

Solutions by Dev Anoop

Person/s	A	B	C	A+B	A+B+C
Time taken (days)	15	12	20	$x$	$y$
work done in 1 day	$\frac{1}{15}$	$\frac{1}{12}$	$\frac{1}{20}$	$\frac{1}{x} = \frac{3}{20}$	$\frac{1}{y} = \frac{1}{5}$

$$\begin{aligned} \frac{1}{x} &= \frac{1}{15} + \frac{1}{12} \\ &= \frac{4+5}{60} \\ &= \frac{9}{60} \end{aligned}$$

$$\frac{1}{x} = \frac{3}{20}$$

$$\begin{aligned} \frac{1}{y} &= \frac{1}{15} + \frac{1}{12} + \frac{1}{20} \\ &= \frac{4+5+3}{60} \\ &= \frac{12}{60} \end{aligned}$$

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

work done together by A, B, C =  $2 \times \frac{1}{5}$

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

work left

$$= 1 - \frac{2}{5}$$

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

Time taken by A and B to do 1 work =  $\frac{20}{3}$

time taken by A and B to do  $\frac{3}{5}$  work =

$$= \frac{20}{3} \times \frac{3}{5}$$

$$= 4 \text{ days}$$