

TIME AND WORK

IMPORTANT FORMULAS

1 - Work from Days:

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

2 - Days from Work:

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

3 - Ratio:

If A is thrice as good a workman as B, then:

Ratio of work done by A and B = 3 : 1.

Ratio of times taken by A and B to finish a work = 1 : 3.

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:

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

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

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

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

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:

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

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

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

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

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

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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:

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

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

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

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

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

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:

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

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

$$\therefore \text{C's share (for 3 days)} = \text{Rs. } \left(3 \times \frac{1}{24} \times 3200\right) = \text{Rs. 400.}$$

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 .

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

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

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

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

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:

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

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

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

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

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

\therefore B alone will take 12 hours to do the work.

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.

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:

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

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

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

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

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

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

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:

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

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

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

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

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 .

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

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

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

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

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

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:

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

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

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.

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.

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

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.

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:

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

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

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

$$\begin{aligned} \therefore \text{Time taken by both to type 110 pages} &= \left(110 \times \frac{3}{40} \right) \text{ hours} \\ &= 8\frac{1}{4} \text{ hours (or) 8 hours 15 minutes.} \end{aligned}$$

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.

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.

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

$$\Rightarrow x = 16 \text{ days.}$$

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.

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, $\frac{1}{15}$ 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.

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.

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

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.

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

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

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

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

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:

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

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

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

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

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

$$\begin{aligned}
 & 3 \times 24 \\
 &= \frac{3}{24} \\
 &= \frac{1}{8}
 \end{aligned}$$

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

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:

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

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

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

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

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

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.

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

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

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

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

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.

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

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

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 .

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

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

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

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

DATA SUFFICIENCY - 1

Each of the questions given below consists of a statement and / or a question and two statements numbered I and II given below it. You have to decide whether the data provided in the statement(s) is / are sufficient to answer the given question. Read the both statements and

- Give answer (A) if the data in Statement I alone are sufficient to answer the question, while the data in Statement II alone are not sufficient to answer the question.
 - Give answer (B) if the data in Statement II alone are sufficient to answer the question, while the data in Statement I alone are not sufficient to answer the question.
 - Give answer (C) if the data either in Statement I or in Statement II alone are sufficient to answer the question.
 - Give answer (D) if the data even in both Statements I and II together are not sufficient to answer the question.
 - Give answer (E) if the data in both Statements I and II together are necessary to answer the question.
1. A and B together can complete a task in 7 days. B alone can do it in 20 days. What part of the work was carried out by A?

I. A completed the job alone after A and B worked together for 5 days.

II. Part of the work done by A could have been done by B and C together in 6 days.

A. I alone sufficient while II alone not sufficient to answer

B. II alone sufficient while I alone not sufficient to answer

C. Either I or II alone sufficient to answer

D. Both I and II are not sufficient to answer

E. Both I and II are necessary to answer

Answer: Option A

Explanation:

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

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

$$\text{I. (A + B)\text{'s 5 day's work} = \frac{5}{7}}$$

$$\text{Remaining work} = \left(1 - \frac{5}{7}\right) = \frac{2}{7}$$

$$\therefore \frac{2}{7} \text{ work was carried by A.}$$

II. is irrelevant.

\therefore Correct answer is (A).

2. How long will Machine Y, working alone, take to produce x candles?

I. Machine X produces x candles in 5 minutes.

II. Machine X and Machine Y working at the same time produce x candles in 2 minutes.

A. I alone sufficient while II alone not sufficient to answer

B. II alone sufficient while I alone not sufficient to answer

C. Either I or II alone sufficient to answer

D. Both I and II are not sufficient to answer

E. Both I and II are necessary to answer

Answer: Option E

Explanation:

I. gives, Machine X produces $\frac{x}{5}$ candles in 1 min.

II. gives, Machine X and Y produce $\frac{x}{2}$ candles in 1 min.

From I and II, Y produces $\left(\frac{x}{2} - \frac{x}{5}\right) = \frac{3x}{10}$ candles in 1 min.

$\frac{3x}{10}$ candles are produced by Y in 1 min.

x candles will be produced by Y in $\left(\frac{10}{3x} \times x\right) \text{ min} = \frac{10}{3} \text{ min.}$

Thus, I and II both are necessary to get the answer.

