

TIME AND WORK

1. A can do a work in 15 days and B in 20 days. If they work on it together for 4 days, then the fraction of the work that is left is :

A. $\frac{1}{4}$

B. $\frac{1}{10}$

C. $\frac{7}{15}$

D. $\frac{8}{15}$

Answer: Option D

Explanation:

$$\text{A's 1 day's work} = \frac{1}{15} ;$$

$$\text{B's 1 day's work} = \frac{1}{20} ;$$

$$(\text{A} + \text{B})\text{'s 1 day's work} = \left(\frac{1}{15} + \frac{1}{20} \right) = \frac{7}{60}.$$

$$(\text{A} + \text{B})\text{'s 4 day's work} = \left(\frac{7}{60} \times 4 \right) = \frac{7}{15}.$$

$$\text{Therefore, Remaining work} = \left(1 - \frac{7}{15} \right) = \frac{8}{15}.$$

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2. A can lay railway track between two given stations in 16 days and B can do the same job in 12 days. With help of C, they did the job in 4 days only. Then, C alone can do the job in:

A. $9\frac{1}{5}$ days

B. $9\frac{2}{5}$ days

C. $9\frac{3}{5}$ days

D. 10

Answer: Option C

Explanation:

$$(\text{A} + \text{B} + \text{C})\text{'s 1 day's work} = \frac{1}{4} ,$$

$$\text{A's 1 day's work} = \frac{1}{16} ,$$

$$\text{B's 1 day's work} = \frac{1}{12}.$$

$$\therefore \text{C's 1 day's work} = \frac{1}{4} - \left(\frac{1}{16} + \frac{1}{12} \right) = \left(\frac{1}{4} - \frac{7}{48} \right) = \frac{5}{48}.$$

So, C alone can do the work in $\frac{48}{5} = 9\frac{3}{5}$ days.

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3. A, B and C can do a piece of work in 20, 30 and 60 days respectively. In how many days can A do the work if he is assisted by B and C on every **third day?**

[A.](#) 12 days

[B.](#) **15 days**

[C.](#) 16 days

[D.](#) 18 days

Answer: Option B

Explanation:

$$\text{A's 2 day's work} = \left(\frac{1}{20} \times 2 \right) = \frac{1}{10}.$$

$$(\text{A} + \text{B} + \text{C})\text{'s 1 day's work} = \left(\frac{1}{20} + \frac{1}{30} + \frac{1}{60} \right) = \frac{6}{60} = \frac{1}{10}.$$

$$\text{Work done in 3 days} = \left(\frac{1}{10} + \frac{1}{10} \right) = \frac{1}{5}.$$

Now, $\frac{1}{5}$ work is done **in 3 days**.

\therefore Whole work will be done in **$(3 \times 5) = 15$ days.**

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4. A is thrice as good as workman as B and therefore is able to finish a job in 60 days less than B. Working together, they can do it in:

[A.](#) 20 days

[B.](#) **$22\frac{1}{2}$ days**

[C.](#) 25 days

[D.](#) 30 days

Answer: Option B

Explanation:

Ratio of times taken by A and B = 1 : 3.

The time difference is $(3 - 1) 2$ days while B take 3 days and A takes 1 day.

If difference of time is 2 days, B takes 3 days.

If difference of time is 60 days, B takes $\left(\frac{3}{2} \times 60\right) = 90$ days.

So, A takes 30 days to do the work.

$$\text{A's 1 day's work} = \frac{1}{30}$$

$$\text{B's 1 day's work} = \frac{1}{90}$$

$$(\text{A} + \text{B})\text{'s 1 day's work} = \left(\frac{1}{30} + \frac{1}{90}\right) = \frac{4}{90} = \frac{2}{45}$$

$$\therefore \text{A and B together can do the work in } \frac{45}{2} = 22\frac{1}{2} \text{ days.}$$

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5. A alone can do a piece of work in 6 days and B alone in 8 days. A and B undertook to do it for Rs. 3200. With the help of C, they completed the work in 3 days. How much is to be paid to C?

