



SNS COLLEGE OF TECHNOLOGY

Coimbatore-35
An Autonomous Institution



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

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

VQAR -VERBAL QUANTITATIVE APTITUDE REASONING-II
IIYEAR/ IV SEMESTER

1

UNIT 1-QUANTITATIVE ABILITY III

TIME AND WORK



TIME AND WORK





TIME AND WORK



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:

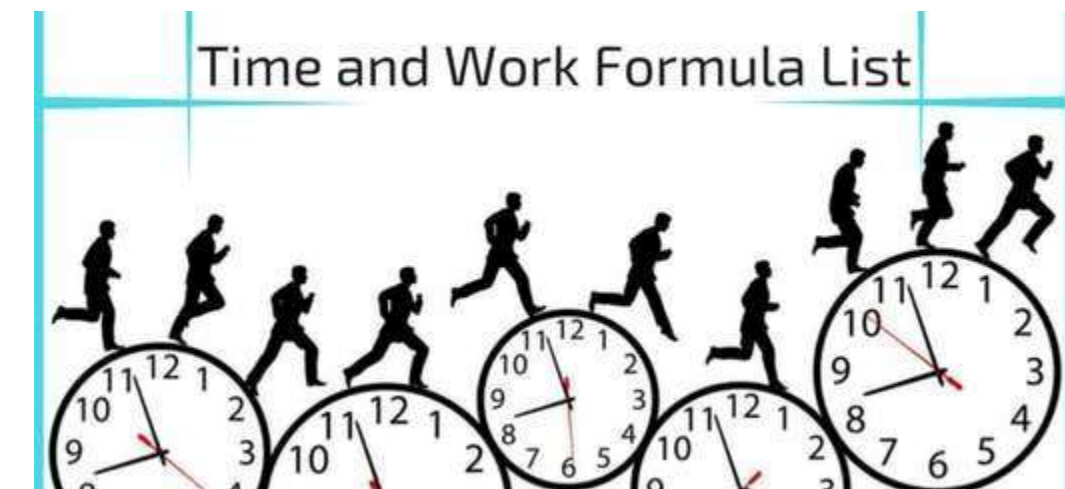
If A's 1 day's work = $\frac{1}{n}$, then A can finish the work in n days.

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.





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 :

Explanation:

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

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

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

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

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



TIME AND WORK



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:

Explanation:

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

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

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

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

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



TIME AND WORK



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:

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.

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

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

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

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



TIME AND WORK



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?

Explanation:

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

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

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



TIME AND WORK



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:

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 $y = \frac{1}{200}$

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

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



TIME AND WORK



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?

Explanation:

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

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

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

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

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

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



TIME AND 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:

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

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

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

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

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

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

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

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



TIME AND WORK



9. 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?

Explanation:

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

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

\therefore P's 1 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.

\therefore 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.



TIME AND WORK



10. 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?

Explanation:

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

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

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

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

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



TIME AND WORK



12. 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?

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

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

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

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

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

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

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



TIME AND WORK



11. 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:

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.

