

QUANTITATIVE APTITUDE MADE EASY

IDEAL FOR
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RAILWAYS, SSC



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Quantitative Aptitude Made Easy

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Chapter - 12

Time and Work

Three main factors of Time and Work

There is a definite relationship between Time and Work. In this concept, there are only three factors:

- Time taken to complete a certain job
- Unit of work done
- Number of persons doing the job

There is a mental relationship between these three, discussed as follows:

Work done (W) = Number of days (Time taken) (T or D) × Number of men (M)

$$W = D \times M$$

Some basic points

More number of men can do more work i.e. both are directly proportional

More number of men take less time to complete certain job i.e. both are inversely proportional

By summarizing, we get

$$\frac{W_1}{W_2} = \frac{M_1}{M_2} \times \frac{D_1}{D_2}$$

Let us start solving some examples:

Example 1: 10 men can cut 8 trees in 16 days. In how many days can 6 men cut 10 trees?

Solution: This is a very simple example. You are given:

$$W_1 = 8$$

$$W_2 = 10$$

$$M_1 = 10$$

$$M_2 = 6$$

$$D_1 = 16$$

$$D_2 = ?$$

Using formula,

$$\begin{aligned} \frac{W_1}{W_2} &= \frac{M_1}{M_2} \times \frac{D_1}{D_2} \\ \frac{8}{10} &= \frac{10}{6} \times \frac{16}{D_2} \\ \Rightarrow D_2 &= 33.3 \end{aligned}$$

Concept of efficiency

This means, "How much work one person can do in one day (expressed in percentage)"

For example: A person can do a job in 2 days

⇒ He can do 50% work in one day

Therefore, his efficiency will be 50%

Just a 2-step concept

This concept involves two steps to calculate efficiency:

- Convert into fraction i.e. per day work
- Multiply with 100 i.e. convert into percentage

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Try the following example first, then re-read above points

Example 2: If a person can complete his work in 5 days. What will be his efficiency?

Solution: Number of days a person take to complete his work = 5

⇒ He is doing $\frac{1}{5}$ th work per day (converted into fraction)

Convert it into percentage:

$$100/5 = 20\%$$

Therefore, his efficiency is 20%.

Summarizing, If a person can do his job in n days, efficiency will be

$$\text{Efficiency} = \frac{100}{n}\%$$

Note: Negative efficiency cancels the positive efficiency

For Example: Positive efficiency = 5%

Negative efficiency = 1.5%

$$\text{Net efficiency} = 5 - 1.5 = 3.5\%$$

As we all know, in competitive exams time management is very important. I suggest you to learn the fractions till 15.

Number of days required to complete work	Work/Day	Efficiency (%)
N	$1/n$	$100/n$
1	1	100
2	$1/2$	50
3	$1/3$	33.33
4	$1/4$	25
5	$1/5$	20
6	$1/6$	16.66
7	$1/7$	14.28
8	$1/8$	12.5
9	$1/9$	11.11
10	$1/10$	10
11	$1/11$	9.09
12	$1/12$	8.25
13	$1/13$	7.69
14	$1/14$	7.14
15	$1/15$	6.66

Example 3: A can do a job in 10 days. B can do a job in 5 days. In how many days they can complete the job if they work together?

Solution: Consider the above table

A's efficiency = 10%

B's efficiency = 20%

A+ B efficiency = $10 + 20 = 30\%$

This means, In one day A and B together can do 30% of work.

Therefore, Number of days A and B together take to do 100% of work = $\frac{100}{3}$

⇒ 3.33 days

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Example 4: A and B together can do a job in 4 days. If A can do job in 12 days if he works alone, then how many days B alone take to complete the job?

Solution: A+B take = 4 days

⇒ A+B's efficiency = 25% i.e. they together do 25% of work in one day

A takes = 12 days

⇒ A's efficiency = 8.33%

B's efficiency = (A+B) - (A)

⇒ 25% - 8.33% = 16.66%

This means, B can do 16.66% work in one day

Therefore, to complete the job he will take = $\frac{100}{16.66}$ days

⇒ 6days

Example 5: A and B can do job in 8 days. B and C can do same job in 12 days. A, B and C together can do same job in 6 days. In how many days A and C together can complete the job?

Solution: You are given that:

A+B's efficiency = 12.5%

B+C's efficiency = 8.33%

A+B+C's efficiency = 16.66%

we need to find A+C

Consider, $2(A+B+C) = (A+B) + (B+C) + (C+A)$

⇒ $2(16.66) = 12.5 + 8.33 + (C+A)$

⇒ $C+A = 12.49 = 12.5\%$

Therefore, A and C takes = $\frac{100}{12.5} = 8$ days

Hope you all understand this topic. I will soon update questions for your practice.

Trick

One simple technique is using days in denominator while solving questions. For example, A can do a job in 3 days and B can do the same job in 6 days. In how much time they can do the job together.

Solution - $1/3 + 1/6 = 1/2$, hence 2 days is the answer.

Examiner can set the question in opposite way and can ask you how much time A or B alone will take to complete the job. It is quite easy to calculate said question by putting values in equation we arrived in above question.

You need to understand one simple concept - If A can do a job in 10 day then in one day A can do $1/10$ th of job.

Now let's solve questions with this trick

Question 1 - A take 5 days to complete a job and B takes 10 days to complete the same job. In how much time they will complete the job together?

Solution - A's efficiency = 20%, B's efficiency = 10%. If they work together they can do 30% of the job in a day. To complete the job they need 3.33 days.

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Question 2 - A is twice as efficient as B and can complete a job 30 days before B. In how much they can complete the job together?

Solution - Let efficiency percentage as x

A's efficiency = $2x$ and B's efficiency = x

A is twice efficient and can complete the job 30 days before B. So,

A can complete the job in 30 days and B can complete the job in 60 days

A's efficiency = $1/30 = 3.33\%$

B's efficiency = $1/60 = 1.66\%$

Both can do 5% ($3.33\% + 1.66\%$) of the job in 1 day.

So they can complete the whole job in 20 days ($100/5$)

Question 3 - A tank can be filled in 20 minutes. There is a leakage which can empty it in 60 minutes. In how many minutes tank can be filled?

Solution -

Method 1

⇒ Efficiency of filling pipe = 20 minutes = $1/3$ hour = 300%

⇒ Efficiency of leakage = 60 minutes = 100%

We need to deduct efficiency of leakage so final efficiency is 200%. We are taking 100% = 1 Hour as base so answer is 30 minutes.

Method 2

⇒ Efficiency of filling pipe = $100/20 = 5\%$

⇒ Efficiency of leakage pipe = $100/60 = 1.66\%$

⇒ Net filling efficiency = 3.33%

So, tank can be filled in = $100/3.33\% = 30$ minutes

You can change the base to minutes or even seconds.

Question 4 - 4 men and 6 women working together can complete the work within 10 days. 3 men and 7 women working together will complete the same work within 8 days. In how many days 10 women will complete this work?

Solution - Let number of men = x , number of women = y

⇒ Efficiency of 4 men and 6 women = $100/10 = 10\%$

⇒ So, $4x+6y = 10$

Above equation means 4 men and 6 women can do 10% of the job in one day.

⇒ Efficiency of 3 men and 7 women = $100/8 = 12.5\%$

So, $3x+7y = 12.5$

By solving both equations we get, $x = -0.5$ and $y = 2$

⇒ Efficiency of 1 woman(y) = 2% per day

⇒ Efficiency of 10 women per day = 20%

So 10 women can complete the job in $100/20 = 5$ days

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Question 5 - A and B together can complete a task in 20 days. B and C together can complete the same task in 30 days. A and C together can complete the same task in 30 days. What is the respective ratio of the number of days taken by A when completing the same task alone to the number of days taken by C when completing the same task alone?

Solution - \Rightarrow Efficiency of A and B = $1/20$ per day = 5% per day

⇒ Efficiency of B and C = 1/30 per day = 3.33% per day

⇒ Efficiency of C and A = 1/30 per day = 3.33% per day

Taking equation 2 and 3 together

$$\Rightarrow B + C = 3.33\% \text{ and } C + A = 3.33\%$$

$\Rightarrow C$ and 3.33% will be removed. Hence $A = B$

\Rightarrow Efficiency of A = B = 5%/2 = 2.5% = 1/40

$$\Rightarrow \text{Efficiency of C} = 3.33\% - 2.5\% = 0.833\% = 1/120$$

⇒ A can do the job in 40 days and C can do the job in 120 days he they work alone.

⇒ Ratio of number of days in which A and C can complete the job 1:3.

Exercise - 12

- 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) $\frac{8}{15}$
 - e) None of these

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) $9\frac{1}{5}$
 - b) $9\frac{2}{5}$
 - c) $9\frac{3}{5}$
 - d) 10
 - e) None of these

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
 - e) None of these

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) $22\frac{1}{2}$
 - c) 25 days
 - d) 30 days
 - e) None of these

5) A alone can do a piece of work in 6 days and B alone 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
 - e) None of these

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
 - e) None of these

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- 45) Tap A can fill the empty tank in 12 hours, but due to a leak in the bottom it is filled in 15 hours, if the tank is full and then tap A is closed then in how many hours the leak can empty it?
a) 45 hours b) 48 hours c) 52 hours
d) 60 hours e) None of these

46) A is twice as good a workman as B and together they finish a piece of work in 18 days. In how many days will A alone finish the work?
a) 72 days b) 30 days c) 27 days
d) 32 days e) None of these

47) Pipe A basically used as inlet pipe and pipe B is used as outlet pipe. Pipes A and B both are opened simultaneously, all the time. When pipe A fills the tank and B empty the tank, it will take double the time than when both the pipes fill the tank. When pipe B is used for filling the tank, its efficiency remains constant. What is the ratio of efficiency of pipe A and pipe B respectively?
a) 3 : 1 b) 5 : 2 c) 1 : 3
d) 3 : 2 e) None of these

48) 45 men can complete a work in 16 days. Six days after they started working, 30 more men joined them. How many days will they now take to complete the remaining work?
a) 18 days b) 12 days c) 9 days
d) 6 days e) None of these

49) Two pipes A and B can fill a cistern in 15 hours and 10 hours respectively. A tap C can empty the full cistern in 30 hours. All the three taps were open for 2 hours, when it was remembered that the emptying tap had been left open. It was then closed. How many hours more would it take for the cistern to be filled?
a) 30 min. b) 1.2 hours c) 24 min.
d) 35 min. e) None of these

50) A tyre has two punctures. The first puncture alone would have made the tyre flat in 9 minutes and the second alone would have done it in 6 minutes. If air leaks out at a constant rate, how long does it take both the punctures together to make it flat?
a) $1\frac{1}{2}$ b) $3\frac{1}{2}$ c) $3\frac{3}{5}$
d) $4\frac{1}{4}$ e) None of these

51) A single reservoir supplies the petrol to the whole city, while the reservoir is fed by a single pipeline filling the reservoir with the stream of uniform volume. When the reservoir is full and if 40,000 litres of petrol is used daily, the supply fails in 90 days. If 32,000 litres of petrol is used daily, it fails in 60 days. How much petrol can be used daily without the supply every failing?
a) 64000 litres b) 56000 litres c) 78000 litres
d) 60000 litres e) None of these

52) A is 50% more efficient than B. C does half of the work done by A and B together. If C alone does the work in 40 days, then A, B and C together can do the work in :
a) $13\frac{1}{3}$ days b) 15 days c) 20 days
d) 30 days e) None of these

53) The total number of men, women and children working in a factory is 18. They earn Rs.4000 in a day. If the sum of the wages of all men, all women and all children is in the ratio of 18 :

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10 : 12 and if the wages of an individual man, woman and child is in the ratio 6 : 5 : 3, then how much a woman earn in a day?

- a) Rs.400
- b) Rs.250
- c) Rs.150
- d) Rs.120
- e) None of these

54) 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) $6\frac{6}{11}$
- e) None of these

55) Eklavya can do the 6 times the actual work in 36 days while Faizal can do the one-fourth of the original work in 3 days. In how many days will both working together complete the 3 times of the original work?

- a) 6
- b) 10
- c) 12
- d) 15
- e) None of these

56) A and B can together finish a work in 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 job?

- a) 40
- b) 50
- c) 54
- d) 60
- e) None of these

57) Aman and Raman are two workers. Working together they can complete the whole work in 10 hours. If the Aman worked for 2.5 hours and Raman worked for 8.5 hours, still there was half of the work to be done. In how many hours Aman working alone, can complete the whole work?

- a) 24 hours
- b) $17\frac{1}{7}$ hours
- c) 40 hours
- d) Data inadequate
- e) None of these

58) 5 men and 2 boys working together can do four times as much work as a man and a boy.

Working capacities of a man and a boy are in the ratio :

- a) 1 : 2
- b) 2 : 1
- c) 1 : 3
- d) 3 : 1
- e) None of these

59) 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
- e) None of these

60) If there is leakage also which is capable of draining out the liquid from the tank at half of the rate of outlet pipe, then what is the time taken to fill the empty tank when both the pipes are opened?

- a) 3 hours
- b) $3\frac{2}{3}$ hours
- c) 4 hours
- d) Data inadequate
- e) None of these

61) A, B and C are employed to do a piece of work for Rs.529. A and B together are supposed to do $\frac{19}{23}$ of the work and B and C together $\frac{8}{23}$ of the work. What amount should A be paid?

- a) Rs.315
- b) Rs.345
- c) Rs.355
- d) Rs.375
- e) None of these

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- 62) 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
 - e) None of these
- 63) A, B and C can do a piece of work in 36, 54 and 72 days respectively. They started the work but A left 8 days before the completion of the work while B left 12 days before the completion. The number of days for which C worked is :
- a) 4
 - b) 8
 - c) 12
 - d) 24
 - e) None of these
- 64) A and B together can complete a work in 12 days. A alone can complete it in 20 days. If B does the work only for half a day daily, then in how many days A and B together will complete the work?
- a) 10 days
 - b) 11 days
 - c) 15 days
 - d) 20 days
 - e) None of these
- 65) 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) Data inadequate
 - e) None of these
- 66) 12 men complete a work in 9 days. After they have worked for 6 days, 6 more men join them. How many days will they take to complete the remaining work?
- a) 2 days
 - b) 3 days
 - c) 4 days
 - d) 5 days
 - e) None of these
- 67) A, B and C together earn Rs.300 per day, while A and C together earn Rs.188 and B and C together earn Rs.152. The daily earning of C is :
- a) Rs.40
 - b) Rs.68
 - c) Rs.112
 - d) Rs.150
 - e) None of these

Solutions:

1. Option D

$$\begin{aligned}
 \text{A's 1 day's work} &= \frac{1}{15} \\
 \text{B's 1 day's work} &= \frac{1}{20} \\
 (\text{A} + \text{B})'s 1 \text{ day's work} &= \left[\frac{1}{15} + \frac{1}{20} \right] = \frac{7}{60} \\
 (\text{A} + \text{B})'s 4 \text{ day's work} &= \left[\frac{7}{60} \times 4 \right] = \frac{7}{15} \\
 \text{Therefore, Remaining work} &= \left[1 - \frac{7}{15} \right] = \frac{8}{15}
 \end{aligned}$$

2. Option C

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

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$$\begin{aligned}
 \text{A's 1 day's work} &= \frac{1}{16} \\
 \text{B's 1 day's work} &= \frac{1}{12} \\
 \text{C's 1 day's work} &= \frac{1}{4} \quad \left[\frac{1}{16} + \frac{1}{12} \right] = \left[\frac{1}{4} \quad \frac{7}{48} \right] = \frac{5}{48} \\
 \text{So, C alone can do the work in } \frac{48}{5} &= 9 \frac{3}{5}
 \end{aligned}$$

3. Option B

$$\begin{aligned}
 \text{A's 2 day's work} &= \left[\frac{1}{20} \times 2 \right] = \frac{1}{10} \\
 (\text{A} + \text{B} + \text{C})'s \text{ 1 day's work} &= \left[\frac{1}{20} + \frac{1}{30} + \frac{1}{60} \right] = \frac{6}{60} = \frac{1}{10} \\
 \text{Work done in 3 days} &= \left[\frac{1}{10} + \frac{1}{10} \right] = \frac{1}{5}
 \end{aligned}$$

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

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

4. Option B

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.

$$\begin{aligned}
 \text{A's 1 day's work} &= \frac{1}{30} \\
 \text{B's 1 day's work} &= \frac{1}{90} \\
 (\text{A} + \text{B})'s \text{ 1 day's work} &= \left[\frac{1}{30} + \frac{1}{90} \right] = \frac{4}{90} = \frac{2}{45} \\
 \text{A and B together can do the work in } \frac{45}{2} &= 22 \frac{1}{2} \text{ days}
 \end{aligned}$$

5. Option B

$$\begin{aligned}
 \text{C's 1 day's work} &= \frac{1}{3} \quad \left[\frac{1}{6} + \frac{1}{8} \right] = \frac{1}{3} - \frac{7}{24} = \frac{1}{24} \\
 \text{A's wages : B's wages : C's wages} &= \frac{1}{6} : \frac{1}{8} : \frac{1}{24} = 4 : 3 : 1 \\
 \text{C's share (for 3 days)} &= \text{Rs.} \left[3 \times \frac{1}{24} \times 3200 \right] = \text{Rs.} 400
 \end{aligned}$$

6. Option A

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

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

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

7. Option C

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$$\begin{aligned}
 A's \text{ 1 hour's work} &= \frac{1}{4} \\
 (B + C)'s \text{ 1 hour's work} &= \frac{1}{3} \\
 (A + C)'s \text{ 1 hour's work} &= \frac{1}{2} \\
 (A + B + C)'s \text{ 1 hour's work} &= \left[\frac{1}{4} + \frac{1}{3} \right] = \frac{7}{12} \\
 B's \text{ 1 hour's work} &= \left[\frac{7}{12} - \frac{1}{2} \right] = \frac{1}{12}
 \end{aligned}$$

B alone will take 12 hours to do the work.