[A.](#) Rs. 375

[B.](#) Rs. 400

[C.](#) Rs. 600

[D.](#) Rs. 800

Answer: Option B

Explanation:

$$\text{C's 1 day's work} = \frac{1}{3} - \left(\frac{1}{6} + \frac{1}{8}\right) = \frac{1}{3} - \frac{7}{24} = \frac{1}{24}$$

$$\text{A's wages : B's wages : C's wages} = \frac{1}{6} : \frac{1}{8} : \frac{1}{24} = 4 : 3 : 1.$$

$$\therefore \text{C's share (for 3 days)} = \text{Rs.}$$

$$\left(3 \frac{1}{24} \times 3200\right) = \text{Rs. 400.}$$

6. If 6 men and 8 boys can do a piece of work in 10 days while 26 men and 48 boys can do the same in 2 days, the time taken by 15 men and 20 boys in doing the same type of work will be:

[A.](#) 4 days

[B.](#) 5 days

[C.](#) 6 days

[D.](#) 7 days

Answer: Option A

Explanation:

Let 1 man's 1 day's work = x and 1 boy's 1 day's work = y.

Then, $6x + 8y = \frac{1}{10}$ and $26x + 48y = \frac{1}{2}$.

Solving these two equations, we get : $x = \frac{1}{100}$ and $y = \frac{1}{200}$.

(15 men + 20 boy)'s 1 day's work = $\left(\frac{15}{100} + \frac{20}{200} \right) = \frac{1}{4}$.

∴ 15 men and 20 boys can do the work in 4 days.

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7. A can do a piece of work in 4 hours; B and C together can do it in 3 hours, while A and C together can do it in 2 hours. How long will B alone take to do it?

[A.](#) 8 hours

[B.](#) 10 hours

[C.](#) 12 hours

[D.](#) 24 hours

Answer: Option C

Explanation:

A's 1 hour's work = $\frac{1}{4}$;

(B + C)'s 1 hour's work = $\frac{1}{3}$;

(A + C)'s 1 hour's work = $\frac{1}{2}$.

(A + B + C)'s 1 hour's work = $\left(\frac{1}{4} + \frac{1}{3} \right) = \frac{7}{12}$.

B's 1 hour's work = $\left(\frac{7}{12} - \frac{1}{2} \right) = \frac{1}{12}$.

∴ B alone will take 12 hours to do the work.

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8. A can do a certain work in the same time in which B and C together can do it. If A and B together could do it in 10 days and C alone in 50 days, then B alone could do it in:

[A.](#) 15 days

[B.](#) 20 days

[C.](#) 25 days

[D.](#) 30 days

Answer: Option C

Explanation:

$$(A + B)\text{'s 1 day's work} = \frac{1}{10}$$

$$C\text{'s 1 day's work} = \frac{1}{50}$$

$$(A + B + C)\text{'s 1 day's work} = \left(\frac{1}{10} + \frac{1}{50} \right) = \frac{6}{50} = \frac{3}{25} \dots (i)$$

$$A\text{'s 1 day's work} = (B + C)\text{'s 1 day's work} \dots (ii)$$

$$\text{From (i) and (ii), we get: } 2 \times (A\text{'s 1 day's work}) = \frac{3}{25}$$

$$\Rightarrow A\text{'s 1 day's work} = \frac{3}{50}$$

$$\therefore B\text{'s 1 day's work} = \left(\frac{1}{10} - \frac{3}{50} \right) = \frac{2}{50} = \frac{1}{25}$$

So, B alone could do the work in 25 days.

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9. A does 80% of a work in 20 days. He then calls in B and they together finish the remaining work in 3 days. How long B alone would take to do the whole work?

