

A does a piece of work in 10 days. B does the same work in 15 days. Find the time taken by A and B together to do the whole work?

$$A \xrightarrow{1d} \frac{1}{10}$$

$$B \xrightarrow{1d} \frac{1}{15}$$

$$A+B \xrightarrow{1d} \frac{1}{10} + \frac{1}{15}$$

$$= \frac{3+2}{30} = \frac{5}{30} = \frac{1}{6}$$

\therefore Time taken by A & B together = 6 days

A does a work in 10 days, B in 15 days, C in 20 days, and D destroys the same work in 30 days. A and B start doing the work. 2 days later B leaves. 1 day later C joins. Again after 2 days A leaves. 3 days later D joins. C and D complete the remaining work. Find the time taken for the work to get completed.

$$\begin{array}{cccc} \underline{10} & \underline{15} & \underline{20} & \underline{30} \\ & & & \underline{60} \end{array} \quad W = 60 \text{ m}$$

$$A \rightarrow 6 \text{ m}$$

$$B \rightarrow 4 \text{ m}$$

$$C \rightarrow 3 \text{ m}$$

$$D \rightarrow -2 \text{ m}$$

$$A+B \xrightarrow{1d} 10 \text{ m}$$

$$\xrightarrow{2d} 20 \text{ m}$$

$$A \xrightarrow{1d} 6 \text{ m}$$

$$C+D \xrightarrow{1d} 3-2=1 \text{ m}$$

$$A+C \xrightarrow{1d} 9 \text{ m}$$

$$\xrightarrow{2d} 18 \text{ m}$$

$$C \xrightarrow{3d} 9 \text{ m}$$

$$2d \quad \cancel{20 \text{ m}} \quad 40 \text{ m}$$

$$3d \quad \cancel{6 \text{ m}} \quad 34 \text{ m}$$

$$5d \quad \cancel{18 \text{ m}} \quad 16 \text{ m}$$

$$\underline{15d} \quad \left\{ \begin{array}{l} 8d \quad \cancel{9 \text{ m}} \quad 7 \text{ m} \\ 7d \end{array} \right.$$

$$\begin{array}{r} \checkmark \checkmark \\ 3 \text{ mms} \rightarrow 22d \quad 2 \times 15 \\ \hline 3 \cdot 5 \text{ mms} \rightarrow 7d \quad + 8 = 14 \\ \hline 4 \text{ mms} \rightarrow 6d \quad (2) \\ \hline 6 \text{ mms} \rightarrow 3d \end{array}$$

A does a work in 10 days, B in 15 days, C in 20 days, and D destroys the same work in 30 days. A and B start doing the work. 2 days later B leaves. 1 day later C joins. Again after 2 days A leaves. 3 days later D joins. C and D complete the remaining work. Find the time taken for the work to get completed.

$$\begin{array}{cccc} 10 & 15 & 20 & 30 \\ \hline & 20 & 30 & 60 \end{array} \quad W = 60 \text{ u}$$

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$$\xrightarrow{2d} 18 \text{ u}$$

$$C \xrightarrow{3d} 9 \text{ u}$$

Current Days done	Work Left
2d 20 u	40 u

3d 6 u	34 u
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5d 18 u	16 u
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15d	{ 8d 9 u 7d }	2 u
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✓✓

$$\begin{array}{r} 3 \text{ hrs} \rightarrow 22 \text{ d} \\ 3.5 \text{ hrs} \rightarrow 7 \text{ d} \\ 4 \text{ hrs} \rightarrow 6 \text{ d} \\ \hline 6 \text{ hrs} \rightarrow 9 \text{ d} \end{array} \quad \begin{array}{r} 8 \\ + 8 = 14 \\ (2) \end{array}$$

- A, B and C together can do a work in 22 days. B and C can do $\frac{3}{4}$ of work in 30 days. In how many days can A alone do the work?