8. Option C

$$\begin{aligned}
 (A + B)'s \text{ 1 day's work} &= \frac{1}{10} \\
 C's \text{ 1 day's work} &= \frac{1}{50} \\
 (A + B + C)'s \text{ 1 day's work} &= \left[\frac{1}{10} + \frac{1}{50} \right] = \frac{6}{50} = \frac{3}{25} \dots\dots\dots (i) \\
 A's \text{ 1 day's work} &= (B + C)'s \text{ 1 day's work} \dots\dots\dots (ii) \\
 \text{From (i) and (ii), we get } 2 \times (A's \text{ 1 day's work}) &= \frac{3}{25} \\
 A's \text{ day's work} &= \frac{3}{50} \\
 B's \text{ 1 day's work} &= \left[\frac{1}{10} - \frac{3}{50} \right] = \frac{2}{50} = \frac{1}{25}
 \end{aligned}$$

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

9. Option C

$$\begin{aligned}
 \text{Whole work is done by A in } \left[20 \times \frac{5}{4} \right] &= 25 \text{ days} \\
 \text{Now, } \left[1 - \frac{4}{5} \right] \text{ i.e., } \frac{1}{5} \text{ work is done by A and B in 3 days.} \\
 \text{Whole work will be done by A and B in } (3 \times 5) &= 15 \text{ days.} \\
 A's \text{ 1 day's work} &= \frac{1}{25}, (A + B)'s \text{ 1 day's work} = \frac{1}{15} \\
 B's \text{ 1 day's work} &= \left[\frac{1}{15} - \frac{1}{25} \right] = \frac{4}{150} = \frac{2}{75} \\
 \text{So, B alone would do the work in } \frac{75}{2} &= 37 \frac{1}{2} \text{ days}
 \end{aligned}$$

10. Option D

$$\begin{aligned}
 (P + Q + R)'s \text{ 1 hour's work} &= \left[\frac{1}{8} + \frac{1}{10} + \frac{1}{12} \right] = \frac{37}{120} \\
 \text{Work done by P, Q and R in 2 hours} &= \left[\frac{37}{120} \times 2 \right] = \frac{37}{60} \\
 \text{Remaining work} &= \left[1 - \frac{37}{60} \right] = \frac{23}{60} \\
 (Q + R)'s \text{ 1 hour's work} &= \left[\frac{1}{10} + \frac{1}{12} \right] = \frac{11}{60} \\
 \text{Now, } \frac{11}{60} \text{ work is done by Q and R in 1 hour.} \\
 \text{So, } \frac{23}{60} \text{ work will be done by Q and R in } \left[\frac{60}{11} \times \frac{23}{60} \right] &= \frac{23}{11} \text{ hours } \approx 2 \text{ hours} \\
 \text{So, the work will be finished approximately 2 hours after 11 A.M., i.e., around 1 P.M.}
 \end{aligned}$$

11. Option C

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

$$\text{Remaining work} = \left[1 - \frac{2}{3} \right] = \frac{1}{3}$$

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

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

12. Option B

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

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

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

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

$$10 \text{ women's 1 day's work} = \left[\frac{1}{400} \times 10 \right] = \frac{1}{40}$$

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

13. Option D

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

$$\text{Remaining work} = \left[1 - \frac{2}{3} \right] = \frac{1}{3}$$

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. Option A

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

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

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

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

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

$$\text{Number of days of 8 hours each} = \left[\frac{480}{11} \times \frac{1}{8} \right] = \frac{60}{11} \text{ days} = 5 \frac{5}{11} \text{ days}$$

15. Option C

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

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

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

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

16. Option B

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

Quantitative Aptitude Made Easy

$$\begin{aligned}\text{Remaining work} &= \left[1 - \frac{1}{5} \right] = \frac{4}{5} \\ (\text{X} + \text{Y})' \text{s 1 day's work} &= \left[\frac{1}{20} + \frac{1}{12} \right] = \frac{8}{60} = \frac{2}{15} \\ \text{Now, } \frac{2}{15} \text{ work is done by X and Y in 1 day.} \\ \text{So, } \frac{4}{5} \text{ work will be done by X and Y in } &\left[\frac{15}{2} \times \frac{4}{5} \right] = 6 \text{ days} \\ \text{Hence, total time taken} &= (6 + 4) \text{ days} = 10 \text{ days}\end{aligned}$$

17. Option B

$$\text{Ratio of times taken by A and B} = 100 : 130 = 10 : 13$$

Suppose B takes x days to do the work.

$$\begin{aligned}\text{Then, } 10 : 13 :: 23 : x &\quad x = \left[\frac{23 \times 13}{10} \right] \quad x = \frac{299}{10} \\ \text{A's 1 day's work} &= \frac{1}{23} \\ \text{B's 1 day's work} &= \frac{10}{299} \\ (\text{A} + \text{B})' \text{s 1 day's work} &= \left[\frac{1}{23} + \frac{10}{299} \right] = \frac{23}{299} = \frac{1}{13}\end{aligned}$$

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

18. Option C

$$\begin{aligned}\text{Number of pages typed by Ravi in 1 hour} &= \frac{32}{6} = \frac{16}{3} \\ \text{Number of pages typed by Kumar in 1 hour} &= \frac{40}{5} = 8 \\ \text{Number of pages typed by both in 1 hour} &= \left[\frac{16}{3} + 8 \right] = \frac{40}{3} \\ \text{Time taken by both to type 110 pages} &= \left[110 \times \frac{3}{40} \right] \text{ hours} \\ &= 8 \frac{1}{4} \text{ hours or 8 hours 15 minutes}\end{aligned}$$

19. Option C

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

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

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

$$\text{So, all the three together will complete the job in } \left[\frac{24}{7} \right] \text{ days} = 3 \frac{3}{7}$$

20. Option B

$$\text{Ratio of times taken by Sakshi and Tanya} = 125 : 100 = 5 : 4$$

Suppose Tanya takes x days to do the work.

$$\begin{aligned}5 : 4 :: 20 : x &\quad x = \left[\frac{4 \times 20}{5} \right] \\ x &= 16 \text{ days}\end{aligned}$$

Hence, Tanya takes 16 days to complete the work.

Quantitative Aptitude Made Easy

21. Option B

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

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

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

$$x = 12$$

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

22. Option C

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

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

$$\text{Remaining work} = \left[1 - \frac{1}{3} \right] = \frac{2}{3}$$

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

$\frac{2}{3}$ 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.

23. Option A

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

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

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

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

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

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

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

24. Option A

$$\text{Ratio of rates of working of A and B} = 2 : 1$$

$$\text{So, ratio of times taken} = 1 : 2$$

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

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

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

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

25. Option B

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

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

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

Quantitative Aptitude Made Easy

$$\begin{aligned}
 & \text{1 man's 1 day's work} & = \frac{1}{240} \\
 & \text{So, required ratio} & = \frac{\frac{1}{240}}{\frac{1}{320}} : \frac{1}{320} \\
 & & = \frac{1}{3} : \frac{1}{4} \\
 & & = 4 : 3 \text{ (cross multiplied)}
 \end{aligned}$$

26. Option C

$$\begin{aligned}
 & (\text{A} + \text{B} + \text{C})'s \text{ 1 day's work} & = \frac{1}{6} \\
 & (\text{A} + \text{B})'s \text{ 1 day's work} & = \frac{1}{8} \\
 & (\text{B} + \text{C})'s \text{ 1 day's work} & = \frac{1}{12} \\
 & (\text{A} + \text{C})'s \text{ 1 day's work} & = \left[2 \times \frac{1}{6} \right] - \left[\frac{1}{8} + \frac{1}{12} \right] \\
 & & = \left[\frac{1}{3} - \frac{5}{24} \right] \\
 & & = \frac{3}{24} \\
 & & = \frac{1}{8}
 \end{aligned}$$

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

27. Option C

$$\begin{aligned}
 & (\text{B} + \text{C})'s \text{ 1 day's work} & = \left[\frac{1}{9} + \frac{1}{12} \right] = \frac{7}{36} \\
 & \text{Work done by B and C in 3 days} & = \left[\frac{7}{36} \times 3 \right] = \frac{7}{12} \\
 & \text{Remaining work} & = \left[1 - \frac{7}{12} \right] = \frac{5}{12} \\
 & \text{Now, } \frac{1}{24} \text{ work is done by A in 1 day.} \\
 & \text{So, } \frac{5}{12} \text{ work is done by A in } \left[24 \times \frac{5}{12} \right] = 10 \text{ days.}
 \end{aligned}$$

28. Option A

$$\begin{aligned}
 & \text{Work done by X in 8 days} & = \left[\frac{1}{40} \times 8 \right] = \frac{1}{5} \\
 & \text{Remaining work} & = \left[1 - \frac{1}{5} \right] = \frac{4}{5} \\
 & \text{Now, } \frac{4}{5} \text{ work is done by Y in 16 days.} \\
 & \text{Whole work will be done by Y in } \left[16 \times \frac{5}{4} \right] = 20 \text{ days.} \\
 & \text{X's 1 day's work} = \frac{1}{40}, \text{ Y's 1 day's work} = \frac{1}{20} \\
 & (\text{X} + \text{Y})'s \text{ 1 day's work} = \left[\frac{1}{40} + \frac{1}{20} \right] = \frac{3}{40} \\
 & \text{Hence, X and Y will together complete the work in } \left[\frac{40}{3} \right] = 13\frac{1}{3} \text{ days.}
 \end{aligned}$$

29. Option B

$$\begin{aligned}
 & (\text{A's 1 day's work}) : (\text{B's 1 day's work}) = \frac{7}{4} : 1 = 7 : 4 \\
 & \text{Let A's and B's 1 day's work be } 7x \text{ and } 4x \text{ respectively.} \\
 & \text{Then, } 7x + 4x = \frac{1}{7} \quad 11x = \frac{1}{7} \quad x = \frac{1}{77}
 \end{aligned}$$

Quantitative Aptitude Made Easy

$$\text{A's 1 day's work} = \left[\frac{1}{77} \times 7 \right] = \frac{1}{11}$$

30. Option A

Efficiency of P : Q = 3 : 1

Required number of days of P : Q = 1 : 3

i.e., if P requires x days then Q requires 3x days

$$\text{but } 3x = 60$$

$$2x = 60$$

$$x = 30 \text{ and } 3x = 90$$

Thus P can finish the work in 30 days and Q can finish the work in 90 days.

31. Option B

$$\text{Filling efficiency} = 5\% \quad 5 = \frac{100}{20}$$

$$\text{Emptying efficiency} = 1.66\% \quad 1.66 = \frac{100}{60}$$

$$\text{Net efficiency} = 5 - 1.66 = 3.33\%$$

$$\text{Required time to full the tub} = \frac{100}{3.33} = 30 \text{ minutes}$$

32. Option C

Efficiency of A = 7.14%

Efficiency of B = 4.76%

Efficiency of A + B = 11.9%

$$\text{Number of days required by A and B, working together} = \frac{100}{11.9} = 8.4 \text{ days}$$

33. Option A

$$\text{Efficiency of A + B} = 33.33\% \left[= \frac{100}{3} \right]$$

Ratio of efficiency of A and B = 3 : 1

$$\text{Efficiency of A} = \frac{3}{4} \times 33.33 = 25\%$$

$$\text{Number of days taken by A} = 4 = \frac{100}{25} = 4$$

34. Option A

3 days before the completion of the work Aman left the work means in last 3 days only Suneeta has worked alone.

$$\text{So, in last 3 days worked done by Suneeta} = 3 \times \frac{1}{21} = \frac{1}{7}$$

So, the rest $\left[1 - \frac{1}{7} \right] = \frac{6}{7}$ work was done by Aman and Suneeta both.

$$\text{Number of days in which Aman and Suneeta worked together} = \frac{6/7}{5/42} = \frac{36}{5} = 7 \frac{1}{5} \text{ days}$$

35. Option A

Karan's efficiency = 10%

Sohan's efficiency = 5%

Work done by Karan and Sohan together in 3 days = $15 \times 3 = 45\%$

$$\text{Now, number of days in which B completed rest (55%) work alone} = \frac{55}{5} = 11$$

Quantitative Aptitude Made Easy

Total number of days in which B worked = $3 + 11 = 14$

Now number of days required by B, when A and B both worked together = $\frac{100}{\frac{10}{15}} = 6 \frac{2}{3}$

Required difference in number of days = $(11) - [6 \frac{2}{3}]$
 $= \frac{13}{3} = 4 \frac{1}{3}$ days

36. Option B

A's share = Rs.250

B's share = Rs.100

It means the ratio of efficiency of A : B = $250 : 100 = 5 : 2$

Ratio of days taken by A and B = $2x : 5x$

Now, $5x - 2x = 9$ $x = 3$

Number of days taken by A = 6 (efficiency = 16.66%)

Number of days taken by B = 15 (efficiency = 6.66%)

Therefore number of days taken by A and B, working together = $\frac{100}{\frac{23.33}{70}} = \frac{300}{70} = 4 \frac{2}{7}$ days

37. Option A

$A + B = 70\%$

$B + C = 50\%$

$[A + B + B + C] - (A + B + C) = B$

$70 + 50 - 100 = 20\%$

$B = 20\%$

$A = 50\%$

$C = 30\%$

Hence, A is most efficient.

38. Option C

Work done = $\frac{1}{5}$

Remaining work = $\frac{4}{5}$

$4(20 \times 75) = 40 \times x$

$x = 150$

Therefore 75 men should be increased.

39. Option E

Work done by 2 men = 3 women = 4 boys

1 man = 2 boys

1 woman = $\frac{4}{3}$ boys

Boys \times days = 4×52 (boys \times days)

Again 1 man + 1 woman + 1 boy = $2 + \frac{4}{3} + 1 = \frac{13}{3}$ boys

40. Option C

Quantitative Aptitude Made Easy

$$\begin{aligned} \text{Work done} &= \frac{2}{3} \\ \text{Remaining work} &= \frac{1}{3}, \text{ which is half of } \frac{2}{3} \\ \frac{1}{2} \times (20 \times 32) &= 8 \times x \\ x &= 40 \text{ men} \end{aligned}$$

Therefore, 20 more men were required.

41. Option A

$$\begin{aligned} \text{Number of days taken by A to complete work alone} &= 14 \text{ days} \\ \text{Number of days taken by B to complete work alone} &= 7 \text{ days} \\ \text{Number of days taken by C to complete work alone} &= 7 \text{ days} \\ \text{One day's work of A and B} &= \frac{1}{14} + \frac{1}{7} = \frac{3}{14} \\ \text{And one day's work of A, B and C} &= \frac{1}{14} + \frac{1}{7} + \frac{1}{7} = \frac{5}{14} \\ \text{3 day's work of A and B} &= 3 \times \frac{3}{14} = \frac{9}{14} \\ \text{Remaining work} &= \frac{5}{14} \quad [1 \quad \frac{9}{14}] \\ \text{This remaining work will be done by A, B and C} &= \frac{5/14}{5/14} = 1 \text{ day} \end{aligned}$$

42. Option A

$$\begin{aligned} (A + B)'s \text{ 1 day's work} &= \frac{1}{4}, \text{ As 1 day's work} = \frac{1}{12} \\ B's \text{ 1 day's work} &= \left[\frac{1}{4} - \frac{1}{12} \right] = \frac{1}{6} \\ \text{Hence, B alone can complete the work in 6 days.} \end{aligned}$$

43. Option E

$$\begin{aligned} \text{Efficiency of 4 men and 2 boys} &= 20\% \\ \text{Efficiency of 3 women and 4 boys} &= 20\% \\ \text{Efficiency of 2 men and 3 women} &= 20\% \end{aligned}$$

$$\begin{aligned} \text{So, Efficiency of 6 men, 6 women and 6 boys} &= 60\% \\ \text{So, efficiency of 1 man, 1 woman and 1 boy} &= 10\% \\ \text{Now, since they will work at double their efficiency} \\ \text{Efficiency of 1 man, 1 woman and 1 boy} &= 20\% \\ \text{Required number of days} &= 5 \end{aligned}$$

44. Option B

$$\begin{aligned} C's \text{ 1 day's work} &= \frac{1}{3} \quad \left[\frac{1}{6} + \frac{1}{8} \right] = \frac{1}{24} \\ A : B : C = \text{Ratio of their 1 day's work} &= \frac{1}{6} : \frac{1}{8} : \frac{1}{24} = 4 : 3 : 1 \\ A's \text{ share Rs.} \left[600 \times \frac{4}{8} \right] &= \text{Rs.} 300, B's \text{ share} = \text{Rs.} \left[600 \times \frac{3}{8} \right] = \text{Rs.} 225 \\ C's \text{ share} = \text{Rs.} \left[600 - (300 + 225) \right] &= \text{Rs.} 75 \end{aligned}$$

45. Option D

Quantitative Aptitude Made Easy

Efficiency of A = 8.33%
 Effective efficiency = 6.66%, when there is leakage
 So, efficiency of leakage = 1.66% = (8.33 - 6.66)
 It means due to leakage a full tank will be empty in 60 hours.

