ 's work} = \frac{45}{\frac{45}{2}}$$

$$\text{Ans} \quad = \frac{45}{5} \times 2 = 18 \text{ days}$$

$$A+B+C = \frac{15}{2}$$

$$\therefore B+C = 5$$

$$A = \frac{15}{2} - 5$$

$$A = \frac{5}{2}$$

Type - W/T before completion the work

a. 11 soln

$$\begin{array}{r} A - 74 \\ B - 21 \end{array}$$

$$\begin{array}{r} 3 \\ 2 \end{array}$$

$$\begin{array}{r} 42 \\ 7 \end{array}$$

$$A + B = 3 + 2 = 7 \quad = \frac{42}{7} = 6$$

3 days before ( $6 - 3 = 3$  day)

$$B \text{ 's} = \frac{42}{3} = 14$$

$$A \text{ 's 1 day work} = \frac{1}{14}$$

$$B \text{ 's 1 day work} = \frac{1}{21}$$

A & B one day work ..

$$\frac{1}{14} + \frac{1}{21} = \frac{5}{42}$$

Let the work completed in  $x$  days

A's work + S work = 1

$$(x-3) \times \frac{1}{14} + \frac{1}{21} = 1$$

$$\frac{3(x-3)+2}{42} = 1$$

$$3x - 9 + 2 = 42$$

$$3x = 42 + 9$$

$$x = \frac{51}{3} = 17$$

Q. 11  
Total

$$\begin{array}{rcl} \text{Aman} & = & 14 \\ & & \swarrow 3 \\ \text{Sunecta} & = & 21 \end{array}$$

$$\text{Sunecta} = \underline{3 \times 2} = 6.$$

$$\text{Remaining} = 42 - 6 = 36. (A+S)$$

$$= \frac{36}{5} = 7 \frac{1}{5} \text{ day or } 7.2$$

$$\begin{array}{l} \text{Total days} \\ \hline \underline{\underline{25}} \end{array} \quad 7 \frac{1}{5} + 3 = 10 \frac{1}{5} \text{ or } 10.2 \text{ days, Ans}$$

Q. 12 Total

$$\begin{array}{rcl} A & = & 10 \\ B & = & 12 \\ C & = & 15 \end{array} \quad \begin{array}{l} \text{B left 3 days before completion} \\ \swarrow 5 \end{array}$$

$$A + \cancel{B} = 10 + 5 = 15 = 10 \times 3 = 30.$$

$$\text{Remaining} = 60 - 30 = \cancel{30} 30 (A+B+C)$$

$$= \frac{30}{6+5+4} = \frac{30}{15} = 2 \text{ days}$$

Total no. of days to complete work is  $2 + 3 = 5$  days.

Type - Chain Rule.

$$\text{Q1 soln} \quad \frac{M_1 T_1}{W_1} = \frac{M_2 T_2}{W_2} \quad (\text{work same})$$

$$30 \times 20 = 12 \times \text{Hour.}$$

$$\text{Hour} = \frac{30 \times 20}{12} = 50 \text{ hrs.}$$

$$\begin{aligned} & \frac{3}{4} \propto \frac{2}{4} \\ & \frac{3}{4} = \frac{4}{M} \\ & M = \frac{16}{3} \end{aligned}$$

~~Q2 soln~~

$$3 \times 2 \times 4 = 4 \times \text{Hour} \times 1.$$

$$\text{Hour} = 6 \text{ hours.}$$

Type - Direct Proportion

~~Q3 soln~~

$$\cancel{30 \times 56 \times 5} = \cancel{40 \times \text{length} \times 8}.$$

$$\text{length} = \frac{14 \times 5}{14 \times 5} = 7.0$$

$$(M_1 \times T_1) / W_1 = (M_2 \times T_2) / W_2$$

$M = \text{Men}$   
 $T = \text{Time}$   
 $W = \text{work}$

$$\frac{30 \times 5}{56} = \frac{40 \times 8}{W_2}$$

$$W_2 = \frac{56 \times 4}{5} = 11.2 \times 4 = \frac{44}{5} \approx 8.8$$

Or.