[A.](#) 23 days

[B.](#) 37 days

[C.](#) $37\frac{1}{2}$

[D.](#) 40 days

Answer: Option C

Explanation:

$$\text{Whole work is done by A in } \left(20 \times \frac{5}{4} \right) = 25 \text{ days.}$$

$$\text{Now, } \left(1 - \frac{4}{5} \right) \text{ i.e., } \frac{1}{5} \text{ work is done by A and B in 3 days.}$$

$$\text{Whole work will be done by A and B in } (3 \times 5) = 15 \text{ days.}$$

$$A\text{'s 1 day's work} = \frac{1}{25}, (A + B)\text{'s 1 day's work} = \frac{1}{15}$$

$$\therefore B\text{'s 1 day's work} = \left(\frac{1}{15} - \frac{1}{25} \right) = \frac{4}{150} = \frac{2}{75}$$

$$\text{So, B alone would do the work in } \frac{75}{2} = 37\frac{1}{2} \text{ days.}$$

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10. A machine P can print one lakh books in 8 hours, machine Q can print the same number of books in 10 hours while machine R can print them in 12 hours. All the machines are started at 9 A.M. while machine P is closed at 11 A.M. and the remaining two machines complete work. Approximately at what time will the work (to print one lakh books) be finished ?

- A. 11:30 A.M.
B. 12 noon
C. 12:30 P.M.
D. 1:00 P.M.

Answer: Option D

Explanation:

$$(P + Q + R)\text{'s 1 hour's work} = \left(\frac{1}{8} + \frac{1}{10} + \frac{1}{12} \right) = \frac{37}{120}.$$

$$\text{Work done by P, Q and R in 2 hours} = \left(\frac{37}{120} \times 2 \right) = \frac{37}{60}.$$

$$\text{Remaining work} = \left(1 - \frac{37}{60} \right) = \frac{23}{60}.$$

$$(Q + R)\text{'s 1 hour's work} = \left(\frac{1}{10} + \frac{1}{12} \right) = \frac{11}{60}.$$

Now, $\frac{11}{60}$ work is done by Q and R in 1 hour.

$$\text{So, } \frac{23}{60} \text{ work will be done by Q and R in } \left(\frac{60}{11} \times \frac{23}{60} \right) = \frac{23}{11} \text{ hours} \approx 2 \text{ hours.}$$

So, the work will be finished approximately 2 hours after 11 A.M., i.e., around 1 P.M.

11. A can finish a work in 18 days and B can do the same work in 15 days. B worked for 10 days and left the job. In how many days, A alone can finish the remaining work?

- A. 5
B. $5\frac{1}{2}$
C. 6
D. 8

Answer: Option C

Explanation:

$$\text{B's 10 day's work} = \left(\frac{1}{15} \times 10 \right) = \frac{2}{3}.$$

$$\text{Remaining work} = 1 - \frac{2}{3} = \frac{1}{3}.$$

$$\left(\frac{1}{3} \right)^3$$

Now, $\frac{1}{18}$ work is done by A in 1 day.

$\therefore \frac{1}{3}$ work is done by A in $\left(18 \times \frac{1}{3} \right) = 6$ days.

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12. 4 men and 6 women can complete a work in 8 days, while 3 men and 7 women can complete it in 10 days. In how many days will 10 women complete it?

[A.](#) 35

[B.](#) 40

[C.](#) 45

[D.](#) 50

Answer: Option B

Explanation:

Let 1 man's 1 day's work = x and 1 woman's 1 day's work = y .

Then, $4x + 6y = \frac{1}{8}$ and $3x + 7y = \frac{1}{10}$.

Solving the two equations, we get: $x = \frac{11}{400}$, $y = \frac{1}{400}$

\therefore 1 woman's 1 day's work = $\frac{1}{400}$.

\Rightarrow 10 women's 1 day's work = $\left(\frac{1}{400} \times 10 \right) = \frac{1}{40}$.

Hence, 10 women will complete the work in 40 days.

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13. A and B can together finish a work 30 days. They worked together for 20 days and then B left. After another 20 days, A finished the remaining work. In how many days A alone can finish the work?