46. Option C

$$\begin{aligned} (\text{A's 1 day's work}) : (\text{B's 1 day's work}) &= 2 : 1 \\ (\text{A} + \text{B})'s \text{ 1 day's work} &= \frac{1}{18} \\ \text{Divide } \frac{1}{18} \text{ in the ratio } 2 : 1 & \\ \text{So, A's 1 day's work} &= \left[\frac{1}{18} \times \frac{2}{3} \right] = \frac{1}{27} \\ \text{Hence, A alone can finish the work in 27 days.} & \end{aligned}$$

47. Option A

$$\begin{aligned} \text{Efficiency when both pipes used to fill} &= A + B \\ \text{And efficiency when pipe A is used to fill and pipe B is used to empty the tank} &= A - B \\ \text{So, } \frac{A+B}{A-B} &= \frac{2}{1} \\ \frac{A}{B} &= \frac{3}{1} \\ \text{Thus, the ratio of efficiency of pipe A and B} &= 3 : 1 \end{aligned}$$

48. Option E

$$\begin{aligned} (45 \times 16) \text{ men can complete the work in 1 day.} & \\ \text{So, 1 man's 1 day's work} &= \frac{1}{720} \\ 45 \text{ men's 6 day's work} &= \left[\frac{1}{720} \times 6 \right] = \frac{3}{8} \quad \text{Remaining work} = \left[1 - \frac{3}{8} \right] = \frac{5}{8} \end{aligned}$$

49. Option C

$$\begin{aligned} \text{Time taken by pipes A and B to fill the whole tank} &= \frac{100}{16.66} = 6 \text{ hours} \\ \text{Capacity filled in 2 hours by pipes A, B and C} &= 2 \times 13.33 = 26.66\% \\ \text{Remaining capacity} &= 73.33\% \\ \text{This remaining capacity can be filled by A and B} &= \frac{73.33}{16.66} = 4 \frac{2}{5} \\ \text{So, the total time required} &= 2 + 4 \frac{2}{5} = 6 \text{ hours 24 minutes} \\ \text{Thus, in this case 24 minutes extra are required.} & \end{aligned}$$

50. Option C

$$\begin{aligned} 1 \text{ minute's work of both the punctures} &= \left[\frac{1}{9} + \frac{1}{6} \right] = \frac{5}{18} \\ \text{So, both the punctures will make the tyre flat in} &= \frac{18}{5} = 3 \frac{3}{5} \text{ min.} \end{aligned}$$

51. Option B

Let x litre be the per day filling and v litre be the capacity of the reservoir, then

Quantitative Aptitude Made Easy

$$90x + v = 40000 \times 90 \quad \dots (1)$$

$$60x + v = 32000 \times 60 \quad \dots (2)$$

Solving eq. (1) and (2), we get

$$x = 56000$$

Hence, 56000 litres per day can be used without the failure of supply.

52. Option A

(A's 1 day's work) : (B's 1 day's work) = 150 : 100 = 3 : 2

Let A's and B's 1 day's work be 3x and 2x respectively.

$$\text{Then, C's 1 day's work} = \left[\frac{3x + 2x}{2} \right] = \frac{5x}{2}$$

$$\text{So, } \frac{5x}{2} = \frac{1}{40} \text{ or } x = \left[\frac{1}{40} \times \frac{2}{5} \right] = \frac{1}{100}$$

$$\text{A's 1 day's work} = \frac{3}{100}; \text{B's 1 day's work} = \frac{1}{50}; \text{C's 1 day's work} = \frac{1}{40}$$

$$(\text{A} + \text{B} + \text{C})'s \text{ 1 day's work} = \left[\frac{3}{100} + \frac{1}{50} + \frac{1}{40} \right] = \frac{15}{200} = \frac{3}{40}$$

$$\text{So, A, B and C together can do the work in } \frac{40}{3} = 13\frac{1}{3} \text{ days}$$

53. Option B

$$\text{Ratio of number of men, women and children} = \frac{18}{6} : \frac{10}{5} : \frac{12}{3} = 3x : 2x : 4x$$

$$\text{So, } (3x + 2x + 4x) = 18$$

$$\text{So, } x = 2$$

Therefore, number of women = 4

$$\text{Share of all women} = \frac{10}{40} \times 4000 = \text{Rs.1000}$$

$$(18 + 10 + 12 = 40)$$

$$\text{So, Share of each woman} = \frac{1000}{4} = \text{Rs.250}$$

54. Option A

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

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

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

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

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

$$\text{So, Number of days of 8 hours each} = \left[\frac{480}{11} \times \frac{1}{8} \right] = \frac{60}{11} \text{ days} = 5\frac{5}{11} \text{ days}$$

55. Option C

$$\text{Efficiency of Eklavya} = 16.66\%$$

$$\text{Efficiency of Faizal} = 8.33\%$$

$$\text{Total efficiency of Eklavya and Faizal} = 25\%$$

So, they can do actual work in 4 days

So, 3 times work requires 12 days.

56. Option D

Quantitative Aptitude Made Easy

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

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

Whole work will be done by A in $(20 \times 3) = 60$ days

57. Option B

$$\text{Efficiency of Aman and Raman} = 10\%$$

Aman worked for 2.5 hours and Raman worked separately 8.5 hours. Which means it can be considered that Aman and Raman worked together for 2.5 hours and Raman worked alone for 6 hours.

Thus, Aman and Raman in 2.5 hours can complete 25% work. It means the remaining $(50 - 25) = 25\%$ of the work was done by Raman in 6 hours.

Therefore, Raman can do 100% work in 24 hours. It means the efficiency of Raman = 4.16%

Therefore, efficiency of Aman = $(10 - 4.16) = 5.83\%$

Thus, Aman require $\frac{100}{5.83} = 17\frac{1}{7}$ hours to complete the work alone.

58. Option B

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

$$\text{Then, } 5x + 2y = 4(x + y) \quad x = 2y \quad \frac{x}{y} = \frac{2}{1}$$

59. Option B

$$C's \ 1 \ day's \ work = \frac{1}{3} \quad \left[\frac{1}{6} + \frac{1}{8} \right] = \frac{1}{3} \quad \frac{7}{24} = \frac{1}{24}$$

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

$$\text{So, } C's \ share = \text{Rs.} \left[\frac{1}{8} \times 3200 \right] = \text{Rs.} 400$$

60. Option C

Rate of leakage = 8.33% per hour

Net efficiency = 50 $(16.66 + 8.33) = 25\%$

$$\text{Time required} = \frac{100}{25} = 4 \text{ hours}$$

61. Option B

$$\text{Work done by A} = \left[1 - \frac{8}{23} \right] = \frac{15}{23}$$

$$\text{So, } A : (B + C) = \frac{15}{23} : \frac{8}{23} = 15 : 8$$

$$\text{So, } A's \ share = \text{Rs.} \left[\frac{15}{23} \times 529 \right] = \text{Rs.} 345$$

62. Option B

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

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

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

Quantitative Aptitude Made Easy

$$\text{So, A's 1 day's work} = \left[\frac{1}{77} \times 7 \right] = \frac{1}{11}$$

63. Option D

Suppose the work was finished in x days.

$$\text{Then, A's } (x - 8) \text{ day's work} + \text{B's } (x - 12) \text{ day's work} + \text{C's } x \text{ day's work} = 1$$

$$\frac{x-8}{36} + \frac{x-12}{54} + \frac{x}{72} = 1 \quad 6(x-8) + 4(x-12) + 3x = 216$$

$$\text{So, } 13x = 312 \text{ or } x = 24$$

64. Option C

$$\text{B's 1 day's work} = \left[\frac{1}{12} - \frac{1}{20} \right] = \frac{2}{60} = \frac{1}{30}$$

$$\text{Now, (A + B)'s 1 day's work} = \left[\frac{1}{20} + \frac{1}{60} \right] = \frac{4}{60} = \frac{1}{15} \quad [\text{B works for half day only}]$$

So, A and B together will complete the work in 15 days.

65. Option C

$$1 \text{ woman's 1 day's work} = \frac{1}{70}; 1 \text{ child's 1 day's work} = \frac{1}{140}$$

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

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

66. Option A

$$1 \text{ man's 1 day's work} = \frac{1}{108}$$

$$12 \text{ men's 6 day's work} = \left[\frac{1}{9} \times 6 \right] = \frac{2}{3} \quad \text{Remaining work} = \left[1 - \frac{2}{3} \right] = \frac{1}{3}$$

$$18 \text{ men's 1 day's work} = \left[\frac{1}{108} \times 18 \right] = \frac{1}{6}$$

$\frac{1}{6}$ work is done by them in 1 day.

$$\text{So, } \frac{1}{3} \text{ work is done by them in } \left[6 \times \frac{1}{3} \right] = 2 \text{ days}$$

67. Option A

$$\text{B's daily earning} = \text{Rs. } (300 - 188) = \text{Rs. } 112$$

$$\text{A's daily earning} = \text{Rs. } (300 - 152) = \text{Rs. } 148$$

$$\text{C's daily earning} = \text{Rs. } [300 - (112 + 148)] = \text{Rs. } 40$$

www.ssceexamguide.com**List of 50 Important Aptitude Questions on Time and Work (with solutions below)**

1).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) 13days
- c) $20\frac{3}{7}$ days
- d) None of these

2).A does half as much work as B in three-fourth of the time. If together they take 18 days to complete the work, how much time shall B take to do it?

- a) 30 days
- b) 40 days
- c) 15 days
- d) None of these

3).A is 50% as efficient as B.C does half of the work done by A and B together. If C alone does the work in 40 days, then A ,B and C together can do the work in?

- a) $13\frac{1}{3}$ days
- b) 20 days
- c) 15 days
- d) 30 days

4). Two workers A and B working together completed a job in 5 days. If A worked twice as efficiently as he actually did and B worked $\frac{1}{3}$ as efficiently as he actually did, the work would have been completed in 3 days. A alone could complete the work in?

- a) $7\frac{1}{2}$ days

- b) $6\frac{1}{4}$ days
- c) $5\frac{1}{4}$ days
- d) None of these

5). 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) $\frac{1}{10}$
- b) $\frac{1}{4}$
- c) $\frac{7}{15}$
- d) $\frac{8}{15}$

6). 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) 8
- b) 5
- c) 6
- d) $5\frac{1}{2}$

7). 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) 10 days
- b) 15 days
- c) 12 days
- d) 8 days

8). 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) 6 days
- b) 5 days
- c) 10 days
- d) $10\frac{1}{2}$ days

9). 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 am and the remaining two machines complete the work. Approximately at what time will the work be finished?

- a) 11:30 am
- b) 12:30 pm
- c) 12 noon
- d) 1 pm

10). 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) 36 days
- c) 24 days
- d) 30 days

Answers: 1). b) 2). a) 3). a) 4). b) 5). d) 6). c) 7). c) 8). c) 9). d) 10). a)

11). 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

12).A and B can together finish work in 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 job?

- a) 40
- b) 50
- c) 54
- d) 60

13).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) 16 days
- c) 25days
- d) 50 days

14).A, B,C together can complete a piece of work in 10 days. All the three started working at it together and after 4 days A left. Then B and C together completed the work in 10 more days .A alone could complete the work in?

- a) 15 days
- b) 16 days

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- c) 25 days
- d) 50 days

15).A does $\frac{4}{5}$ 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) $37 \frac{1}{2}$ days
- d) 40 days

16).A and B together can do a piece of work in 30 days. A having worked for 16 days. B finished 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

17).A and B together can do a piece of work in 12 days, which B and C together can do in 16 days. After A has been working at it for 5 days and B for 7 days, C finishes it in 13 days. In how many days C alone will do the work?

- a) 46
- b) 24
- c) 16
- d) 36

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18).A and B can do a piece of work in 45 days and 40 days respectively. They began to the work together but A leaves after some days and then B completed the remaining work in 23 days. The number of days which A left the work was?

- a) 8
- b) 6
- c) 9
- d) 12

19).A can do a piece of work in 14 days which B can do in 21 days. They begin together but 3 days before the completion of the work, A leave off The total number of days to complete the work is?

- a) $6 \frac{3}{5}$
- b) $8 \frac{1}{2}$
- c) $10 \frac{1}{5}$
- d) $13 \frac{1}{2}$

20).A can do a piece of work in 14 days which B can do in 21 days. They begin together but 3 days before the completion of the work, A leave off The total number of days to complete the work is?

- a) 15 days
- b) 25 days
- c) 22 days
- d) 35 days

Answers: 11). b) 12). d) 13). a) 14). c)15). c)16). c 17).b 18).c 19).c 20).a

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21).A, B and C together earn Rs.300 per day, while A and C together earn Rs.188 and B and C together earn Rs.152.The daily earning of C is?

- a) Rs.40
- b) Rs.112
- c) Rs.68
- d) Rs.150

22).A,B and c are employed to do a piece of work for Rs.529.A and B together are supposed to do $\frac{19}{23}$ of the work and B and C together $\frac{8}{23}$ of the work. What amount should A be paid?

- a) Rs.315
- b) Rs.345
- c) Rs.375
- d) Rs.355

23). Kim can do a work in 3 days while David can do the same work in 2 days. Both of them finish the work together and get Rs.150.What is the share of Kim?

- a) Rs.70
- b) Rs.60
- c) Rs.75
- d) Rs.30

24).If A can do $\frac{1}{4}$ of a work in 3 days and B can do $\frac{1}{6}$ of the same work in 4 days, how much will A get if both work together and are paid Rs.180 in all?

- a) Rs.60

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- b) Rs.36
- c) Rs.75
- d) Rs.70

25).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.600
- b) Rs.400
- c) Rs.375
- d) Rs.800

26).A sum of money is sufficient to pay A's wages for 21 days and B's wages for 28 days. The same money is sufficient to pay the wages of both for?

- a) 12 days
- b) 14 days
- c) $12\frac{1}{4}$ days
- d) $24\frac{1}{2}$ days

27).A can do a piece of work in 10 days in 15 days. They work for 5 days. The rest of the work had finished by C in 2 days. If they get Rs.1500 for the whole work, the daily wages of B and C are?

- a) Rs.150
- b) Rs.225
- c) Rs.250

d) Rs.300

28).A and B together can complete a work in 12 days. A alone can complete it in 20 days. If B does the work only for half a day daily, then in how many days A and B together will complete the work?

a) 10 days

b) 20 days

c) 15 days

d) 11 days

29).A alone can complete a work in 16 days and B alone in 12 days. Starting with A, they work on alternate days. The total work will be completed in?

a) 12 days

b) 13 days

c) $13\frac{5}{7}$ days

d) $13\frac{3}{4}$ days

30).A, B and C can do a piece of work in 11 days,20 days and 55 days respectively, working alone. How soon can the work be done if A is assisted by B and C on every third day?

a) 7 days

b) 8 days

c) 9 days

d) 10 days

Answers: 21).a 22).b 23).b 24).d 25).b 26).a 27). b) 28). c) 29). d) 30). b)

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31). A, B and C can separately 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 alternative days?

- a) 12 days
- b) 15 days
- c) 18 days
- d) 16 days

32). A and B can separately do a piece of work in 20 and 15 days respectively. They worked together for 6 days, after which B was replaced by C. If the work was finished in next 4 days, then the number of days in which C alone could do the work will be?

- a) 30 days
- b) 35 days
- c) 40 days
- d) 60 days

33). A, B and C can do a work in 36, 54 and 72 days respectively. They started the work but A left 8 days before the completion of the work while B left 12 days before the completion. The number of days for which C worked is?

- a) 4
- b) 12
- c) 8
- d) 24

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

- a) 3:4

- b) 4:3
- c) 5:3
- d) Data inadequate

35).10 men can complete a piece of work in 15 days and 15 women can complete the same work in 12 days. If all the 10 men and 15 women work together, in how many days will the work get completed?

- a) 6
- b) $6\frac{1}{3}$
- c) $6\frac{2}{3}$
- d) $7\frac{2}{3}$

36).Seven men can complete a work in 12 days. They started the work and after 5 days, two men left .How many days will they take to complete the remaining work?

- a) 2 days
- b) 4 days
- c) 5 days
- d) None of these

37).12 men complete a work in 9 days. After they have worked for 6 days,6 more men join them. How many days will they take to complete the remaining work?

- a) 2 days
- b) 4 days
- c) 3 days

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d) 5 days

e) None of these

38).Three men, four women and six children can complete a work in seven days. A woman does double the work a man does half the work a man does. How many women alone can complete this work in 7 days?

a) 7

b) 8

c) 12

d) Cannot be determined

e) None of these

39).A man, a woman and a boy can complete a job in 3,4 and 12 days respectively. How many boys must assist 1 man 1 woman to complete the job $\frac{1}{4}$ of a day?

a) 1

b) 4

c) 19

d) 41

40).10 men and 15 women together can complete a work in 6 days. It takes 100 days for one man alone to complete the same work. How many days will be required for one woman alone to complete the same work?

a) 90

b) 145

c) 125

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- d) 150
- e) None of these

Answers: 31). b) 32). c) 33). d) 34). b) 35).c 36). d). 37).a 38). a) 39). d) 40). e)

41).12 men can complete a piece of work in 4 days, while 15 women can complete the same work in 4 days.6 men start working on the job and after working for 2 days, all of them stopped working. How many women should be put on job to complete the remaining work, if it is to be completed in 3 days?

