

SNS COLLEGE OF TECHNOLOGY



An Autonomous Institution Coimbatore-35

Accredited by NBA – AICTE and Accredited by NAAC – UGC with 'A++' Grade Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

19GET276 – VQAR II

II YEAR/ IV SEMESTER

UNIT 1 – QUANTITATIVE ABILITY III

TOPIC – TIME AND WORK

12/03/2024 1/20





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.





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. 7
- D. 8

Answer: Option D

Explanation:

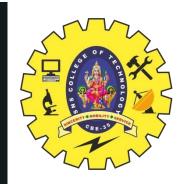
A's 1 day's work = $\frac{1}{15}$;

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 = $\left(1 - \frac{7}{15}\right) = \frac{8}{15}$.





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:

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

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

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

.. 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.





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
- 16 days
- D. 18 days

Answer: Option B

Explanation:

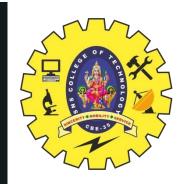
A's 2 day's work =
$$\left(\frac{1}{20} \times 2\right) = \frac{1}{10}$$
.

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

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.

∴ Whole work will be done in (3 x 5) = 15 days.





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

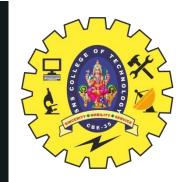
Answer: Option B

Explanation:

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

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

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





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.





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:

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

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

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

A's 1 day's work = (B + C)'s 1 day's work (ii)

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

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

.. B'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.





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:

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

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

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

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





. 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 = $\left(\frac{1}{30} \times 20\right) = \frac{2}{3}$.

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.





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

Answer: Option A

Explanation:

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

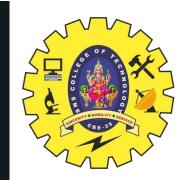
Q can complete the work in (8 x 10) hrs. = 80 hrs.

∴ P's1 hour's work = $\frac{1}{96}$ and Q's 1 hour's work = $\frac{1}{80}$.

(P + Q)'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.

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





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
- Cannot be determined
- E. None of these

Answer: Option C

Explanation:

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

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

(5 women + 10 children)'s 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.





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:

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

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

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

∴ Time taken by both to type 110 pages = $\left(110 \times \frac{3}{40}\right)$ hours

= $8\frac{1}{4}$ hours (or) 8 hours 15 minutes.





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

$$(A + B + C)$$
'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.





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.





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
- 12 days
- D. 15 days

Answer: Option C

Explanation:

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

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

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

Now, $\frac{1}{15}$ work is done by A in 1 day.

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

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





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.

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

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

$$(A + B)$$
'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.





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

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

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

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

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

= 4:3 (cross multiplied)





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:

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

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

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

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

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





THANK YOU