[A.](#) 40

[B.](#) 50

[C.](#) 54

[D.](#) 60

Answer: Option D

Explanation:

(A + B)'s 20 day's work = $\frac{1}{30} \times 20 = \frac{2}{3}$.

$$\left(\frac{30}{1 - \frac{2}{3}} \right)^3$$

Remaining work = $\left(1 - \frac{2}{3} \right) = \frac{1}{3}$.

Now, $\frac{1}{3}$ work is done by A in 20 days.

Therefore, the whole work will be done by A in $(20 \times 3) = 60$ days.

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14. P can complete a work in 12 days working 8 hours a day. Q can complete the same work in 8 days working 10 hours a day. If both P and Q work together, working 8 hours a day, in how many days can they complete the work?

A. $5\frac{5}{11}$

B. $5\frac{6}{11}$

C. $6\frac{5}{11}$

D. $6\frac{6}{11}$

Answer: Option A

Explanation:

P can complete the work in (12×8) hrs. = 96 hrs.

Q can complete the work in (8×10) hrs. = 80 hrs.

$$\therefore \text{P's 1 hour's work} = \frac{1}{96} \text{ and Q's 1 hour's work} = \frac{1}{80}.$$

$$(P + Q)\text{'s 1 hour's work} = \left(\frac{1}{96} + \frac{1}{80} \right) = \frac{11}{480}.$$

So, both P and Q will finish the work in $\left(\frac{480}{11} \right)$ hrs.

$$\therefore \text{Number of days of 8 hours each} = \left(\frac{480}{11} \times \frac{1}{8} \right) = \frac{60}{11} \text{ days} = 5\frac{5}{11} \text{ days}.$$

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15. 10 women can complete a work in 7 days and 10 children take 14 days to complete the work. How many days will 5 women and 10 children take to complete the work?

A. 3

B. 5

C. 7

D. Cannot be determined

E. None of these

Answer: Option C

Explanation:

$$1 \text{ woman's 1 day's work} = \frac{1}{70}$$

$$1 \text{ child's 1 day's work} = \frac{1}{140}$$

$$(5 \text{ women} + 10 \text{ children})'s \text{ day's work} = \left(\frac{5}{70} + \frac{10}{140} \right) = \left(\frac{1}{14} + \frac{1}{14} \right) = \frac{1}{7}$$

∴ 5 women and 10 children will complete the work in 7 days.

16. X and Y can do a piece of work in 20 days and 12 days respectively. X started the work alone and then after 4 days Y joined him till the completion of the work. How long did the work last?

A. 6 days

B. 10 days

C. 15 days

D. 20 days

Answer: Option B

Explanation:

$$\text{Work done by X in 4 days} = \left(\frac{1}{20} \times 4 \right) = \frac{1}{5}$$

$$\text{Remaining work} = \left(1 - \frac{1}{5} \right) = \frac{4}{5}$$

$$(X + Y)'s \text{ 1 day's work} = \left(\frac{1}{20} + \frac{1}{12} \right) = \frac{8}{60} = \frac{2}{15}$$

Now, $\frac{2}{15}$ work is done by X and Y in 1 day.

So, $\frac{4}{5}$ work will be done by X and Y in $\left(\frac{15}{2} \times \frac{4}{5} \right) = 6$ days.

Hence, total time taken = (6 + 4) days = 10 days.

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17. A is 30% more efficient than B. How much time will they, working together, take to complete a job which A alone could have done in 23 days?

[A.](#) 11 days

[B.](#) 13 days

[C.](#) $20\frac{3}{17}$ days

[D.](#) None of these

Answer: Option B

Explanation:

Ratio of times taken by A and B = 100 : 130 = 10 : 13.

Suppose B takes x days to do the work.

$$\text{Then, } 10 : 13 :: 23 : x \Rightarrow x = \left(\frac{23 \times 13}{10} \right) \Rightarrow x = \frac{299}{10}.$$

$$\text{A's 1 day's work} = \frac{1}{23};$$

$$\text{B's 1 day's work} = \frac{10}{299}.$$

$$(\text{A} + \text{B})\text{'s 1 day's work} = \left(\frac{1}{23} + \frac{10}{299} \right) = \frac{23}{299} = \frac{1}{13}.$$

Therefore, A and B together can complete the work in 13 days.