- a) 15
- b) 22
- c) 18
- d) Data inadequate
- e) None of these

42).Twelve children take sixteen days to complete a work which can complete by eight adults in twelve days. Sixteen adults started working and after three days ten adults left and four children joined them. How many days will they take to complete the remaining work?

- a) 3
- b) 8
- c) 4
- d) 6
- e) None of these

43).10 women can complete a work in 7 days and 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

44).Sixteen men can complete a work in twelve days. Twenty –four children can complete the same work in eighteen days. Twelve men and eight children started working and after eight days three more children joined them. How many days will they now take to complete the remaining work?

- a) 2 days
- b) 4 days
- c) 6 days
- d) 8 days
- e) None of these

45).Twenty-four men can complete a work in sixteen days. Thirty-two women can complete the same work in twenty-four days .Sixteen men and sixteen women started working and worked for twelve days. How many more men are to added to complete the remaining work in 2 days?

- a) 16
- b) 24
- c) 36
- d) 48
- e) None of these

46).5 men and 2 boys working together can do four times as much work as a man and a boy.

Working capacities of a woman and a boy are in the ratio?

- a) 1:2
- b) 2:1
- c) 1:3
- d) 3:1

47).If 12 men and 2 boys working together can do four times as much work as a man and a boy. Working capacities of a woman and a boy are in the ratio?

- a) 2:1
- b) 3:1
- c) 3:2
- d) 5:4

48).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) 50
- d) 45

49).One man,3 women and 4 boys can do a piece of work in 96 hours,2 men and 8 days can do it in 80 hours,2 men and 3 women can do it in 120 hours.5men and 12 boys can do in:?

- a) $39 \frac{1}{11}$ hours

- b) $42 \frac{7}{11}$ hours
- c) $43 \frac{7}{11}$ hours
- d) 44 hours

50). 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

Answers: 41). a) 42). e) 43). c) 44). b) 45). b) 46). b) 47). a) 48). b) 49). c) 50). a)

Solutions for the above Time and Work Aptitude Questions:

1). 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?

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

Suppose B takes x days to do the work.

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

$$\text{A's 1 day's work} = \frac{1}{23}; \text{B's 1 day's work} = \frac{10}{299}.$$

A and B together can complete the job in 13 days.

Answer: b

2). A does half as much work as B in three-fourth of the time. If together they take 18 days to complete the work, how much time shall B take to do it?

Suppose B takes x days to do the work

$$\text{A takes } (2 \times \frac{3}{4}x) = \frac{3x}{2} \text{ days to do it.}$$

$$(\text{A} + \text{B})' \text{S 1 day's work} = \frac{1}{18}.$$

$$\frac{1}{x} + \frac{2}{3x} = \frac{1}{18} \text{ or } x=30$$

Answer: a

3). A is 50% as efficient as B. C does half of the work done by A and B together. If C alone does the work in 40 days, then A, B and C together can do the work in?

$$(\text{A's 1 day's work}) : (\text{B's 1 day's work}) = 150:100 = 3:2.$$

Let A's and B's 1 day's work be 3x and 2x respectively.

$$\text{Then, C's 1 day's work} = \left(\frac{3x+2x}{2}\right) = \frac{5x}{2}$$

$$\frac{5x}{2} = \frac{1}{40} \text{ or } x = \left(\frac{1}{40} \times \frac{2}{5} \right) = \frac{1}{100}$$

A's 1 day's work = $\frac{3}{100}$; B's 1 day's work = $\frac{1}{50}$; C's 1 day's work = $\frac{1}{40}$

$$(A+B+C)'s 1 day's work = \left(\frac{3}{100} + \frac{1}{50} + \frac{1}{40} \right) = \frac{15}{20} = \frac{3}{40}$$

So, A, B and C together can do the work in $\frac{40}{3} = 13\frac{1}{3}$ days.

Answer: a

4.) Two workers A and B working together completed a job in 5 days. If A worked twice as efficiently as he actually did and B worked $\frac{1}{3}$ as efficiently as he actually did, the work would have been completed in 3 days. A alone could complete the work in?

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

$$\text{Then, } x+y=\frac{1}{5} \text{ and } 2x+\frac{1}{3}y = \frac{1}{3}$$

$$\text{Solving, we get : } x=\frac{4}{25} \text{ and } y=\frac{1}{25}$$

$$\text{A's 1 day's work} = \frac{4}{25}$$

So, A alone could complete the work in $\frac{25}{4} = 6\frac{1}{4}$ days

Answer: b

5.) 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?

$$\text{A's 1 day's work} = \frac{1}{15}; \text{B's 1 day's work} = \frac{1}{20}$$

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

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

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

Answer: d

6). 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?

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

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

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

Answer: c

7). 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?

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

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

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

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

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

Answer: c

8). 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?

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

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

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

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

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

Answer: c

9). 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 am and the remaining two machines complete the work. Approximately at what time will the work be finished?

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

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

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

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

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

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

So, the work will be finished approximately 2 hours after 11 a.m, i.e., round 1 p.m

Answer: d

10). 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?

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

$$\Rightarrow (A+B+C)'s 1 day's work = \frac{1}{16}$$

$$\text{Work done by A, B and C in 10 days} = \frac{10}{16} = \frac{5}{8} \quad \text{Remaining work} = \left(1 - \frac{5}{8}\right) = \frac{3}{8}$$

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

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

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

Answer: a

11). 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?

Work done by X in 4 days $= (\frac{1}{20} \times 4) = \frac{1}{5}$ Remaining work $= (1 - \frac{1}{5}) = \frac{4}{5}$

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

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 $(\frac{15}{2} \times \frac{4}{5}) = 6$ days.

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

Answer: b

12).A and B can together finish work in 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 job?

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

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

Whole work will be done by A in $(20 \times 3)=60$ days

Answer: d

13).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?

Work done by X in 8 days $= (\frac{1}{40} \times 8) = \frac{1}{5}$ Remaining work $= (1 - \frac{1}{5}) = \frac{4}{5}$

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

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

X's 1 day's work = $\frac{1}{40}$ Y's 1 day's work = $\frac{1}{20}$

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

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

Answer: a

14). A, B, C together can complete a piece of work in 10 days. All the three started working at it together and after 4 days A left. Then B and C together completed the work in 10 more days. A alone could complete the work in?

Work done by A, B and C in 4 days = $(\frac{1}{10} \times 4) = \frac{2}{3}$. Remaining work = $(1 - \frac{2}{5}) = \frac{3}{5}$

Now, $\frac{3}{5}$ work is done by B and C in 10 days.

Whole work will be done by B and C in $(10 \times \frac{5}{3}) = \frac{50}{3}$ days.

$(A+B+C)$'s 1 day's work = $\frac{1}{10}$, (B + C)'s 1 day's work = $\frac{3}{50}$

A's 1 day's work = $(\frac{1}{10} - \frac{3}{50}) = \frac{2}{50} = \frac{1}{25}$

A alone could complete the work in 25 days.

Answer: c

15). A does $\frac{4}{5}$ 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?

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

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

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

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

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

Answer: c

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

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

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

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

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

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

Answer: c

17).A and B together can do a piece of work in 12 days, which B and C together can do in 16 days. After A has been working at it for 5 days and B for 7 days, C finishes it in 13 days. In how many days C alone will do the work?

A's 5 day's work + B's 7 day's work + C's 13 day's work = 1

$$\Rightarrow (A+B)'s 5 day's work + (B+C)'s day's work + C's 11 day's work = 1$$

$$\Rightarrow \frac{5}{12} + \frac{2}{16} + C's 11 day's work = 1$$

$$\Rightarrow C's 11 day's work = 1 - \left(\frac{5}{12} + \frac{2}{16} \right) = \frac{11}{24}$$

$$\Rightarrow C's 1 day's work = \left(\frac{11}{24} \times \frac{1}{11} \right) = \frac{1}{24}$$

C alone can finish the work in 24 days.

Answer: b

18).A and B can do a piece of work in 45 days and 40 days respectively. They began to the work together but A leaves after some days and then B completed the remaining work in 23 days. The number of days which A left the work was?

$$(A+B)'s \text{ 1 day's work} = \left(\frac{1}{45} + \frac{1}{40}\right) = \frac{17}{360}$$

Work done by B in 23 days = $\left(\frac{1}{40} \times 23\right) = \frac{23}{40}$. Remaining work = $\left(1 - \frac{23}{40}\right) = \frac{17}{40}$

Now, $\frac{17}{360}$ work was done by (A+B) in 1 day.

$\frac{17}{40}$ work was done by (A + B) in $\left(1 \times \frac{360}{17} \times \frac{17}{40}\right) = 9$ days.

A left after 9 days

Answer: c

19). A can do a piece of work in 14 days which B can do in 21 days. They begin together but 3 days before the completion of the work, A leave off. The total number of days to complete the work is?

$$B's \text{ 3 day's work} = \left(\frac{1}{21} \times 3\right) = \frac{1}{7}. \text{ Remaining work} = \left(1 - \frac{1}{7}\right) = \frac{6}{7}$$

$$(A+B)'s \text{ 1 day's work} = \left(\frac{1}{14} + \frac{1}{21}\right) = \frac{5}{42}$$

Now, $\frac{5}{42}$ work is done by A and B in 1 day

$$\frac{6}{7} \text{ work is done by A and B in } \left(\frac{42}{6} \times \frac{6}{7}\right) = \frac{36}{5} \text{ days}$$

$$\text{Hence, total times taken} = \left(3 + \frac{36}{5}\right) \text{ days} = 10\frac{1}{5} \text{ days}$$

Answer: c

20). A can do a piece of work in 14 days which B can do in 21 days. They begin together but 3 days before the completion of the work, A leave off. The total number of days to complete the work is?

$$(A+B+C)'s \text{ 1 day's work} = \left(\frac{1}{24} + \frac{1}{36} + \frac{1}{48}\right) = \frac{12}{144}$$

$$\text{Work done by (A+B+C) in 4 days} = \left(\frac{13}{144} \times 4\right) = \frac{13}{36}$$

$$\text{Work done by B in 3 days} = \left(\frac{1}{36} \times 3\right) = \frac{1}{12}. \text{ Remaining work} = \left[1 - \left(\frac{13}{36} + \frac{1}{12}\right)\right] = \frac{5}{9}$$

$$(A+B)'s \text{ 1 day's work} = \left(\frac{1}{24} + \frac{1}{36}\right) = \frac{5}{72}$$

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Now, $\frac{5}{72}$ work is done by A and B in $(\frac{72}{5} \times \frac{5}{9}) = 8$ days.

Hence total time taken=(4+3+8) days =15 days

Answer: a

21).A, B and C together earn Rs.300 per day, while A and C together earn Rs.188 and B and C together earn Rs.152.The daily earning of C is?

B's daily earning = Rs. $(300 - 188) =$ Rs. 112

A's daily earning = Rs. $(300 - 152) =$ Rs. 148.

C's daily earning = Rs. $[30 - (112 + 148)] =$ Rs 40

Answer: a

22).A,B and c are employed to do a piece of work for Rs.529.A and B together are supposed to do $\frac{19}{23}$ of the work and B and C together $\frac{8}{23}$ of the work. What amount should A be paid?

Work done by A= $(1 - \frac{8}{23}) = \frac{15}{23}$

A : (B+C)= $\frac{15}{23} : \frac{8}{23} = 15:8$

So, A's share=Rs. $(\frac{15}{23} \times 529) =$ Rs.345

Answer: b

23). Kim can do a work in 3 days while David can do the same work in 2 days. Both of them finish the work together and get Rs.150.What is the share of Kim?

Kim's wages: David's wages = Kim's 1 day's work: David's 1 day's work

$$\frac{1}{3} : \frac{1}{2} = 2:3$$

Kim's share = Rs. $(\frac{2}{5} \times 150)$ Rs. 60

Answer: b

24). If A can do $\frac{1}{4}$ of a work in 3 days and B can do $\frac{1}{6}$ of the same work in 4 days, how much will A get if both work together and are paid Rs.180 in all?

Whole work is done by A in $(3 \times 4) = 12$ days.

Whole work is done by B in $(4 \times 6) = 24$ days.

A's wages: B's wages = A's 1 day's work: B's 1 day's work = $\frac{1}{12} : \frac{1}{12} = 2:1$

A's share = Rs. $(\frac{2}{3} \times 180) = \text{Rs. } 120$

Answer: d

25.) 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?

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

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

C's share = Rs $(\frac{1}{8} \times 3200)$ Rs 400

Answer: b

26). A sum of money is sufficient to pay A's wages for 21 days and B's wages for 28 days. The same money is sufficient to pay the wages of both for?

Let total money be Rs. X

A's 1 day's wages = Rs. $\frac{x}{21}$, B's 1 day's wages = Rs. $\frac{x}{28}$

(A+B)'s 1 day's wages = Rs. $(\frac{x}{21} + \frac{x}{28}) = \text{Rs. } \frac{x}{12}$

Money is sufficient to pay the wages of both for 12 days

Answer: a

27). A can do a piece of work in 10 days in 15 days. They work for 5 days. The rest of the work had finished by C in 2 days. If they get Rs.1500 for the whole work, the daily wages of B and C are?

$$\text{Part of the work done by A} = \left(\frac{1}{10} \times 5\right) = \frac{1}{2}$$

$$\text{Part of the work done by B} = \left(\frac{1}{15} \times 5\right) = \frac{1}{3}$$

$$\text{Part of the work done by C} = 1 - \left(\frac{1}{2} + \frac{1}{3}\right) = \frac{1}{6}$$

$$\text{So, (A's share): (B's share): (C's share)} = \frac{1}{2} : \frac{1}{3} : \frac{1}{6} = 3: 2: 1$$

$$\text{A's share} = \text{Rs.} \left(\frac{3}{6} \times 1500\right) = \text{Rs.} 750, \text{B's share} = \text{Rs.} \left(\frac{2}{6} \times 1500\right) = \text{Rs.} 500,$$

$$\text{C's share} = \text{Rs.} \left(\frac{1}{6} \times 1500\right) = \text{Rs.} 250$$

$$\text{A's daily wages} = \text{Rs.} \left(\frac{750}{5}\right) = \text{Rs.} 150; \text{B's daily wages} = \text{Rs.} \left(\frac{500}{5}\right) = \text{Rs.} 100;$$

$$\text{C's daily wages} = \text{Rs.} \left(\frac{250}{2}\right) = \text{Rs.} 125.$$

$$\text{Daily wages of B and C} = \text{Rs.} (100 + 125) = \text{Rs.} 225$$

Answer: b

28). A and B together can complete a work in 12 days. A alone can complete it in 20 days. If B does the work only for half a day daily, then in how many days A and B together will complete the work?

$$\text{B's 1 day's work} = \left(\frac{1}{12} - \frac{1}{20}\right) = \frac{2}{60} = \frac{1}{30}$$

$$\text{Now, (A+B)'s 1 day's work} = \left(\frac{1}{20} + \frac{1}{60}\right) = \frac{4}{60} = \frac{1}{15}. \quad |B \text{ works for half day only}|$$

So, A and B together will complete the work in 15 days

Answer: c

29). A alone can complete a work in 16 days and B alone in 12 days. Starting with A, they work on alternate days. The total work will be completed in?

$$(A+B)'s \text{ 2 day's work} = \left(\frac{1}{16} + \frac{1}{12}\right) = \frac{7}{48}$$

$$\text{Work done in 6 pairs of days} = \left(\frac{7}{48} \times 6\right) = \frac{7}{8}. \text{ Remaining work} = \left(1 - \frac{7}{8}\right) = \frac{1}{8}$$

$$\text{Work done by A on 13^{th} day} = \frac{1}{16}. \text{ Remaining work} = \left(\frac{1}{8} - \frac{1}{16}\right) = \frac{1}{16}$$

On 14th day, it is B's turn.

$$\frac{1}{12} \text{ work is done by B in 1 day. } \frac{1}{16} \text{ work is done by B in } \left(12 \times \frac{1}{16}\right) = \frac{3}{4} \text{ day}$$

$$\text{Total time taken} = 13\frac{3}{4} \text{ days}$$

Answer: d

30). A, B and C can do a piece of work in 11 days, 20 days and 55 days respectively, working alone. How soon can the work be done if A is assisted by B and C on every third day?

$$(A+B)'s \text{ 1 day's work} = \left(\frac{1}{11} + \frac{1}{20}\right) = \frac{31}{220}. (A+C)'s \text{ work} = \left(\frac{1}{11} + \frac{1}{55}\right) = \frac{6}{55}$$

$$\text{Work done in 2 days} = \left(\frac{31}{220} + \frac{6}{55}\right) = \frac{55}{220} = \frac{1}{4}$$

Now, $\frac{1}{4}$ work is done by A in 2 days.

Whole work will be done in $(2 \times 4) = 8$ days.