$$\frac{30 \times 5}{56} = \frac{40 \times 3}{W_2}$$

$$W_2 = \frac{30 \times 3 \times 56}{30 \times 5}$$

$$\text{Ans} \dots = \frac{224}{5} = 44.8 \text{ m}$$

Ques 801

$$\frac{(M_1 \times T_1)}{W_1} = \frac{(M_2 \times T_2)}{W_2}$$

$$\frac{8 \times 12}{40} = \frac{30 \times 20}{W_2}$$

$$W_2 = \frac{\frac{5}{80 \times 20 \times 40}}{\frac{12}{8 \times 12}} = 61$$

Type - Combination of Direct and Indirect Proportion Ans

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

$$\frac{3 \times 3}{3} = \frac{1 \times D}{1} \quad D = 3 \text{ days.}$$

Q. 6101

$$\frac{20 \times 20}{20} = \frac{1 \times D}{1}, \quad D = 20 \text{ days.}$$

Q. 7801

$$\frac{10^2 \times 10}{500} = \frac{M \times 2}{600}$$

$$M = 10.$$

Q. 8801

$$\frac{12 \times 16 \times 18}{24000} = \frac{24 \times 11 \times 35}{26000}$$

$$H = \frac{16 \times 18}{24 \times 2} = 6 \text{ hours.}$$

Ques 801

Ques 801, 11, 12, 13  
Ans

$$\frac{12 \times 16 \times 18}{24000} = \frac{24 \times 6 \times 35}{W}$$

$$W = 36000. \quad \underline{\text{Ans}}$$

Q12 soln

$$M \times 180 = M_1 D_1 H_1 + M_2 D_2 H_2$$

$$\frac{100 \times 100}{100} = \frac{M_1 D_1}{D_1} \quad D = 100 \text{ days}$$

Type - Contractor Underrote work.

Q. 11 soln

$$\frac{M_1 D_1 H_1}{W_1} = \frac{M_2 D_2 H_2}{W_2}$$

$$\frac{40 \times 25 \times 8}{14} = \frac{M_2 \times 40 \times 15}{374}$$

$$3 \times 8 \times 2 \times 35 = 4 \times M_2$$

$$M_2 = 48 \text{ men.}$$

40

↓ 8  
48

Ans = P

work

$\frac{1}{4}$  = complete

$2 \cdot \frac{1}{4} = \frac{2}{4} \text{ left}$

Total = 60 da.

60 - 20 = 40 d.

Q. 12 soln

$$\frac{M_1 D_1 H_1}{W_1} = \frac{M_2 D_2 H_2}{W_2}$$

$$\frac{20 \times 60 \times 6}{\frac{1}{2}} = \frac{M_2 \times 20 \times 4}{\frac{1}{2}}$$

$$15 \times 6 \times \frac{1}{2} \times 1 = 2M_2$$

$$M_2 = 90 \text{ men.}$$

20

↓  
90

Ans = P

work

$\frac{1}{2}$  = complete

$1 - \frac{1}{2} = \frac{1}{2} \text{ left}$

Total = 80 da.

80 - 60 = 20 d.

Q. 13 soln

$$\frac{M_1 D_1 H_1}{W_1} = \frac{M_2 D_2 H_2}{W_2}$$

$$\frac{20 \times 32}{\frac{1}{3}} = \frac{M \times 800}{\frac{2}{3}}$$

$$M = \frac{20 \times 32 \times \frac{4}{2}}{\frac{1}{3} \times 800}$$

$$= 40 \times 2$$

$$= 80 \times 32$$

$$= 16 \times 32$$

$$= 40 \times 8$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

$$= 320$$

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

$$\frac{20 \times 32}{\frac{2}{3}} = M_2 \times 8$$

$$M_2 = \frac{\frac{10}{20} \times 32^4}{8 \times \frac{2}{3}} = 40 \text{ men}$$

20 men  $\xrightarrow{\hspace{1cm}}$  40 men

+ 20 more men = Ay

Type - efficiency based.

$$20\% = \frac{3}{10}$$

$$\underline{\text{S.I. soln}} \quad A \quad B$$

$$M = 13 : 10$$

$$\frac{13}{23}$$

$$\text{Total work} = 13 \times 23 = 299$$

$$A+B \text{ together} = 23 = \frac{299}{23} = 13 \text{ days}$$

Ex 28 Q 11

T S.

$$25\% = \frac{1}{4} = \frac{5}{20}$$

$$M = 5 : 4$$

$$\text{Total work} = 4 \times 20 = 80$$

$$\text{Time} = \frac{80}{5} = 16 \text{ days. } \underline{\text{Ans}}$$

work  
still not  
1/3 work complete  
complete  
 $1 - \frac{1}{3} = \frac{2}{3}$  left  
Total: 40 days  
8 days before  
 $40 - 8 = 32 \text{ days}$

~~Q3~~ ~~801~~

A

B

$$10 \text{ days} = \frac{4}{10} \text{ day}$$

$$n = 10 : 14$$

$$\text{Total work} = 10 \times 21 = 210.$$

$$A+B \text{ together} = \frac{210}{24} = 8 \frac{18}{24} = 8 \frac{9}{12} = 8 \frac{3}{4} \text{ days.}$$