\therefore Correct answer is (E).

DATA SUFFICIENCY - 2

Each of the questions given below consists of a question followed by three statements. You have to study the question and the statements and decide which of the statement(s) is/are necessary to answer the question.

1. In how many days can 10 women finish a work?

I. 10 men can complete the work in 6 days.

II. 10 men and 10 women together can complete the work in $3\frac{3}{7}$ days

III. If 10 men work for 3 days and thereafter 10 women replace them, the remaining work is completed in 4 days.

A. Any two of the three

B. I and II only

C. II and III only

D. I and III only

E. None of these

Answer: Option A

Explanation:

I. (10×6) men can complete the work in 1 day.

$$\Rightarrow 1 \text{ man's 1 day's work} = \frac{1}{60}$$

II. $\left(10 \times \frac{24}{7}\right)$ men + $\left(10 \times \frac{24}{7}\right)$ women can complete the work in 1 day.

$$\Rightarrow \left(\frac{240}{7}\right) \text{ men's 1 day work} + \left(\frac{240}{7}\right) \text{ women's 1 day work} = 1.$$

$$\Rightarrow \left(\frac{240}{7} \times \frac{1}{60}\right) + \left(\frac{240}{7}\right) \text{ women's 1 day's work} = 1.$$

$$\Rightarrow \left(\frac{240}{7}\right) \text{ women's 1 day's work} = \left(1 - \frac{4}{7}\right) = \frac{3}{7}$$

$$\Rightarrow 10 \text{ women's 1 day's work} = \left(\frac{3}{7} \times \frac{7}{240} \times 10\right) = \frac{1}{8}$$

So, 10 women can finish the work in 8 days.

III. $(10 \text{ men's work for 3 days}) + (10 \text{ women's work for 4 days}) = 1$

$$\Rightarrow (10 \times 3) \text{ men's 1 day's work} + (10 \times 4) \text{ women's 1 day's work} = 1$$

$$\Rightarrow 30 \text{ men's 1 day's work} + 40 \text{ women's 1 day's work} = 1$$

Thus, I and III will give us the answer.

And, II and III will give us the answer.

∴ Correct answer is (A).

2. How many workers are required for completing the construction work in 10 days?

I. 20% of the work can be completed by 8 workers in 8 days.

II. 20 workers can complete the work in 16 days.

III. One-eighth of the work can be completed by 8 workers in 5 days.

A. I only

B. II and III only

C. III only

D. I and III only

E. Any one of the three

Answer: Option E

Explanation:

I. $\frac{20}{100}$ work can be completed by (8×8) workers in 1 day.

\Rightarrow Whole work can be completed by $(8 \times 8 \times 5)$ workers in 1 day.

$$= \frac{8 \times 8 \times 5}{10} \text{ workers in 10 days} = 32 \text{ workers in 10 days.}$$

II. (20×16) workers can finish it in 1 day.

$\Rightarrow \frac{(20 \times 16)}{10}$ workers can finish it in 10 days.

$\Rightarrow 32$ workers can finish it in 10 days.

III. $\frac{1}{8}$ work can be completed by (8×5) workers in 1 day.

\Rightarrow Whole work can be completed by $(8 \times 5 \times 8)$ workers in 1 day.

$$= \frac{8 \times 5 \times 8}{10} \text{ workers in 10 days} = 32 \text{ workers in 10 days.}$$

- ∴ Any one of the three gives the answer.
- ∴ Correct answer is (E).

DATA SUFFICIENCY

Each of these questions is followed by three statements. You have to study the question and all the three statements given to decide whether any information provided in the statement(s) is redundant and can be dispensed with while answering the given question.

1. 8 men and 14 women are working together in a field. After working for 3 days, 5 men and 8 women leave the work. How many more days will be required to complete the work?

I. 19 men and 12 women together can complete the work in 18 days.

II. 16 men can complete two-third of the work in 16 days.

III. In 1 day, the work done by three men is equal to the work done by four women.

- A. I only
- B. II only
- C. III only
- D. I or II or III
- E. II or III only

Answer: Option D

Explanation:

Clearly, I only gives the answer.

Similarly, II only gives the answer.

And, III only gives the answer.

- ∴ Correct answer is (D).