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18. Ravi and Kumar are working on an assignment. Ravi takes 6 hours to type 32 pages on a computer, while Kumar takes 5 hours to type 40 pages. How much time will they take, working together on two different computers to type an assignment of 110 pages?

[A.](#) 7 hours 30 minutes

[B.](#) 8 hours

[C.](#) 8 hours 15 minutes

[D.](#) 8 hours 25 minutes

Answer: Option C

Explanation:

$$\text{Number of pages typed by Ravi in 1 hour} = \frac{32}{6} = \frac{16}{3}.$$

$$\text{Number of pages typed by Kumar in 1 hour} = \frac{40}{5} = 8.$$

$$\text{Number of pages typed by both in 1 hour} = \left(\frac{16}{3} + 8 \right) = \frac{40}{3}.$$

$$\begin{aligned} \therefore \text{Time taken by both to type 110 pages} &= \left(110 \times \frac{3}{40} \right) \text{ hours} \\ &= 8\frac{1}{2} \text{ hours (or) 8 hours 15 minutes.} \end{aligned}$$

19. A, B and C can complete a piece of work in 24, 6 and 12 days respectively. Working together, they will complete the same work in:

[A.](#) $\frac{1}{24}$ day

[B.](#) $\frac{7}{24}$ day

[C.](#) $3\frac{3}{7}$ days

[D.](#) 4 days

Answer: Option C

Explanation:

Formula: If A can do a piece of work in n days, then A's 1 day's work = $\frac{1}{n}$.

$$(A + B + C)\text{'s 1 day's work} = \left(\frac{1}{24} + \frac{1}{6} + \frac{1}{12} \right) = \frac{7}{24}.$$

Formula: If A's 1 day's work = $\frac{1}{n}$, then A can finish the work in n days.

So, all the three together will complete the job in $\left(\frac{24}{7} \right)$ days = $3\frac{3}{7}$ days.

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20. Sakshi can do a piece of work in 20 days. Tanya is 25% more efficient than Sakshi. The number of days taken by Tanya to do the same piece of work is:

[A.](#) 15

[B.](#) 16

[C.](#) 18

[D.](#) 25

Answer: Option B

Explanation:

Ratio of times taken by Sakshi and Tanya = 125 : 100 = 5 : 4.

Suppose Tanya takes x days to do the work.

$$5 : 4 :: 20 : x \Rightarrow x = \left(\frac{4 \times 20}{5} \right)$$

$\Rightarrow x = 16$ days.

Hence, Tanya takes 16 days to complete the work.

21. A takes twice as much time as B or thrice as much time as C to finish a piece of work. Working together, they can finish the work in 2 days. B can do the work alone in:

[A.](#) 4 days

[B.](#) 6 days

[C.](#) 8 days

[D.](#) 12 days

Answer: Option B

Explanation:

Suppose A, B and C take x , $\frac{x}{2}$ and $\frac{x}{3}$ days respectively to finish the work.

$$\text{Then, } \left(\frac{1}{x} + \frac{2}{x} + \frac{3}{x} \right) = \frac{1}{2}$$

$$\Rightarrow \frac{6}{x} = \frac{1}{2}$$

$$\Rightarrow x = 12.$$

So, B takes $(12/2) = 6$ days to finish the work.