~~Q3~~ ~~801~~

A . B

A is twice as fast as B

$$n = 2 : 1$$

$$\text{Total work} = 1 \times 12 = 12$$

$$A+B \text{ together} = 3 = \frac{12}{3} = 4 \text{ days.}$$

~~Q4~~ ~~801~~

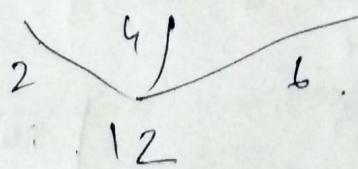
A . B . C

$$\begin{matrix} 20 & 10 \\ 12 & 6 \\ 6 & 3 \end{matrix}$$

Time

6 3 2

Efficiency  
(n)



$$\text{Total} = 12$$

$$A+B+C = 2^{\text{day}} \times 12 = 24.$$

$$A \text{ alone} = \frac{24}{2} = 12 \text{ days}$$

$$B \text{ alone} = \frac{24}{4} = 6 \text{ days}$$

$$C \text{ alone} = \frac{24}{6} = 4 \text{ days.}$$

or

Time

1  $\frac{1}{2}$

C

$$\text{total} = 6 \times 2 = 12$$

n

1 : 2

3

$$B \text{ alone} = \frac{12}{2} =$$

n

1 : 2 : 3

$$6 \text{ days Ans}$$

~~Q5 Soln~~

M S

2 : 1

work (together) =  $20 \times 3 = 60$

Now it's =  $\frac{60}{2} = 30$  days.

Type = pizza concept.

~~Q. 1 soln~~

$$A - \frac{\frac{3}{1}}{4} = 12$$

$$B - \frac{\frac{4}{1}}{6} = 24$$

$\begin{cases} 2 \\ 1 \end{cases}$

$$A + B = 3.$$

$$A : B$$

$$\text{Amount} = 180.$$

$$2 : 1$$

$$A's \text{ share} = \frac{2}{3} \times 180 = 120.$$

$$B's \text{ share} = \frac{1}{3} \times 180 = 60. \quad A_2$$

~~Q2 soln~~

A B

$$80\% \rightarrow \frac{8}{10}$$

$$1 - \frac{8}{10} = \frac{2}{10}.$$

$$\boxed{\begin{aligned} \frac{8}{10} \times 20 &= 16 \\ A + B &= \frac{2}{10} \times 3 \\ B &= \frac{6}{10} - 16 \end{aligned}}$$

$$A = \frac{40}{100} \times 20 = 8 \text{ day}.$$

$$A = \frac{20}{80} \times 100 = \frac{200}{8} = 25 \text{ days}$$

$$A + B = \frac{3}{20\%} \times 100 = 15 \text{ days.}$$

$$A \text{ 's } 1 \text{ day work} = \frac{3}{5} \\ A = 25 \\ A + B = 15$$

$$A = 3$$

$$A + B = 5$$

$$\textcircled{B = 2}$$

$$B \text{ alone} = \frac{15}{2} = 7\frac{1}{2}$$

and 37.5 days.

03 So 17

$X$  - 40 days 100% work

$X \rightarrow 8 \text{ days} \rightarrow 20\% \text{ work}$   
Remaining 80% work done by Y in 16 days.

$$X \text{'s } 1 \text{ day work} = \frac{8}{20} \times 100 = 40$$

$$Y \text{'s } 1 \text{ day work} = \frac{16}{80} \times 100 = 20$$

$$X = 40 \quad \frac{1}{2} \\ Y = 20 \quad \frac{1}{2} \\ X + Y = 60$$

$$X + Y = \frac{60}{3} = 13\frac{1}{3} \text{ Ans}$$

04 So 17

$A + B \rightarrow 30 \rightarrow 100\% \text{ work}$

$A + B \rightarrow 20 \frac{\text{days}}{\text{work done then B left}}$

$A \rightarrow 20 \frac{\text{days}}{\text{(Remaining work)}}$

$$30 \rightarrow 100 \\ 1 \rightarrow \frac{100}{30} \times 20 \\ = \frac{200}{3} \cdot \\ = 66\frac{2}{3}$$

$$A + B \rightarrow 20 \text{ day} \rightarrow \frac{200}{3} \%$$

Remaining  $100\% - \frac{200}{3}\% = \frac{100}{3}$ % work done by A in 20 days.