- (A) $47\frac{8}{9}$ (B) $48\frac{7}{9}$
 ✓ (C) $48\frac{8}{9}$ (D) $47\frac{7}{9}$

- P and Q together can do a work in 32 days, P and R together in 48 days, R and Q together in 24 days. In how many days can P alone do the same work?

- (A) 64 (B) 192 (C) 128 (D) 84

- A can do a work in 21 days and B in 28 days. Together they started the work and B left after 4 days. In how many days A alone can do the remaining work?

- (A) 12 (B) 10 (C) 16 (D) 14

- P is twice as fast as Q and R together. Working together, all three can do a work in 21 days. In how many days can Q and R together do the work?

- (A) 48 (B) 63 (C) 54 (D) 72

$$\text{LCM}(22, 240) = (2 \times 11 \times 20)$$

$$W_a = (2 \times 11 \times 20) =$$

$$A + B + C \xrightarrow{1d} 20u$$

$$B + C \xrightarrow{1d} 11u$$

$$A \xrightarrow{1d} 9u$$

$$A \text{ can do } \frac{2 \times 11 \times 20}{9} = \frac{440}{9} = 48\frac{8}{9}$$

2

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$$\begin{array}{r}
 8 \overline{) 32 \quad 48 \quad 24} \\
 \underline{24} \\
 8 \\
 2 \overline{) 4 \quad 6 \quad 3} \\
 \underline{4} \\
 0 \\
 3 \overline{) 3 \quad 3 \quad 3} \\
 \underline{3} \\
 0 \\
 2 \quad 1 \quad 1
 \end{array}$$

$$W_k = 96m$$

$$P+Q \xrightarrow{1d} 3m$$

$$P+R \xrightarrow{1d} 2m$$

$$R+Q \xrightarrow{1d} 4m$$

$$2(P+Q+R) \xrightarrow{1d} 9m$$

$$P+Q+R \xrightarrow{1d} 4.5m$$

$$\therefore P \xrightarrow{1d} 4.5 - 4 = 0.5$$

$$\begin{aligned}
 &W_o \text{ of } P \\
 &= \frac{96}{0.5} = 192d
 \end{aligned}$$

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$$\begin{array}{rcl}
 Q+R & \xrightarrow{1d} & x \text{ m} \\
 P & \xrightarrow{1d} & 2x \text{ m} \\
 \hline
 P+Q+R & \xrightarrow{1d} & 3x \text{ m} \\
 & \xrightarrow{21d} & 21 \times 3x = 63x \text{ m} \\
 & & \hline
 & & \text{Total Wk}
 \end{array}$$

- P and Q can do a work in 14 and 21 days respectively. P started the work and after 9 days Q joined him. If the total earnings for the work are ₹280, what is the share of P?
(A) ₹210 (B) ₹240 (C) ₹225 (D) ₹180
- 8 men or 12 women or 20 boys can do a work in 36 days. In how many days can 6 men, 12 women and 10 boys together do the work?
(A) 14 (B) 12 (C) 10 (D) 16
- Eight men and six boys can do a work in eleven days, and nine men and twelve boys can do the work in nine days. In how many days can six men and thirty boys together do the work?
(A) 11 (B) 8 (C) 10 (D) 9
- Vinay and Varma can do a work in 30 days and 60 days respectively. If they work on alternate days beginning with Vinay in how many days will the work be completed?
(A) 45 days (B) 35 days
(C) 40 days (D) 50 days

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$$\begin{array}{r}
 Wk = 42m \\
 P \xrightarrow{1d} 3m \\
 Q \xrightarrow{1d} 2m \\
 \hline
 P+Q \xrightarrow{1d} 5m
 \end{array}$$

$$\begin{array}{r}
 P \xrightarrow{12d} 36m \\
 Q \xrightarrow{3d} 6m
 \end{array}$$

$$P \xrightarrow{9d} 27m$$

$$\begin{aligned}
 Wk \text{ left} &= 42 - 27 \\
 &= 15m
 \end{aligned}$$

$$P+Q \xrightarrow{15m} \frac{15}{5} = 3d$$

$$P:Q = 36m : 6m = 6:1$$

$$P = \frac{6}{7} \times 280 = \underline{\underline{Rs 240}}$$

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$$8m \xrightarrow{36d} 36m$$