Answer: b

31). A, B and C can separately 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 alternative days? A's 2 day's work = $\left(\frac{1}{20} \times 2\right) = \frac{1}{10}$

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

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

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

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

Answer: b

32).A and B can separately do a piece of work in 20 and 15 days respectively. They worked together for 6 days, after which B was replaced by C. If the work was finished in next 4 days, then the number of days in which C alone could do the work will be?

$$(A+B)'s \text{ 6 day's work} = 6\left(\frac{1}{20} + \frac{1}{15}\right) = \frac{7}{10}; (A+C)'s 4 \text{ day's work} = \frac{3}{10}$$

$$(A+C)'s 1 \text{ day's work} = \frac{3}{40} A's 1 \text{ day's work} = \frac{1}{20}$$

$$C's 1 \text{ day's work} = \left(\frac{3}{40} - \frac{1}{20}\right) = \frac{1}{40}$$

Hence, C alone can finish the work in 40 days.

Answer: c

33).A, B and C can do a work in 36, 54 and 72 days respectively. They started the work but A left 8 days before the completion of the work while B left 12 days before the completion. The number of days for which C worked is?

Suppose, the work was finished in x days.

Then, A's $(x-8)$ day's work + B's $(x-12)$ day's work + C's x day's work = 1

$$\Rightarrow \frac{(x-8)}{36} + \frac{(x-12)}{54} + \frac{x}{72} = 1 \Rightarrow 6(x-8) + 4(x-12) + 3x = 216$$

$$13x = 312 \text{ or } x=24$$

Answer: d

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

(20×16) Women can complete the work in 1 day.

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

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

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

$$\text{So, required ratio} = \frac{1}{240} : \frac{1}{320} = 4:3$$

Answer: b

35). 10 men can complete a piece of work in 15 days and 15 women can complete the same work in 12 days. If all the 10 men and 15 women work together, in how many days will the work get completed? 10 men's 1 day's work = $\frac{1}{15}$; 15 women's 1 day's work = $\frac{1}{12}$.

$$(10 \text{ men} + 15 \text{ women})'s \text{ 1 day's work} = \left(\frac{1}{15} + \frac{1}{12}\right) = \frac{9}{60} = \frac{3}{20}$$

$$10 \text{ men and 15 women will complete the work in } \frac{3}{20} = 6\frac{2}{3} \text{ days.}$$

Answer: c

36). Seven men can complete a work in 12 days. They started the work and after 5 days, two men left .How many days will they take to complete the remaining work?

(7 × 12) men can complete the work in 1 day

$$1 \text{ man's 1 day's work} = \frac{1}{84}$$

$$7 \text{ men's 5 day's work} = \left(\frac{1}{12} \times 5\right) = \frac{5}{12}. \text{ Remaining work} = \left(1 - \frac{5}{12}\right) = \frac{7}{12}$$

$$5 \text{ men's 1 day's work} = \left(\frac{1}{84} \times 5\right) = \frac{5}{84}$$

$\frac{5}{84}$ work is done by them in 1 day.

$$\frac{7}{12} \text{ Work is done by them in } \left(\frac{84}{5} \times \frac{7}{12}\right) = \frac{49}{5} \text{ days} = 9\frac{4}{5} \text{ days}$$

Answer: d

37). 12 men complete a work in 9 days. After they have worked for 6 days,6 more men join them. How many days will they take to complete the remaining work?

$$1 \text{ man's 1 day's work} = \frac{1}{108}$$

$$12 \text{ men's 6 day's work} = \left(\frac{1}{9} \times 6\right) = \frac{2}{3}. \text{ Remaining work} = \left(1 - \frac{2}{3}\right) = \frac{1}{3}$$

$$18 \text{ men's 1 day's work} = \left(\frac{1}{108} \times 18 \right) = \frac{1}{6}$$

$\frac{1}{6}$ Work is done by them in 1 day.

$$\frac{1}{3} \text{ work is done by them in } \left(6 \times \frac{1}{3} \right) = 2 \text{ days}$$

Answer: a

38). Three men, four women and six children can complete a work in seven days. A woman does double the work a man does half the work a man does. How many women alone can complete this work in 7 days?

Let 1 woman's 1 day's work = x

Then, 1 man's 1 day's work = $\frac{x}{2}$ and 1 child's 1 day's work = $\frac{x}{4}$

$$\text{So, } \left(\frac{3x}{2} + 4x + \frac{6x}{4} \right) = \frac{1}{7} \Rightarrow x = \left(\frac{1}{7} \times \frac{4}{28} \right) = \frac{1}{49}$$

1 woman alone can complete the work in 49 days.

So, to complete the work in 7 days, number of women required = $(\frac{49}{7}) = 7$

Answer: a

39). A man, a woman and a boy can complete a job in 3, 4 and 12 days respectively. How many boys must assist 1 man 1 woman to complete the job $\frac{1}{4}$ of a day?

$$(1 \text{ man} + 1 \text{ woman})'s 1 \text{ day's work} = \left(\frac{1}{3} + \frac{1}{4} \right) = \frac{7}{12}$$

$$\text{Work done by 1 man and 1 woman in } \frac{1}{4} \text{ day} = \left(\frac{7}{12} \times \frac{1}{4} \right) = \frac{7}{48}$$

$$\text{Remaining work} = \left(1 - \frac{7}{48} \right) = \frac{1}{48}$$

$$\text{Work done by 1 boy in } \frac{1}{4} \text{ day} = \left(\frac{1}{12} \times \frac{1}{4} \right) = \frac{1}{48}$$

$$\text{Number of boys required} = \left(\frac{41}{48} \times 48 \right) = 41$$

Answer: d

40). 10 men and 15 women together can complete a work in 6 days. It takes 100 days for one man alone to complete the same work. How many days will be required for one woman alone to complete the same work?

$$1 \text{ man's 1 day's work} = \frac{1}{100}; (10 \text{ men} + 15 \text{ women})'s \text{ day work} = \frac{1}{6}$$

$$15 \text{ women's 1 day's work} = \left(\frac{1}{6} - \frac{10}{100} \right) = \left(\frac{1}{6} - \frac{1}{10} \right) = \frac{1}{15}$$

$$1 \text{ woman's 1 day's work} = \frac{1}{225}$$

1 woman alone can complete the work in 225 days.

Answer: e

41). 12 men can complete a piece of work in 4 days, while 15 women can complete the same work in 4 days. 6 men start working on the job and after working for 2 days, all of them stopped working. How many women should be put on job to complete the remaining work, if it is to be completed in 3 days?

$$1 \text{ man's 1 day's work} = \frac{1}{48}; 1 \text{ woman's 1 day's work} = \frac{1}{60}$$

$$6 \text{ men's 2 day's work} = \left(\frac{6}{48} \times 2 \right) = \frac{1}{4}. \text{ Remaining work} = \left(1 - \frac{1}{4} \right) = \frac{3}{4}$$

Now, $\frac{1}{60}$ work is done in 1 day by 1 woman

$$\text{So, } \frac{3}{4} \text{ work will be done in 3 days by } \left(60 \times \frac{3}{4} \times \frac{1}{3} \right) = 15 \text{ women}$$

Answer: a

42). Twelve children take sixteen days to complete a work which can complete by eight adults in twelve days. Sixteen adults started working and after three days ten adults left and four children joined them. How many days will they take to complete the remaining work?

$$1 \text{ child's 1 day's work} = \frac{1}{192}; 1 \text{ adult's 1 day's work} = \frac{1}{96}$$

$$\text{Work done in 3 days} = \left(\frac{1}{96} \times 16 \times 3 \right) = \frac{1}{2}. \text{ Remaining work} = \left(1 - \frac{1}{2} \right) = \frac{1}{2}$$

$$(6 \text{ adults} + 4 \text{ children})'s \text{ 1 day's work} = \left(\frac{6}{96} + \frac{4}{192} \right) = \frac{1}{12}$$

$\frac{1}{12}$ Work is done by them in 1 day

$$\frac{1}{2} \text{ work is done by them } \left(12 \times \frac{1}{2} \right) = 6 \text{ days}$$

Answer: e

43). 10 women can complete a work in 7 days and children take 14 days to complete the work. How many days will 5 women and 10 children take to complete the work?

$$1 \text{ woman's 1 day's work} = \frac{1}{70}; 1 \text{ child's 1 day's work} = \frac{1}{140}$$

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

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

Answer: c

44). Sixteen men can complete a work in twelve days. Twenty-four children can complete the same work in eighteen days. Twelve men and eight children started working and after eight days three more children joined them. How many days will they now take to complete the remaining work?

$$1 \text{ man's 1 day's work} = \frac{1}{192}; 1 \text{ child's 1 day's work} = \frac{1}{432}$$

$$\text{Work done in 8 days} = 8 \left(\frac{12}{192} + \frac{8}{432} \right) = 8 \left(\frac{1}{16} + \frac{1}{54} \right) = \frac{35}{54}$$

$$\text{Remaining work} = \left(1 - \frac{35}{54} \right) = \frac{19}{54}$$

$$(12 \text{ men} + 11 \text{ children})'s 1 \text{ day's work} = \left(\frac{12}{192} + \frac{11}{432} \right) = \frac{19}{216}$$

Now, $\frac{19}{216}$ work is done by them in 1 day

$$\frac{19}{54} \text{ work will be done by them in } \left(\frac{219}{19} \times \frac{19}{54} \right) = 4 \text{ days.}$$

Answer: b

45). Twenty-four men can complete a work in sixteen days. Thirty-two women can complete the same work in twenty-four days .Sixteen men and sixteen women started working and worked for twelve days. How many more men are to be added to complete the remaining work in 2 days?

$$1 \text{ man's 1 day's work} = \frac{1}{384}; 1 \text{ woman's 1 day's work} = \frac{1}{768}$$

$$\text{Work done in 12 days} = 12\left(\frac{16}{384} + \frac{16}{768}\right) = \left(12 \times \frac{3}{48}\right) = \frac{3}{4}$$

$$\text{Remaining work} = \left(1 - \frac{3}{4}\right) = \frac{1}{4}$$

$$(16 \text{ men} + 16 \text{ women})'s 2 \text{ day's work} = 2 \left(\frac{16}{384} + \frac{16}{768}\right) = \left(2 \times \frac{1}{16}\right) = \frac{1}{8}$$

$$\text{Remaining work} = \left(\frac{1}{4} - \frac{1}{8}\right) = \frac{1}{8}$$

$\frac{1}{384}$ Work is done in 1 day by 1 man

$$\frac{1}{8} \text{ Work will be done in 2 days by } \left(384 \times \frac{1}{8} \times \frac{1}{2}\right) = 24 \text{ men.}$$

Answer: b

46). 5 men and 2 boys working together can do four times as much work as a man and a boy. Working capacities of a woman and a boy are in the ratio?

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

$$\text{Then, } 5x + 2y = 4(x + y) \Rightarrow x = 2y \Rightarrow \frac{x}{y} = \frac{2}{1}$$

Answer: b

47). If 12 men and 2 boys working together can do four times as much work as a man and a boy. Working capacities of a woman and a boy are in the ratio?

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

$$\text{Then, } 12x + 16y = \frac{1}{5} \text{ and } 13x + 24y = \frac{1}{4}$$

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

$$\text{Required ratio} = x:y = \frac{1}{100} : \frac{1}{200} = 2:1$$

Answer: a

78).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?

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

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

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

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

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

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

Answer: b

49).One man,3 women and 4 boys can do a piece of work in 96 hours,2 men and 8 days can do it in 80 hours,2 men and 3 women can do it in 120 hours.5men and 12 boys can do in:?

Let 1 man's 1 hour's work = x , 1 woman's 1 hour's work = y

and 1 boy's 1 hour's work = z . Then,

$$x+3y+4z=\frac{1}{96} \quad \dots \dots \text{(i)} \quad 2x + 8z = \frac{1}{80} \quad \dots \dots \text{(ii)} \quad 2x + 3y = \frac{1}{120} \quad \dots \dots \text{(iii)}$$

Adding (ii) and (iii) and subtracting (i) from it, we get it, we get: $3x + 4z = \frac{1}{96} \dots \dots \text{(iv)}$

From (ii) and (iv), we get $x = \frac{1}{480}$ Substituting, we get : $y = \frac{1}{720}$, $z = \frac{1}{960}$

$$(5 \text{ men} + 12 \text{ boy})'s 1 \text{ hour's work} = \left(\frac{5}{480} + \frac{12}{960}\right) = \left(\frac{1}{96} + \frac{1}{80}\right) = \frac{11}{480}$$

5 men and 12 boys can do the work in $\frac{480}{11}$ i. e., $43\frac{7}{11}$ hours

Answer: c

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50). 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?

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

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

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

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

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

Answer: a

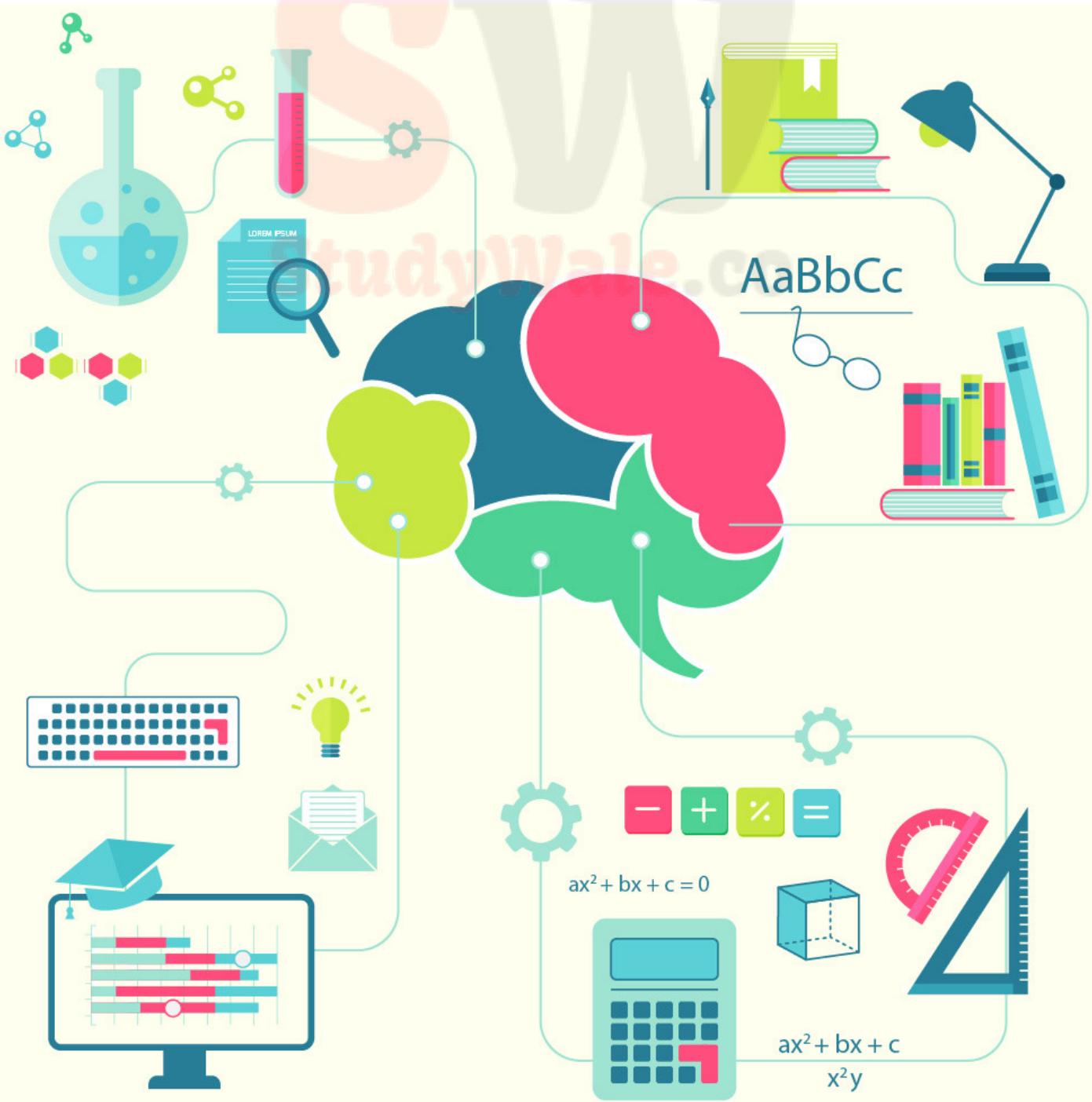
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Time and Distance Questions for SSC CGL

06 April 2018





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Question 1: Raju travels half of the distance to his school on foot at 10 km/hr and remaining half of the distance by bus at 30 km/hr. If the distance between school and his starting point is 60 km, find the time taken by Raju to reach his school?

- a) 5 hours
- b) 4.8 hours
- c) 3.6 hours
- d) 4 hours

Question 2: Jogging at a speed of 6.5 km/hr a man can cover a distance in 18 hours. Running at a speed of 12 km/hr the man covers the same distance in

- a) 7.85 hours
- b) 10.5 hours
- c) 8.36 hours
- d) 9.75 hours

Question 3: Two trains moving in opposite directions cross each other in 60 seconds. If their speeds are 30 km/hr and 120 km/hr, find the sum of the lengths of the trains.

- a) 3.2 km
- b) 2.8 km
- c) 2.5 km
- d) 3.6 km

Question 4: A group of rowers can row a boat at a speed of 20 m/min. The speed of the water current is 0.24 km/hr. What is the difference between the time they will take to row 576 m upstream and downstream?