$$A + B \rightarrow \frac{20}{200} \times 3 \times 100 = 30 \quad \frac{2}{3} \\ A \rightarrow \frac{20}{200} \times 3 \times 100 = 60$$

$$A \rightarrow \frac{20}{200} \times 3 \times 100 = 60 \quad \frac{2}{3} \\ \downarrow \quad 60$$

$$A+B = 2$$

$$A = 1$$

$$B = 1$$

$$A \text{ alone} = \frac{60}{2} = 60 \text{ days.} \quad \text{Ans}$$

\* Concept - less than 1 days (efficiency difference)

$$\text{Q. 1 soln}$$

	P	Q
M =	3	1

$$\text{Time. } 1 \quad 3$$

$\underbrace{\qquad\qquad}_{2} \longrightarrow 60 \text{ days.}$

$$P \rightarrow 30 \times 3 = 90 \quad \begin{matrix} 3 \\ \searrow \end{matrix} \quad 90$$

$$Q \rightarrow 30 \times 1 = 30 \quad \begin{matrix} 3 \\ \searrow \end{matrix} \quad 90$$

$$P \text{ alone} = \frac{90}{1} = 90 \text{ days}$$

$$Q \text{ alone} = \frac{90}{3} = 30 \text{ days.} \quad \text{Ans}$$

$$\text{Q. 2 soln}$$

	A	B
M	2	1

$$\text{Time } 1 \quad 2$$

$\underbrace{\qquad\qquad}_{1} \longrightarrow 30 \text{ days}$

$$A = 1 \times 30 = 30 \quad \begin{matrix} 2 \\ \searrow \end{matrix}$$

$$B = 2 \times 30 = 60 \quad \begin{matrix} 1 \\ \searrow \end{matrix} \quad 60$$

$$A+B = 3 = \frac{60}{3} = 20 \text{ days.}$$

Ans

Q3 Soln Pavjan Aarti  
 $n = 2$   
 $T = \frac{1}{2} \rightarrow 30 \text{ days}$

$$\text{Pavjan} \rightarrow 1 \times 30 = 30 \quad \sum^2 \\ \text{Aarti} \rightarrow 2 \times 30 = 60 \quad \sum_2$$

$$\text{Pavjan + Aarti} = \frac{180}{3} = 60 \text{ days Ans}$$

Type - Men / women - "And".

Q.1

$$\text{And} = +$$

$$or \rightarrow = . u$$

$$(4M + 6W) \times 8 = (3M + 7W) \times 10^5$$

$$16M + 48W = 15M + 35W$$

$$M = 11W$$

$$\frac{M}{W} = \frac{11}{1} \quad \text{Ratio} \quad M : W \quad 11 : 1$$

$$(uM + 6W) \times 8 = 10W \times \text{Days}$$

$$(4 \times 11 + 6 \times 1) \times 8 = 10 \times 1 \times \text{Days}$$

$$\text{Days} = \frac{44 + \frac{5W \times 8}{1W}}{10} = 40 \text{ days Ans}$$

Q2 8.10

$$(2M + 3W) \times u = (3M + 2W) \times 3$$

$$8M + 12W = 9M + 6W$$

$$M + 6W = M$$

$$M : W$$

$$\frac{M}{W} = \frac{6}{1}$$

$$6 : 1$$

$$(2M + 3W) \times 10 = 10W \times \text{Days}$$

$$(2 \times 6 + 3 \times 1) \times 10 = 10 \times 1 \times \text{Days}$$

$$\text{Days} = \frac{15 \times 4}{10} = \frac{60}{10} = 6 \text{ days}$$

Ans.

$$10W \times 7 = 10C \times 14$$

$$10W = 140C$$

$$\frac{W}{C} = \frac{140}{70} = 2$$

W : C  
2 : 1

$$(5W + 10C) \times \text{Days} = 10W \times 7 + 10C \times 14$$

$$(5 \times 2 + 10 \times 1) \times \text{Days} = 10 \times 2 \times 7 + 10 \times 1 \times 14$$

$$\text{Days} = \frac{140 + 140}{20} = \frac{280}{20} = 14 \text{ days}$$

$$Q. 10W \times 7 = (5W + 10C) \times \text{Days}$$

$$10 \times 2 \times 7 = 5 \times 2 + 10 \times 1 \times \text{Days}$$

$$\text{Days} = \frac{10 \times 2 \times 7}{20} = 7 \text{ days}$$

Ans.

Type - Men / Women -  $\frac{25}{OR}$

A - 1

$$2M = 3W = 4B \rightarrow 52 \text{ days}$$

Take LCM of 2, 3, 4 = 12

$$\frac{M}{6} : \frac{W}{4} : \frac{B}{3}$$

$$\frac{M}{6} = \frac{W}{4} = \frac{B}{3}$$

$$2M \times 52 = (1M + 1W + 1B) \times \text{Days}$$
$$3W \times 52 = (1M + 1W + 1B) \times \text{Days}$$
$$4B \times 52 = (1M + 1W + 1B) \times \text{Days}$$

Take any one of them.

$$4B \times 52 = (1M + 1W + 1B) \times \text{Days}$$

Put value of M, W, B

$$4 \times 3 \times 52 = (1 \times 6 + 1 \times 4 + 1 \times 3) \times \text{Days}$$

$$\text{Days} = \frac{4 \times 3 \times 52}{13} = 48 \text{ days. Ans}$$