

Class VIII, ex 13A, P1

Solutions by Dev Anoop

Person/s	A	B	A+B
Time to complete work (in days)	24	30	$x$
work done in unit time	$\frac{1}{24}$	$\frac{1}{30}$	$\frac{1}{x}$

$$\begin{aligned} \frac{1}{x} &= \frac{1}{24} + \frac{1}{30} \\ &= \frac{5+4}{120} \\ &= \frac{9}{120} \quad 40 \\ \Rightarrow x &= \frac{120}{9} \\ &= 13\frac{1}{3} \end{aligned}$$

Person/s	Ravi	Raman	together
Time taken to do work (in h)	15	12	$x$
work done in 1 hour	$\frac{1}{15}$	$\frac{1}{12}$	$\frac{1}{x}$

$$\begin{aligned} \frac{1}{x} &= \frac{1}{15} + \frac{1}{12} \\ &= \frac{4+5}{60} \\ &= \frac{9}{60} \\ \Rightarrow x &= \frac{60}{9} \quad 20 \\ &= 6\frac{2}{3} \end{aligned}$$

required time = 6 h 40 min