

Class VIII, ex 13A, P 7

Solutions by Dev Anoop

(12)

class VIII, 13A, P7

Person/s	A	B	C	A+B	B+C	C+A	A+B+C
Time to finish work (in days)	x	y	z	18	24	36	
work done in 1 day	$\frac{1}{x}$	$\frac{1}{y}$	$\frac{1}{z}$	$\frac{1}{18}$	$\frac{1}{24}$	$\frac{1}{36}$	

$$\frac{1}{x} + \frac{1}{y} = \frac{1}{18} \dots \textcircled{i} \quad \left| \quad \frac{1}{y} + \frac{1}{z} = \frac{1}{24} \dots \textcircled{ii} \quad \left| \quad \frac{1}{y} + \frac{1}{z} = \frac{1}{36} \dots \textcircled{iii} \right.$$

$$\textcircled{i} + \textcircled{ii} + \textcircled{iii}$$

$$2 \left(\frac{1}{x} + \frac{1}{y} + \frac{1}{z} \right) = \frac{1}{18} + \frac{1}{24} + \frac{1}{36}$$

$$\Rightarrow \frac{1}{x} + \frac{1}{y} + \frac{1}{z} = \frac{4+3+2}{72 \times 2}$$

$$= \frac{9}{72 \times 2}$$

$$= \frac{1}{16}$$

\therefore Time to finish work with A, B, C = 16 days

(13) Person/s

Person/s	A	B	C	A+B	B+C	C+A	A+B+C
Time to finish work (in days)	x	y	z	12	15	20	
work done in 1 day	$\frac{1}{x}$	$\frac{1}{y}$	$\frac{1}{z}$	$\frac{1}{12}$	$\frac{1}{15}$	$\frac{1}{20}$	

$$\frac{1}{x} + \frac{1}{y} = \frac{1}{12} \dots \textcircled{i}, \quad \frac{1}{y} + \frac{1}{z} = \frac{1}{15} \dots \textcircled{ii}, \quad \frac{1}{z} + \frac{1}{x} = \frac{1}{20} \dots \textcircled{iii}$$

$$\textcircled{i} + \textcircled{ii} + \textcircled{iii}$$

$$2 \left(\frac{1}{x} + \frac{1}{y} + \frac{1}{z} \right) = \frac{1}{12} + \frac{1}{15} + \frac{1}{20}$$

$$\Rightarrow \frac{1}{x} + \frac{1}{y} + \frac{1}{z} = \frac{5+4+3}{120} = \frac{12}{120} = \frac{1}{10}$$

using \textcircled{ii}

$$\frac{1}{x} + \frac{1}{15} = \frac{1}{10} \quad \left| \quad = \frac{1}{30} \right.$$

$$\Rightarrow \frac{1}{x} = \frac{1}{10} - \frac{1}{15} \quad \left| \quad x = 30 \right.$$

$$= \frac{3-2}{30}$$