- a) 8 minutes
- b) 10 minutes
- c) 12 minutes
- d) 15 minutes

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Question 5: A train of length 480 m crosses a pole in 32 seconds. What is the speed of the train?

- a) 36 km/hr
- b) 45 km/hr
- c) 54 km/hr
- d) 63 km/hr

Question 6: 10 men can together do a piece of work in 4 days. But from the second day, 1 worker kept on leaving the group each day. On which day will the assignment get completed?

- a) 5th day
- b) 6th day
- c) 7th day
- d) 8th day

Question 7: A person bought an article marked at Rs. 100 and gets successive discounts of 10% and 20%. Then, he also spends 10% of the cost price as transportation cost. To earn a profit of 5%, at what price should he sell the article?

- a) Rs.79.2079.20
- b) Rs.80.3580.35
- c) Rs.75.4275.42
- d) Rs.83.1683.16

Question 8: To catch the train just in time, Uday estimated that he needs to leave his house before 3 hours of the scheduled departure if he travels at his normal speed. However, he leaves his house 45 minutes later than he planned. To catch the train just on time, he needs to increase his speed by

- a) 16.66%
- b) 20%
- c) 33.33%
- d) 25%

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Question 9: 3 days of Amit's work is equal to 2 days of Vinod's work. If Amit can complete a particular job in 15 days, then how many days will Vinod take to complete the same work?

- a) 22.5 days
- b) 10 days
- c) 20 days
- d) 30 days

Question 10: Ram can do a piece of work in 15 days. Shyam can do the same piece of work in 20 days. They work together for 5 days and then Ram leaves. On which day (from the beginning) will the work be completed?

- a) 10th day
- b) 12th day
- c) 13th day
- d) 14th day

Answers & Solutions:

1) Answer (D)

Total time taken to reach Raju's school = $30 / 10 + 30 / 30 = 3 + 1 = 4$ hrs.

2) Answer (D)

Distance he covers = $6.5 * 18 = 117$ km

Time taken by the man to cover the distance while running = $117 / 12 = 9.75$ hours

3) Answer (C)

60 seconds = $1/60$ hours

Sum of the lengths of the trains = (sum of the speeds of the trains)*time taken = $(30+120)*(1/60) = 2.5$ km

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**4) Answer (C)**

The speed in still water is 20 m/min

Speed of the water current is $0.24 \text{ km/hr} = 4 \text{ m/min}$

\Rightarrow Speed of the boat upstream = 16 m/min \Rightarrow Time upstream = $576/16 = 36 \text{ min}$

Speed of the boat downstream = 24 m/min \Rightarrow Time downstream = $576/24 = 24 \text{ min}$

\Rightarrow Difference in time = $36-24 = 12 \text{ min}$

5) Answer (C)

Speed = Distance / Time

Speed of the train = $480/32 = 15 \text{ m/s}$

To convert m/s to km/hr we need to multiply by $18/5$

So Speed = $15*18/5 = 54 \text{ km/hr}$

6) Answer (A)

Let us assume that each man does 1 unit of work each day.

So, the total work to be done is $10 \times 4 = 40$ units

Now, on the first day 10 workers will work, on the second day 9 workers will work, on third 8 and so forth.

Since each man does 1 unit of work, the work done on each day can be written as-

$10(1\text{st day}) + 9(2\text{nd day}) + 8(3\text{rd day}) + 7(4\text{th day}) + 6(5\text{th day}) = 40 \text{ units}$

Thus, the assignment will get completed on the 5th day.

7) Answer (D)

Marked Price = Rs. 100

After successive discount of 10% and 20% ,

Therefore, Cost Price becomes $\Rightarrow (0.90) \times (0.80) \times 100 = 72$

Since, there is a Transportation Cost as well

Total Cost Price $\Rightarrow (1.10) \times 72 = \text{Rs. } 79.20$

To gain 5%, Selling Price of the dealer should be $\Rightarrow \text{Rs.} (1.05) \times (79.20) = \text{Rs. } 83.16$

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**8) Answer (C)**

Let his normal speed be 's'.

So, the distance will be 180s. (3 hours = 180 minutes)

But he leaves his house 45 minutes late. So, the time left is 135 minutes.

Let the speed in this case be s'.

$$\Rightarrow 135s' = 180s$$

$$\Rightarrow s'/s = 4/3$$

Thus, he needs to increase his speed by a factor of $1/3$ or 33.33%

9) Answer (B)

The amount of work done by Amit in 3 days is equal to the amount of work done by Vinod in 2 days. Hence if Amit does 1 unit of work in 3 days, Vinod can do it in 2 days. In 15 days, Amit would do $15/3 = 5$ units of work.

The time needed by Vinod to complete 5 units of work = $5*2 = 10$ days.

10) Answer (D)

Let the total work to be done be 60 units. So Ram does 4 units of work in a day and Shyam does 3 units of work in a day. Hence when they work together, they will be able to do 7 units in 1 day. Hence in 5 days, they will do 35 units of work. Thus, the remaining 25 units will have to be done by Shyam. The time taken by Shyam to do the remaining 25 units of work = $25/3 = 8.33$ days. Hence the total time taken = $5 + 8.33 = 13.33$ days.

Hence the work will be completed on 14th day.

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Time and Work Questions for SBI PO PDF

23 April 2018





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Question 1: Three friends J, K and L jog around a circular stadium and complete one round in 12, 18 and 20 seconds respectively. In how many minutes will all the three meet again at the starting point

- a) 5
- b) 8
- c) 12
- d) 3
- e) None of these

Question 2: The speed of a boat when travelling downstream is 32 Kms. / Hr. , whereas when travelling upstream it is 28 kms/hr. What is the speed of the boat in still water ?

- a) 27 Kms./Hr.
- b) 29 Kms./ Hr.
- c) 31 Kms./ Hr.
- d) Cannot be determined
- e) None of these

Question 3: If I walk at 4 km/h, I miss the bus by 10 min. If I walk at 5 km/h, I reach 5 min before the arrival of the bus. How far I walk to reach the bus stand?

- a) 5 km
- b) 5.5 km
- c) 6 km
- d) 7.5 km
- e) None of these

Question 4: The speed of a boat in still water is 15 km/hr and the rate of current is 3 km/hr. The distance travelled down steam in 12 minutes is:

- a) 3.3 km
- b) 2.9 km
- c) 2.4 km
- d) 3.6 km
- e) None of these

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Question 5: An express train travelled at an average speed of 75 km/h stopping for 5 min every 125 km. How long did it take to reach its destination 375 km from the starting point?

- a) 6 h 30 min
- b) 4 h 45 min
- c) 3 h 15 min
- d) 5 h 10 min
- e) None of these

Question 6: A boat's speed with the current is 15 kmph and the boat's speed against the current is 5 kmph. What is the speed of the current?

- a) 15 kmph
- b) 10 kmph
- c) 5 kmph
- d) 20 kmph
- e) None of the above

Question 7: A 210 m long train takes 6 s to cross a man running at 9 km/h in a direction opposite to that of the train. What is the speed of the train? (in km/h)

- a) 127
- b) 121
- c) 117
- d) 108
- e) 111

Question 8: A truck covers a distance of 640 km in 10 h. A car covers the same distance in 8 h. What is the respective ratio between the speed of the truck and the car?

- a) 3: 4
- b) 1: 2
- c) 5: 6
- d) 6: 7
- e) None of these

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Question 9: Faisal walks 325 m every day .How many kilometers will he walk in four weeks?

- a) 6.2
- b) 9.1
- c) 8.6
- d) 7.8
- e) None of these

Question 10: A 280 m long train crosses a platform thrice its length in 6 min 40 s. What is the speed of the train?

- a) 3.2 m/s
- b) 1.4 m/s
- c) 2.8 m/s
- d) Cannot be determined
- e) None of these

Answers & Solutions:

1) Answer (D)

All the three friends will meet at the starting point again after X seconds, such that X is the LCM of the times taken by J, K and L to complete one round.

=> LCM of 12, 18 and 20 = 180 seconds = 3 minutes.

Hence 3 minutes is the answer.

2) Answer (E)

Let the speed of boat in still water be v and the speed of water be x.

Boat speed while going upstream = $v-x = 28$

Boat speed while going downstream = $v+x = 32$

=> $2v = 60 \Rightarrow v = 30$

Hence, none of these is the correct answer.

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3) Answer (A)

Suppose the required distance be d km/h

Then, $d/4 - d/5 = 15\text{min} = 1/4 \text{ h} \Rightarrow d/120 = 1/4 \Rightarrow d = 5\text{km}$

4) Answer (D)

Speed downstream = $(15 + 3)$ kmph = 18 kmph.

Distance traveled = $(18 \times 12/60)$ km = 3.6 km.

5) Answer (D)

Time taken to cover 375 km = $(375 / 75)\text{h} = 5\text{h}$

Number of stoppages = $375 / 125 - 1 = 2$

Total time to stoppages = (5×2) min = 10 min

Hence, total time taken = 5 h 10 min

6) Answer (C)

With the current => downstream

Against the current => upstream

Let the speed of the boat be 's' and the speed of the river be 'r'.

So, $s - r = 5$ and $s + r = 15$

$\Rightarrow 2s = 20 \Rightarrow s = 10$ and $r = 5$ kmph

Speed of the current = 5 kmph

7) Answer (C)

Speed of train = x

Relative speed = $x + 9(5 / 18) = x + 2.5$

Speed = $210 / 6 = 35$ m/s

$x + 2.5 = 35 \Rightarrow x = 32.5$ m/s = $32.5 * (18/5) = 6.5 * 18 = 117$ kmph

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**8) Answer (E)**

We know the formula of speed which is Speed = Distance/Time

Speed of a truck = $640/10 = 64$

Speed of a car = $640/8 = 80$

Ratio of speed of truck and car = $64:80 = 4:5$

9) Answer (B)

Number of days in 4 weeks = $4*7 = 28$

Since Faisal walks 325 m every day

Distance walked in 28 days = $325*28 = 9100$ m

9100 m = 9.1 km

10) Answer (C)

Length of the train = 280 m

Length of the platform = $(280*3)$ m

Since the train passes the platform completely

Total distance traveled by train = $280 + (3*280) = 4*280$

Time take = 6 min 40 s = $360 + 40 = 400$ s

Speed = $4*280 / 400 = 2.8$ m/s.

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①

समय, काम और मजदूरी - 1

$$\frac{M_1 \cdot D_1 \cdot H_1 \cdot R_1}{W_1} = \frac{M_2 \cdot D_2 \cdot H_2 \cdot R_2}{W_2}$$

M = Man व्यक्ति
 D = Day दिन
 H = Hour घंटा
 R = Rate दर
 W = Work कार्य

- ① 20 व्यक्ति किसी कार्य को 20 दिन में समाप्त करते हैं तो 25 व्यक्ति इस कार्य को कितने दिन में समाप्त करेंगे।

Ans: $\frac{M_1 \times D_1}{W_1} = \frac{M_2 \times D_2}{W_2}$

Q: Job-Adda.in

$$\Rightarrow \frac{20 \times 20}{x} = \frac{25 \times x}{x} \Rightarrow x = 16 \text{ दिन}$$

Ans.

- ② एक सैनिक शिविर में 500 सैनिकों के लिए 27 दिन की भोजन सामग्री थी। तीन दिन बाद 300 सैनिक और आगे तो शेष सामग्री कितने दिनों के लिए पर्याप्त हैं।

<i>Ans</i> $\begin{array}{ccc} \text{sैनिक} & \text{दिन} \\ \frac{500}{500} & \rightarrow & 27 \\ 3 \text{ दिन बाद} & \frac{500}{800} & 24 \\ & \frac{800}{800} & x \end{array}$	$500 \times 27 = 800 \times x$ $x = 15 \text{ दिन}$ <p><i>Ans.</i></p>
---	--

- ③ कुछ व्यक्तियों ने मिलकर एक कार्य को 18 दिन में समाप्त करना तय किया। परन्तु 6 व्यक्ति आरंभ से ही अनुपस्थित रहे तब्दी शेष व्यक्तियों ने 20 दिन में कार्य समाप्त किया तो आरंभ में व्यक्तियों की संख्या ज्ञात करो।

$$\text{Ans} \Rightarrow \frac{M_1 \times D_1}{W_1} = \frac{M_2 \times D_2}{W_2} \Rightarrow \frac{x \times 18}{x} = \frac{(x-6) \times 20}{x}$$

$$\Rightarrow 18x = 20x - 120 \Rightarrow 2x = 120 \Rightarrow x = 60 \text{ व्याप्ति}$$

④ कुद्द व्याप्ति किसी कार्य को 60 दिन में समाप्त करते हैं। यदि 8 व्याप्ति और अधिक होते तो यह कार्य पूरा होने में 10 दिन कमलगते। आरंभ में कितने व्याप्ति थे।

$$\text{Ans} \Rightarrow \frac{x \times 60}{x} = \frac{(x+8) \times 50}{x} \Rightarrow 60x = 50x + 400$$

$$\Rightarrow 10x = 400 \Rightarrow x = 40 \text{ व्याप्ति}$$

⑤ 6 आदमी अथवा 12 लड़के एक काम को 25 दिन में समाप्त करते हैं तो 6 आदमी तथा 11 लड़के इस कार्य को कितने दिन में समाप्त करेंगे। (c) Job-Adda.in

$$\text{Ans} \Rightarrow \frac{(3M) \times 25}{x} = \frac{[6M + 11B] \times x}{x}$$

$$\Rightarrow 24 \times 25 = (18 + 22) \times x$$

$$\Rightarrow 24 \times 25 = 40x \Rightarrow x = 15 \text{ दिन}$$

$$8M = 12B$$

$$4M = 6B$$

⑥ 3 आदमी या 4 औरते या 6 लड़के किसी काम को 27 दिन में समाप्त करते हैं तो 6 आदमी, 6 औरते व 6 लड़के उस कार्य को कितने दिन में समाप्त करेंगे।

$$\text{Ans} \quad (3M) \times 27 = [6M + 6W + 6B] \times x$$

$$\downarrow \quad \downarrow \quad \downarrow \quad \downarrow$$

$$3 \times 4 \times 27 = [24 + 18 + 12] \times x$$

$$3 \times 4 \times 27 = 54 \times x$$

$$x = 6 \text{ दिन}$$

$$3M = 4W = 6B$$

$$M : W : B$$

$$24 : 18 : 12$$

$$4 : 3 : 2$$

(3)

- ⑦ यदि 35 व्यक्ति 49 मीटर लम्बी दीवार को 7 दिन में बना सकते हैं, तो 30 व्यक्ति 6 दिन में कितने मीटर लम्बी दीवार बना सकेंगे।

$$\text{Ans: } \frac{M_1 \times D_1}{W_1} = \frac{M_2 \times D_2}{W_2} \Rightarrow \frac{\frac{35 \times 7}{49}}{7} = \frac{30 \times 6}{x}$$

$$x = 56 \text{ मीटर}$$

- ⑧ यदि 25 व्यक्ति प्रतिदिन 7 घण्टे कार्य करके 1 खाड़ी को 18 दिन में खोद सकते हैं तो कितने मजदूर 9 घण्टे प्रतिदिन कार्य करके इस खाड़ी को 16 दिन में जोड़ेंगे।

$$\text{Ans: } \frac{M_1 \times H_1 \times D_1}{W_1} = \frac{M_2 \times H_2 \times D_2}{W_2}$$

$$\Rightarrow \frac{\frac{25 \times 7 \times 18^2}{1}}{1} = \frac{9 \times 16 \times x}{1} \quad [x = ? \text{ मजदूर}]$$

- ⑨ यदि 12 नर्दड़ी 6 घण्टे प्रतिदिन कार्य करके 25 दिन में 460 कुर्सी बना सकते हैं तो 18 नर्दड़ी 8 घण्टे प्रतिदिन कार्य करके 36 दिन में कितनी कुर्सी बना सकेंगे।

$$\text{Ans: } \frac{M_1 \times H_1 \times D_1}{W_1} = \frac{M_2 \times H_2 \times D_2}{W_2}$$

$$\Rightarrow \frac{12 \times 6 \times 25}{460} = \frac{18 \times 8 \times 36}{x}$$

$$x = 1380 \text{ कुर्सी}$$

- ⑩ यदि 400 व्यक्ति 9 घण्टे प्रतिदिन कार्य करके किसी कार्ग के $\frac{1}{4}$ भाग की 10 दिन में समाप्त कर सके तो कितने अतिरिक्त व्यक्ति लगाये जाये जो 8 घण्टे प्रतिदिन कार्य

करके शेष कार्य को 20 दिन में समाप्त कर सके।

$$\text{Ans: } \frac{M_1 \times H_1 \times D_1}{W_1} = \frac{M_2 \times H_2 \times D_2}{W_2}$$

$$\Rightarrow \frac{25 \times 200}{400 \times 9 \times 10 \times 5} = \frac{x \times 8 \times 20 \times 9}{3}$$

$$x = 675 \quad \text{अतिरिक्त व्याप्ति} = 675 - 400 = 275$$

⑩ 15 पुरुष 8 घण्टे प्रतिदिन कार्य करके किसी कार्य को 21 दिन में समाप्त करते हैं तो ६ पुरुष 6 घण्टे प्रतिदिन कार्य करके इसे कितने दिन में समाप्त कर देंगे जबकि उमडिला १ पुरुषों के बराबर काम करती हैं।

$$\text{Ans: } (15M) \times 8 \times 21 = (21W) \times 6 \times x$$

$$3W = 2M$$

$$\frac{15}{45} \times \frac{4^2}{8} \times 21 \underset{\text{प्र०}}{=} x \underset{\text{प्र०}}{=} 30 \text{ दिन}$$