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22. A and B can complete a work in 15 days and 10 days respectively. They started doing the work together but after 2 days B had to leave and A alone completed the remaining work. The whole work was completed in :

[A.](#) 8 days

[B.](#) 10 days

[C.](#) 12 days

[D.](#) 15 days

Answer: Option C

Explanation:

$$(A + B)\text{'s 1 day's work} = \left(\frac{1}{15} + \frac{1}{10} \right) = \frac{1}{6}.$$

$$\text{Work done by A and B in 2 days} = \left(\frac{1}{6} \times 2 \right) = \frac{1}{3}.$$

$$\text{Remaining work} = \left(1 - \frac{1}{3} \right) = \frac{2}{3}.$$

Now, 1 work is done by A in 1 day.

$$\therefore \frac{2}{3} \text{ work will be done by a in } \left(15 \times \frac{2}{3} \right) = 10 \text{ days.}$$

Hence, the total time taken = $(10 + 2) = 12$ days.

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23. A and B can do a piece of work in 30 days, while B and C can do the same work in 24 days and C and A in 20 days. They all work together for 10 days when B and C leave. How many days more will A take to finish the work?

[A.](#) 18 days

[B.](#) 24 days

[C.](#) 30 days

[D.](#) 36 days

Answer: Option A

Explanation:

$$2(A + B + C)\text{'s 1 day's work} = \left(\frac{1}{30} + \frac{1}{24} + \frac{1}{20} \right) = \frac{15}{120} = \frac{1}{8}.$$

$$\text{Therefore, } (A + B + C)\text{'s 1 day's work} = \frac{1}{2 \times 8} = \frac{1}{16}.$$

$$\text{Work done by A, B, C in 10 days} = \frac{10}{16} = \frac{5}{8}.$$

$$\text{Remaining work} = \left(1 - \frac{5}{8} \right) = \frac{3}{8}.$$

$$\text{A's 1 day's work} = \left(\frac{1}{16} - \frac{1}{24} \right) = \frac{1}{48}.$$

Now, $\frac{1}{48}$ work is done by A in 1 day.

$$\text{So, } \frac{3}{8} \text{ work will be done by A in } \left(48 \times \frac{3}{8} \right) = 18 \text{ days.}$$

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24. A works twice as fast as B. If B can complete a work in 12 days independently, the number of days in which A and B can together finish the work in :

[A.](#) 4 days

[B.](#) 6 days

[C.](#) 8 days

[D.](#) 18 days

Answer: Option A

Explanation:

Ratio of rates of working of A and B = 2 : 1.

So, ratio of times taken = 1 : 2.

$$\text{B's 1 day's work} = \frac{1}{12}.$$

$$\therefore \text{A's 1 day's work} = \frac{1}{6}; \text{ (2 times of B's work)}$$

$$(\text{A} + \text{B})\text{'s 1 day's work} = \left(\frac{1}{6} + \frac{1}{12} \right) = \frac{3}{12} = \frac{1}{4}.$$

So, A and B together can finish the work in 4 days.

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25. Twenty women can do a work in sixteen days. Sixteen men can complete the same work in fifteen days. What is the ratio between the capacity of a man and a woman?

[A.](#) 3 : 4

[B.](#) 4 : 3

[C.](#) 5 : 3

[D.](#) Data inadequate

Answer: Option B

Explanation:

(20 x 16) women can complete the work in 1 day.

$$\therefore 1 \text{ woman's 1 day's work} = \frac{1}{320}.$$

(16 x 15) men can complete the work in 1 day.

$$\therefore 1 \text{ man's 1 day's work} = \frac{1}{240}$$

$$\text{So, required ratio} = \frac{1}{240} : \frac{1}{320}$$

$$= \frac{1}{3} : \frac{1}{4}$$

$$= 4 : 3 \text{ (cross multiplied)}$$

26. A and B can do a work in 8 days, B and C can do the same work in 12 days. A, B and C together can finish it in 6 days. A and C together will do it in :

A. 4 days

B. 6 days

C. 8 days

D. 12 days

Answer: Option C

Explanation:

$$(A + B + C)\text{'s 1 day's work} = \frac{1}{6} ;$$

$$(A + B)\text{'s 1 day's work} = \frac{1}{8} ;$$

$$(B + C)\text{'s 1 day's work} = \frac{1}{12} .$$

$$\therefore (A + C)\text{'s 1 day's work} = \left(2 \times \frac{1}{6} \right) - \left(\frac{1}{8} + \frac{1}{12} \right)$$

$$= \left(\frac{1}{3} - \frac{5}{24} \right)$$

$$= \frac{3}{24}$$

$$= \frac{1}{8} .$$

So, A and C together will do the work in 8 days.

