

Class VIII, ex 13A, P8

Solutions by Dev Anoop

⑭ Pipe/s	Class VIII, 13A,	P	A	B	A+B
Time to fill tank (in h)		10		15	x
work done in 1 hour		$\frac{1}{10}$		$\frac{1}{15}$	$\frac{1}{x}$

$$\begin{aligned} \frac{1}{x} &= \frac{1}{10} + \frac{1}{15} \\ &= \frac{3+2}{30} \\ &= \frac{5}{30} \end{aligned} \quad \Bigg| \quad x = 6$$

⑮ Pipe/s	A	B	A+B
Time to fill tank (in h)	5	6	x
work done in 1 hour	$\frac{1}{5}$	$\frac{1}{6}$	$\frac{1}{x}$

$$\begin{aligned} \frac{1}{x} &= \frac{1}{5} - \frac{1}{6} \\ &= \frac{6-5}{30} \\ &= \frac{1}{30} \\ \Rightarrow x &= 30 \end{aligned}$$

⑯ Tap/s	A	B	C	A+B+C
Time to fill tank (in h)	6	8	12	x
work done in 1 hour	$\frac{1}{6}$	$\frac{1}{8}$	$\frac{1}{12}$	$\frac{1}{x}$

$$\begin{aligned} \frac{1}{x} &= \frac{1}{6} + \frac{1}{8} + \frac{1}{12} \\ &= \frac{4+3+2}{24} \end{aligned}$$

$$\frac{1}{x} = \frac{9}{24}$$

$$\Rightarrow x = \frac{24}{9} = 8/3$$

$$\begin{aligned} \text{Time} &= 2\frac{2}{3} \\ &= 2 \text{ hours } 40 \text{ min} \end{aligned}$$