⑫ 12 पुरुष तथा 18 लड़के $\frac{1}{2}$ घण्टे प्रतिदिन कार्य करके किसी कार्य को 60 दिन में समाप्त करते हैं। यदि १ पुरुष, २ लड़कों के समान कार्य करे तो ६ पुरुष कितने लड़कों की समायोजना में ३ घण्टे प्रतिदिन कार्य करके इसके द्वारा कार्य को 50 दिन में समाप्त कर सकते हैं।

$$\text{Ans: } \frac{[12M + 18B] \times 15 \times 60}{2 \times 1} = \frac{[21M + xB] \times 9 \times 50}{2}$$

$$\Rightarrow \frac{(24+18) \times 15 \times 60}{2} = \frac{(42+x) \times 9 \times 50}{2} \quad \frac{1M}{1} = \frac{2B}{2}$$

$$\Rightarrow 84 = 42+x \quad \Rightarrow x = 42 \text{ लड़के}$$

(5)

✓ यदि 9 दिन 8 घण्टे प्रतिदिन कार्यरत रहने पर 27 मीट्रिक टन कोयले की खपत करते हैं तो 8 दिन प्रतिदिन 13 घण्टे कार्यरत रहकर कितने कोयले की खपत करेंगे जबकि पहली प्रकार के 3 दिन उतनी खपत करते हैं जितनी दूसरी प्रकार के

4 दिन।

$$\text{Ans} \quad \frac{\text{I} \times 9 \times 8}{24} = \frac{\text{II} \times 8 \times 13}{x}$$

$$\text{I} \times 3 = \text{II} \times 4$$

$$\Rightarrow \frac{\text{I} \times 3 \times 8}{24} = \frac{\text{II} \times 8 \times 13}{x} \quad x = 26 \text{ मीट्रिक टन}$$

(4) एक व्यक्ति किसी कार्य को 12 दिन में समाप्त करते हैं तो इससे दुगुने व्यक्ति इससे आधी काम को कितने दिन में समाप्त करेगा।

$$\text{Ans} \quad \frac{x \times 12}{1} = \frac{2x \times p \times 2}{1} \quad p = 3 \text{ दिन}$$

(5) एक डेकेदार ने एक सड़क का निर्माण कार्य 200 दिन में पूरा करने का डेका लिया उसने 140 आठवीं काम पर लगाये 60 दिन बाद उसे सात दूजा कि केवल कार्य का $\frac{1}{3}$ भाग शुरू किया गया है। वह कितने अतिरिक्त व्यक्ति काम पर लगाये कि सभी पर कार्य पूरा हो जाये।

$$\text{Ans} \quad \frac{140 \times 60 \times 1}{1} = \frac{x \times 140 \times 1}{3}$$

$$x = 180 \text{ व्यक्ति}$$

$$\text{अतिरिक्त व्यक्ति} = 180 - 140 = 40 \text{ व्यक्ति}$$

✓ एक डेकेदार ने कोई कार्य 19 दिन में शुरू करने के लिए 15 व्यक्ति काम पर लगाये जो 8 घण्टे प्रतिदिन कार्य करते

है। 10 दिन बाद किसी दुर्घटना के कारण 3 दिन कार्य नहीं हो सका तथा 4 व्यापति काम करने में भय नहीं रहे कितने अतिरिक्त व्यापति और लगाए गए जो 19 घण्टे प्रतिदिन कार्य करके समय पर कार्य प्राप्त कर देते।

Ans. 19 दिन में होता है = 1 काम

$$1 \text{ काम} = \frac{1}{19} \text{ काम}$$

$$10 \text{ दिन} = \frac{10}{19} \text{ काम}$$

$$\text{शेष काम} = 1 - \frac{10}{19} = \frac{9}{19} \text{ काम}$$

$$\text{शेष व्यापति} = 15 - 4 = 11 \text{ व्यापति}$$

$$\text{शेष दिन} = 19 - 10 - 3 = 6 \text{ दिन}$$

$$\Rightarrow \frac{5 \times 15 \times 18 \times 10 \times 15}{40} = \frac{x \times 9 \times 18 \times 6 \times 15}{9}$$

$$x = 20 \quad \text{अतिरिक्त व्यापति} = 20 - 11 = 9 \text{ व्यापति} \quad \text{Ans.}$$

(7) एक व्यापति 9 घण्टे ~~जोड़ना~~ ~~जोड़ना~~ निश्चित दूरी 50 दिन में तय कर लेता है। यदि वह दुगुना आराम करे तथा दुगुना तेज चले तो वह दुगुनी दूरी कितने दिन में तय करेगा।

Ans. पहले

$$\text{आराम} = 9 \text{ घण्टा}$$

$$\text{काम} = 15 \text{ घण्टा}$$

बाद में

$$\text{आराम} = 18 \text{ घण्टा}$$

$$\text{काम} = 6 \text{ घण्टा}$$

दूरी = कार्य

$$\text{चाल} = \frac{\text{km}}{\text{hr}}$$

$$m/s \quad \text{दर}$$

$$\Rightarrow \frac{5 \times 9 \times 50 \times 1}{1 \rightarrow \text{दूरी}} = \frac{8 \times 2 \times x}{2 \rightarrow \text{दूरी}} \quad x = 125 \text{ दिन}$$

(8) यदि 35 दोड़ों के लिये 270 किलोग्राम अनाज 21 दिन के लिये पर्याप्त होते 28 दोड़ों के लिये 360 किलोग्राम अनाज कितने दिनों के लिए पर्याप्त होगा।

$$\text{लाइ} \quad \frac{35 \times 270}{270} = \frac{28 \times x}{360} \quad x = 35 \text{ दिन} \quad \text{Ans.}$$

(7)

- 19 एक किलो में 850 ग्राम प्रति व्याकृति की दर से 3300 सेनिकों की खाद्य सामग्री 32 दिन के लिये थी। सात दिन बाद कुछ सेनिक और आने से तबा घट्टेक की 825 ग्राम प्रतिदिन देने से शेष सामग्री के बाद 17 दिन में समाप्त हो जाए तो किलो में कितने सेनिक और आ जाये।

Ans.	सेनिक	दर	दिन
	3300	850	32
7 दिन बाद	3300	850	25
	x	825	17

$$\frac{100}{3300} \times \frac{50}{850} \times \frac{35}{25} = x \times \frac{825}{x} \times 17$$

$x = 5000$ © Job-Adda.in \Rightarrow अतिरिक्त सेनिक = [1700] Ans.

- 20 4 बुनकर 4 चाटाई, 4 दिनों में बुन सकते हैं तो 8 बुनकर 8 दिनों में कितनी चाटाई बुन सकेंगे।

$$\text{Ans. } \frac{A \times A}{A} = \frac{28 \times 8}{x} \quad x = 16 \text{ चाटाई}$$

- 21 एक केकेदारने किसी कार्य को 40 दिन में पूरा करने का तो किया। उसने आरेम में 100 व्याकृति कार्य पर लगाये तब 35 दिन बाद 100 व्याकृति और लगाकर सभाय पर कार्य पूर्ण कर दिया। यदि वह अतिरिक्त व्याकृति कार्यरत नहीं करता है तो तीक समय के कितने दिन बाद कार्य समाप्त होगा।

Ans. माना 100 व्याकृति कार्य समाप्त करते हैं = x दिन में
तो कुल कार्य = $100x$

$$100x = (35 \times 100) + (5 \times 200)$$

$$100x = 3500 + 1000$$

$$100x = 4500$$

$$x = 45 \text{ दिन}$$

$$\text{अतिरिक्त दिन} = 45 - 40$$

$$= 5 \text{ दिन}$$

(8)

67

- ✓ 22 एक शिविर में ठहरे ऐनिकों के लिए एक निश्चित अवधि के लिए खाद्य सामग्री थी। 10 दिनबाद इनमें से $\frac{1}{5}$ ऐनिकों के छोड़कर जाने पर शात हुआ कि शेष सामग्री उतनी ही दिन और चलेगी जितने दिन के लिए आरंब में निश्चित की गई थी। यह निश्चित अवधि कितने दिन की थी।

Ans.	ऐनिक दिन	$x \xrightarrow{P} (P-10)$	$x(P-10) = \frac{4x}{5} \times P$
10 दिनबाद	$x \xrightarrow{P} (P-10)$	$5P - 50 = 4P$	$P = 50$ दिन Ans.
	$\frac{4x}{5} \xrightarrow{P}$		

- ✓ 23 राम किसी काम की 3 दिन में व श्याम उसे 6 दिन में करता है तो बताओ दोनों मिलकर उसे कितने दिन में समाप्त करेंगे।

Ans. राम $\xrightarrow{3\text{दिन}} \text{उकाम}$ Job-Adda.in
श्याम $\xrightarrow{6\text{दिन}} \text{उकाम}$

दोनों का $② + ① = 3\text{काम}$

1 दिन का काम $\xrightarrow{\quad} \text{उकाम} = \frac{1}{3} \text{दिन}$

$\xrightarrow{\quad} \frac{1}{3} \text{काम} = \frac{1}{3} \text{दिन}$

$\xrightarrow{\quad} \frac{1}{3} \text{काम} = \frac{1}{3} \times 6 = 2 \text{दिन}$ Ans.

- ✓ 24 राम व श्याम किसी कार्य की 16 घण्टे में पूरा करते हैं। यदि श्याम उसे 24 घण्टे में पूरा करता है तो राम उसे कितने घण्टे में पूरा करेगा।

Ans. (राम + श्याम) $\xrightarrow{16\text{घण्टे}} \text{उकाम} \xrightarrow{24\text{घण्टे}} \text{उकाम} \xrightarrow{\quad} \text{कुल उकाम}$

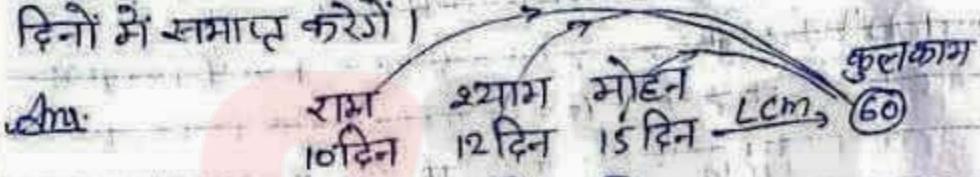
1 घण्टे का काम $\rightarrow ③ \text{काम}$ $③ \text{काम}$

राम का 1 घण्टे का काम $= 3 - 2 = 1 \text{काम}$

राम का 1 काम $= 1 \text{घण्टा}$
 $\xrightarrow{\quad} 48 \text{काम} = 48 \text{घण्टे}$ Ans.

(3)

- 25) राम किसी कार्य को 10 दिन में, श्याम उसे 12 दिन में, मोहन उसे 15 दिन में करता है तो तीनों मिलकर उसे कितने दिनों में समाप्त करेंगे।



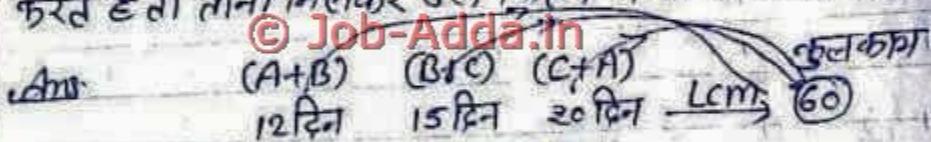
1 दिन का काम \rightarrow ⑥ काम ⑤ ④

$$\text{तीनों का } 1 \text{ दिन का काम} = 6 + 5 + 4 = 15 \text{ काम}$$

$$\text{— } 15 \text{ काम} = 1 \text{ दिन}$$

$$\text{तो } 60 \text{ काम} = \frac{1}{15} \times 60 = 4 \text{ दिन } \text{Ans}$$

- 26) A और B किसी काम को 12 दिनों में, B और C उसी काम को 15 दिनों में तथा C और A उसी काम को 20 दिन में प्रशंसनीय करते हैं तो तीनों मिलकर उसे कितने दिनों में करेंगे।



1 दिन का काम \rightarrow ⑤ ④ ③

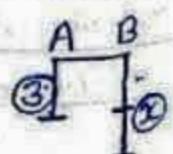
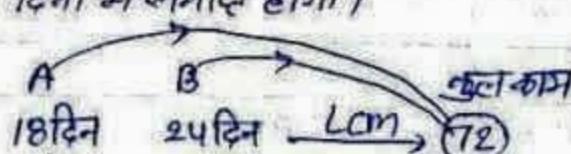
$$2(A+B+C) \text{ का } 1 \text{ दिन का काम} = 5 + 4 + 3$$

$$A+B+C \text{ का } 1 \text{ दिन का काम} = 6 \text{ काम}$$

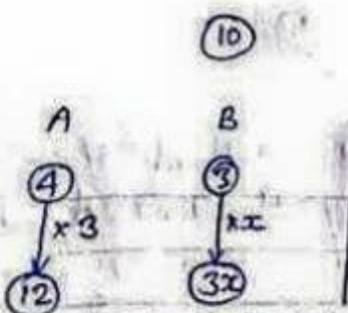
$$\text{— } 6 \text{ काम} = 1 \text{ दिन}$$

$$\text{तो } 60 \text{ काम} = \frac{1}{6} \times 60 = 10 \text{ दिन } \text{Ans}$$

- 27) A एक काम को 18 दिन में तथा B उसी काम को 24 दिन में करता है। यदि दोनों एक साथ कार्य शुरू करे तो A ने तीन दिन काम किया और फिर काम होड़कर चला गया। यदि शीस दिन काम B ने पूरा किया तो पूरा काम कितने दिनों में समाप्त होगा व शेष कार्य कितने दिनों में समाप्त होगा।



1 दिन का काम



$12 + 3x = 72$

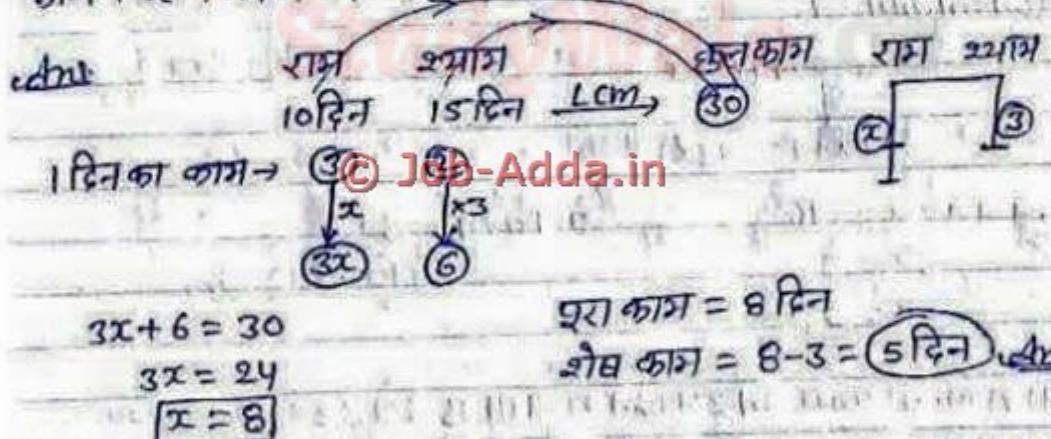
$3x = 60$

$x = 20$

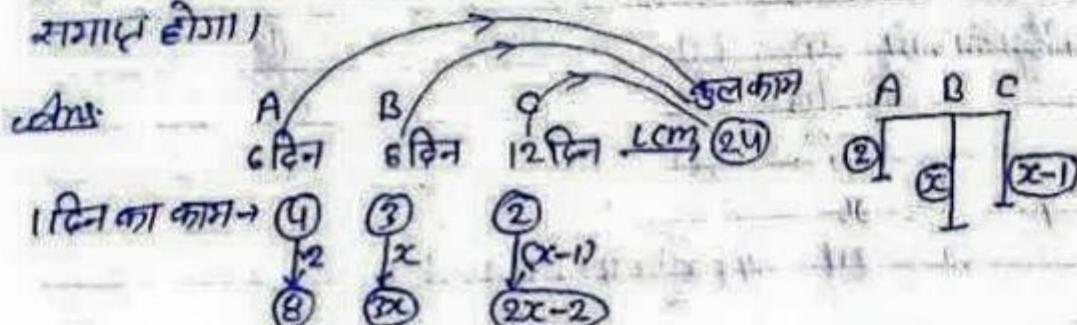
पूरा काम होगा = 20 दिन में

श्रीम काम होगा = $20 - 3 = 17$ दिन में

- 25) राम किसी कार्य को 10 दिनों में तथा श्रीम उसे 15 दिनों में समाप्त करता है। दोनों ने एक साथ काम शुरू किया तथा कार्य शुरू होने के तीन दिन बाद श्रीम कार्य करना छोड़ देता है तो श्रीम कार्य कितने दिन में समाप्त होगा।



- 26) A किसी काम को 6 दिन में, B उसे 8 दिन में तथा C उसे 12 दिन में समाप्त करता है। तीनों एक साथ कार्य शुरू करते हैं। कार्य शुरू होने के 9 दिन बाद A कार्य छोड़ देता है और कार्य समाप्त होने से 1 दिन पहले C कार्य छोड़ देता है तो पूरा कार्य कितने दिनों में समाप्त होगा।