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27. A can finish a work in 24 days, B in 9 days and C in 12 days. B and C start the work but are forced to leave after 3 days. The remaining work was done by A in:

A. 5 days

B. 6 days

C. 10 days

D. $10\frac{1}{2}$ days

Answer: Option C

Explanation:

$$(B + C)\text{'s 1 day's work} = \frac{1}{9} + \frac{1}{12} = \frac{7}{36} .$$

$$\left(9 \quad 12\right) \quad 36$$

$$\text{Work done by B and C in 3 days} = \left(\frac{7}{36} \times 3\right) = \frac{7}{12}.$$

$$\text{Remaining work} = \left(1 - \frac{7}{12}\right) = \frac{5}{12}.$$

Now, $\frac{1}{24}$ work is done by A in 1 day.

$$\text{So, } \frac{5}{12} \text{ work is done by A in } \left(24 \times \frac{5}{12}\right) = 10 \text{ days.}$$

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28. X can do a piece of work in 40 days. He works at it for 8 days and then Y finished it in 16 days. How long will they together take to complete the work?

A. $13\frac{1}{3}$ days

B. 15 days

C. 20 days

D. 26 days

Answer: Option A

Explanation:

$$\text{Work done by X in 8 days} = \left(\frac{1}{40} \times 8\right) = \frac{1}{5}.$$

$$\text{Remaining work} = \left(1 - \frac{1}{5}\right) = \frac{4}{5}.$$

Now, $\frac{4}{5}$ work is done by Y in 16 days.

$$\text{Whole work will be done by Y in } \left(16 \times \frac{5}{4}\right) = 20 \text{ days.}$$

$$\therefore \text{X's 1 day's work} = \frac{1}{40}, \text{ Y's 1 day's work} = \frac{1}{20}.$$

$$(X + Y)\text{'s 1 day's work} = \left(\frac{1}{40} + \frac{1}{20}\right) = \frac{3}{40}.$$

$$\text{Hence, X and Y will together complete the work in } \left(\frac{40}{3}\right) = 13\frac{1}{3} \text{ days.}$$

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29. A and B can do a job together in 7 days. A is $1\frac{3}{4}$ times as efficient as B. The same job can be done by A alone in :

A. $9\frac{1}{3}$ days

B. 11 days

C. $12\frac{1}{4}$ days

D. $16\frac{1}{3}$ days

Answer: Option B

Explanation:

$$(\text{A's 1 day's work}) : (\text{B's 1 day's work}) = \frac{7}{4} : 1 = 7 : 4.$$

Let A's and B's 1 day's work be $7x$ and $4x$ respectively.

$$\text{Then, } 7x + 4x = \frac{1}{7} \Rightarrow 11x = \frac{1}{7} \Rightarrow x = \frac{1}{77}.$$

$$\therefore \text{A's 1 day's work} = \left(\frac{1}{77} \times 7 \right) = \frac{1}{11}.$$

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30. A and B together can do a piece of work in 30 days. A having worked for 16 days, B finishes the remaining work alone in 44 days. In how many days shall B finish the whole work alone?

A. 30 days

B. 40 days

C. 60 days

D. 70 days

Answer: Option C

Explanation:

Let A's 1 day's work = x and B's 1 day's work = y .

$$\text{Then, } x + y = \frac{1}{30} \text{ and } 16x + 44y = 1.$$

$$\text{Solving these two equations, we get: } x = \frac{1}{60} \text{ and } y = \frac{1}{60}$$

$$\therefore \text{B's 1 day's work} = \frac{1}{60}.$$

Hence, B alone shall finish the whole work in 60 days.