$$8m \xrightarrow{1d} 1m$$

$$6m \xrightarrow{1d} \frac{6}{8}m = \frac{3}{4}m$$

$$12w \xrightarrow{36d} 36m$$

$$12w \xrightarrow{1d} 1m$$

$$20b \xrightarrow{36d} 36m$$

$$20b \xrightarrow{1d} 1m$$

$$10b \xrightarrow{1d} \frac{1}{2}m$$

$$W = 36m$$

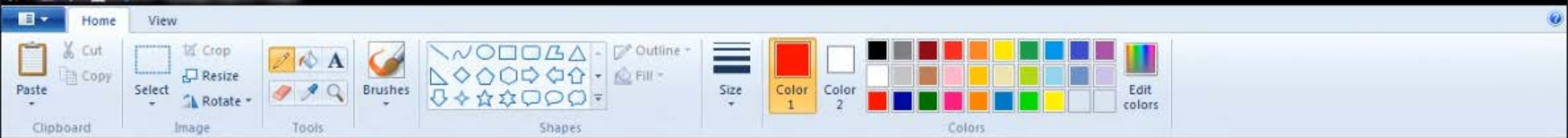
$$\frac{36}{\frac{9}{4}} = \frac{36 \times 4}{9} = 16d$$

$$6m + 12w + 10b \xrightarrow{1d}$$

$$\frac{3}{4} + 1 + \frac{1}{2}$$

$$= 2\frac{1}{4}m$$

$$= \frac{9}{4}m$$



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$$6m + 30b \xrightarrow{1d} 66m$$

$$8m + 6b \rightarrow 11d \quad 9m + 12b \rightarrow 9d$$

$$4m + 3b \rightarrow 22d \quad 3m + 4b \rightarrow 27d$$

$$\frac{22 \times 27}{6 \times 3} = 9d \quad \text{LCM of } 22 \text{ \& } 27 = (22 \times 27)$$

$$Wk = (22 \times 27)m$$

$$4m + 3b \xrightarrow{1d} 27m$$

$$3m + 4b \xrightarrow{1d} 22m$$

$$7m + 7b \xrightarrow{1d} 49m$$

$$1m + 1b \xrightarrow{1d} 7m$$

$$1m \xrightarrow{1d} \frac{7+5}{2} = 6m$$

$$1b \xrightarrow{1d} \frac{7-5}{2} = 1m$$

$$1m - 1b \xrightarrow{1d} 5m$$

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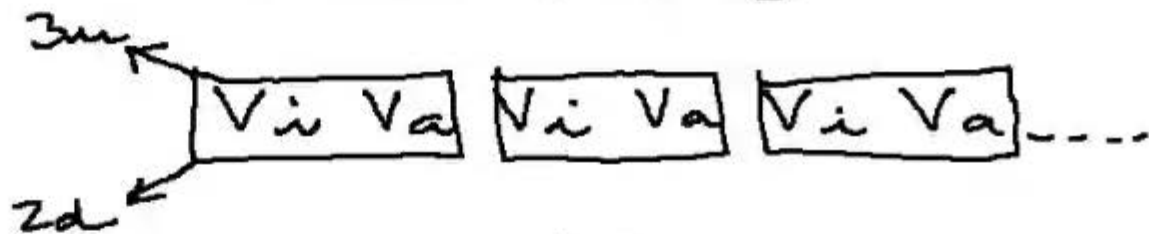
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$$Wk = 60u$$

$$\left. \begin{array}{l} \text{Vinay } \xrightarrow{1d} 2u \\ \text{Varma } \xrightarrow{1d} 1u \end{array} \right\} \text{Vi + Va } \xrightarrow{2d} 3u$$



$$\frac{60u}{3u} = 20 \text{ comp}$$

$\times 2$

40d ✓