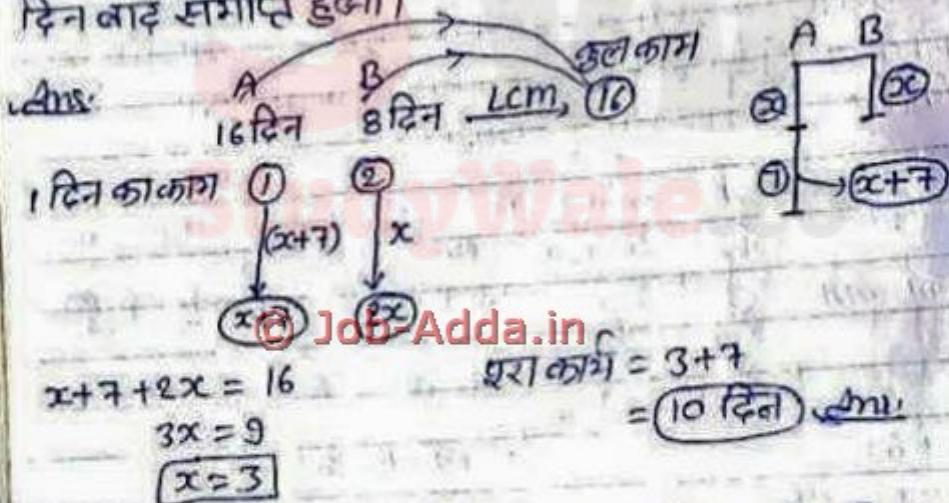


(ii)

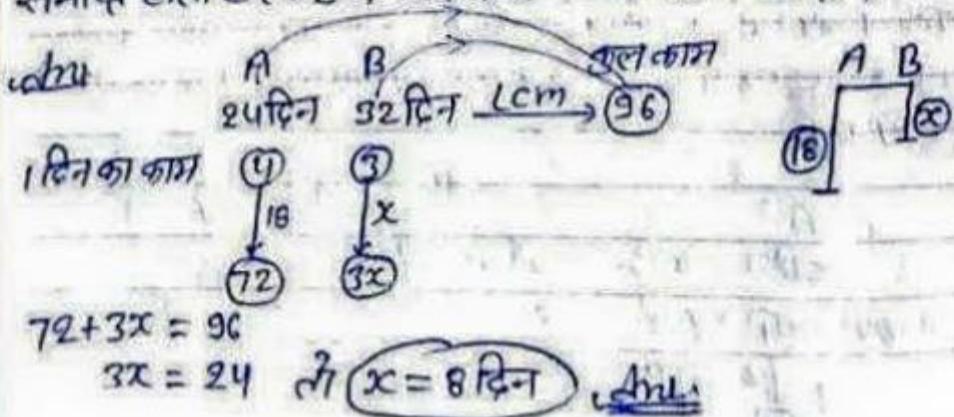
$$8 + 3x + 2x - 2 = 24 \quad | \quad x = \frac{18}{5} = 3\frac{3}{5} \text{ दिन } \underline{\text{ans}}$$

$$5x = 18$$

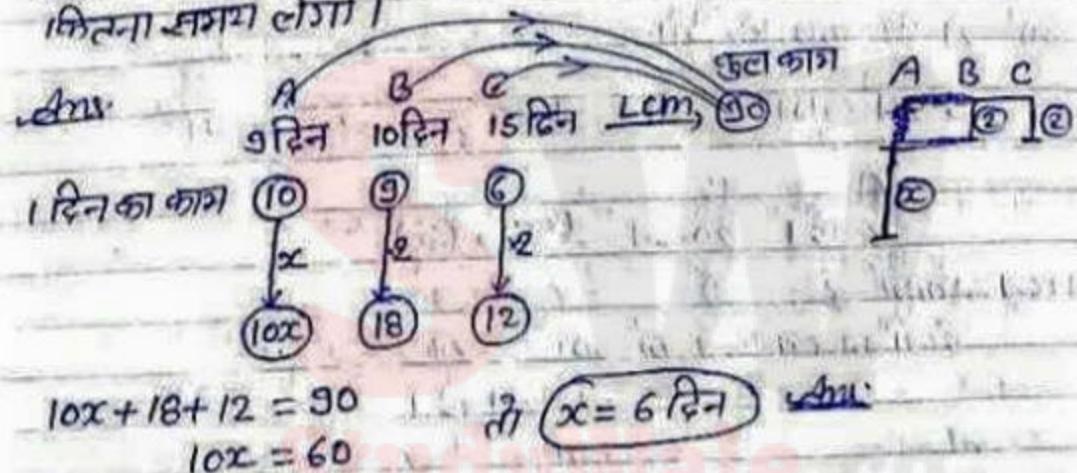
- ⑩ A किसी कार्य को 16 दिन में तबा उसे 8 दिन में समाप्त करता है। दोनों सावा-साथ काम शुरू करते हैं। कुह दिन बाद B कार्य होड़कर चला जाता है तबा पूरा कार्य A बाद के 7 दिनों में समाप्त करता है तो बताओ पूरा कार्य कितने दिन बाद समाप्त हुआ।



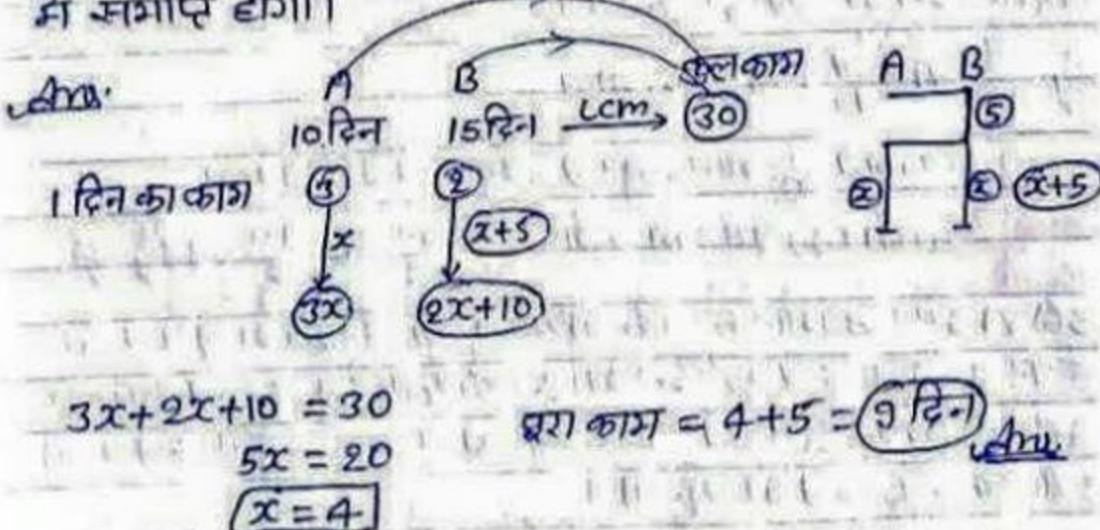
- ⑪ A किसी काम को 24 दिन में तबा उसे 32 दिन में समाप्त करता है। दोनों सावा-साथ कार्य करते हैं। कुह समझ बाद B कार्य होड़कर चला जाता है। प्रदि पूरा कार्य 18 दिन में समाप्त होता है तो B ने कितने दिन बाद काम होड़ा।



31) A किसी कार्य को 9 दिन में, B 10 दिन में तथा C 15 दिन में करते हैं। B तथा C मिलकर कार्य करता उत्तरण करते हैं। किन्तु 2 दिन के बाद कार्य छोड़ देते हैं तो शेष कार्य की पूरा क्रन्ति में A कितना समय लेगा।



32) A एक काम को 10 दिन में पूरा करता है जबकि B इसे 15 दिन में, C ने 3 दिन में पूरा करता है। यदि 5 दिन बाद A भी उसमें साझेलित हो जाता है तो काम कितने दिन में समाप्त होगा।

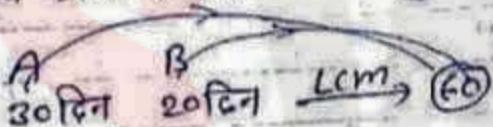


(13)

Ques A किसी काम के $\frac{5}{7}$ भाग को 12 दिन में करता है जबकि B इसी काम के $\frac{3}{7}$ भाग को 15 दिन में समाप्त करता है तो दोनों मिलकर इसी कार्य का कितने दिन में समाप्त होगा।

$$\text{Ans. } A \text{ पूरा काम करेगा} = 12 \times \frac{5}{2} = 30 \text{ दिन में}$$

$$B \text{ पूरा काम करेगा} = 15 \times \frac{4}{3} = 20 \text{ दिन में}$$



1 दिन का काम ③ ④

$$\text{तोनों का एक दिन का काम} = 2+3 = 5 \text{ भाग}$$

$$\text{5 काम} = 1 \text{ दिन}$$

$$\text{तो } 60 \text{ काम} = \frac{1}{5} \times 60 = 12 \text{ दिन (Ans)}$$

✓ Ques 35 किसी कार्य के $\frac{7}{10}$ भाग को A 15 दिन में पूरा करता है। इसके पश्चात ~~JobAdda.in~~ से श्रीष कार्य की 4 दिन में पूरा करता है तो A और B मिलकर पूरे काम की कितने दिन में समाप्त करेगे।

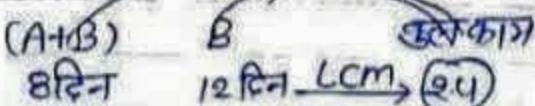
$$\text{Ans. } A \text{ ने } \frac{7}{10} \text{ भाग} = 15 \text{ दिन में}$$

$$\text{श्रीष काम } \frac{3}{10} \text{ भाग } (A+B) \text{ पूरा करते हैं} = 4 \text{ दिन}$$

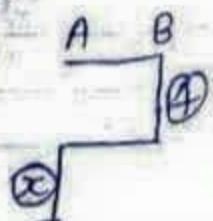
$$\text{तो } (A+B) \text{ पूरा काम करेगे} = 4 \times \frac{10}{3} = \frac{40}{3} = 13\frac{1}{3} \text{ दिन}$$

Ques 36 A और B मिलकर किसी कार्य की 8 दिन में पूरा करते हैं B अकेला उसी 12 दिन में पूरा करता है। B उस कार्य में 4 दिन लगा रहता है। इसके पश्चात A अकेला उस काम की कितने दिन में करेगा।

Ans.



1 दिन का काम ③ ②



$$\begin{array}{l} A : B \\ \textcircled{1} : \textcircled{2} \\ \downarrow x \quad \downarrow 4 \\ \textcircled{1} : \textcircled{8} \end{array}$$

$$\begin{aligned} x + 8 &= 24 \\ x &= 16 \text{ दिन} \end{aligned}$$

Ans.

उन्नीस) A एक कार्य को 4 दिन में, B तथा C गिलकर 3 दिन में, A तथा C गिलकर उसी 2 दिन में समाप्त करते हैं, तो B अकेला उस कार्य को कितने दिन में समाप्त करेगा।

Ans. $A : (B+C) : (A+C)$ कल कागज
 4 दिन 3 दिन 2 दिन $\text{LCM} = 12$ $\textcircled{12}$

1 दिन का कागज $\textcircled{3} : \textcircled{4} : \textcircled{6}$

$$A : B : C$$

1 दिन का कागज $\textcircled{3} : \textcircled{1} : \textcircled{3}$

$$B+C = \frac{1}{12} \text{ कागज} = \frac{1}{12} \text{ दिन}$$

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Ans.

उन्नीस) **IMP** एक आदमी और एक लड़का गिलकर किसी कार्य को 24 दिन में पूरा करते हैं। यदि आन्तिम 6 दिनों में आदमी अकेला काम करते होंगे तो कार्य 26 दिन में समाप्त हो जाता है तो अकेला लड़का कार्य को कितने दिन में समाप्त करेगा।

Ans. $(M+B)$ पूरा काम करते हैं = $\textcircled{24 \text{ दिन}}$

$$20 \text{ दिन का काम} = \frac{20}{24} \text{ या } \frac{5}{6} \text{ काम}$$

$$\begin{aligned} \text{शेष काम} &= \frac{1}{6} \text{ काम आदमी करता है} = 6 \text{ दिन} \\ \text{धूरा काम} &= 6 \times \frac{6}{5} = \textcircled{36 \text{ दिन}} \end{aligned}$$

$$\text{लड़के का काम} = \frac{1}{24} - \frac{1}{36} = \frac{3-2}{72} = \frac{1}{72}$$

$$\text{लड़के का समय} = \textcircled{72 \text{ दिन}} \quad \underline{\text{Ans.}}$$

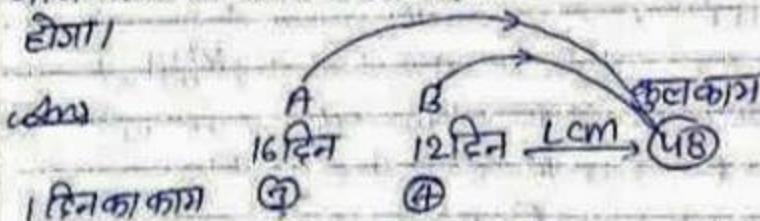
(15)

IMP
 39) B किसी कार्य को कितने समय में करता है उसके $\frac{1}{6}$
 समय में A आच्छा काम करता है। यदि दोनों मिलकर इस
 कार्य को 10 दिन में समाप्त करें तो B अकेला इसे कितने
 दिन में समाप्त करेगा।

Ans. माना B किसी कार्य को समाप्त करता है = 6 दिन
 तो A आच्छा काम करेगा = $6 \times \frac{1}{6} = 1$ दिन
 अतः A पूरा काम करेगा = 2 दिन

समय कार्य	$\begin{array}{l} B : A \\ 6 : 2 \\ 3 : 1 \\ 1 : \frac{1}{3} \end{array}$	$(A+B) \times 10 = B \times x$ $4 \times 10 = 1 \times x$ $x = 40 \text{ दिन}$
--------------	---	--

40) A अकेला एक कार्य को 16 दिन में समाप्त करता है।
 B अकेला इस कार्य को 12 दिन में समाप्त करता है। यदि
 A कार्य आरंभ करेतबा वे एक दिन छोड़कर एक दिन
 बारी-बारी से काम करे तो पूरा काम कितने दिन में समाप्त
 होगा।



$$\begin{array}{c}
 \underline{③ + ④ + ③ + ④ + ③ + ④ + ③ + ④ + ③ + ④ + ③ + ④ + ③} \\
 \text{कुल समय} = 13\frac{3}{4} \text{ दिन}
 \end{array}
 \quad \text{कारी } 4 \quad \text{शेष } 3$$

41) A तथा B एक काम को क्रमशः 10 दिन तथा 15 दिन में
 समाप्त करते हैं। यदि दोनों एक दिन छोड़कर एक दिन काम
 करे तो काम कितने दिनों में समाप्त होगा। जबकि कार्य A
 से शुरू किया जाए।

(16)

प्र०

10 दिन

B

15 दिन

कुल काम

5 cm

30

11 दिन का काम ③ ②

③ + ② + ③ + ② + ③ + ② + ③ + ② + ③ + ②

कुल समय = 12 दिन Ans.

- ✓ (42) 12 पुरुष एक काम को 12 दिन में करते हैं। यदि 6 पुरुष 6 दिन के बाद कार्य छोड़कर चले जाते हैं तो कार्य पूरा होने में कितने दिन और लगें।

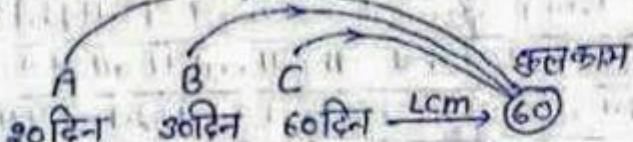
Ans.

$$\begin{array}{c} \text{पुरुष} \quad \text{दिन} \\ \hline 12 & 12 \\ \hline 6 \text{ दिन बाद} & 12 \quad 6 \\ & \hline 6 & 2 \end{array} \quad 12 \times 6 = x \times 6 \\ x = 12 \text{ दिन} \quad \text{Ans.}$$

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- (43) A, B, C क्रमशः: एक कार्य 30, 30, 60 दिनों में समाप्त करते हैं। यदि A अलगातार कार्य करत्वा दूर तीसरे दिन B तत्वा C तीव्री A के साथ मिलकर कार्य करती कार्य कितने दिन में समाप्त होगा।

Ans.



1 दिन का काम ③ ② ①

③ + ② + ① + ③ + ② + ① + ③ + ② + ① + ③ + ② + ① + ③ + ② + ①

कुल समय = 15 दिन Ans.

- ✓ (44) A और B मिलकर एक काम को 30 दिन में समाप्त करते हैं। उन्होंने एक साथ 20 दिन तक कार्य किया फिर B काम छोड़कर चला गया। ऐसे काम को A ने अकेले 20 आतिरिक्त दिनों में पूरा किया। तो B अकेला उस काम को कितने दिन में समाप्त करेगा।

(३)

Ques. $(A+B)$ प्राकाम करते हैं = ३० दिन
 २० दिन का काम = $\frac{20}{30}$ काम

शेष काम $\frac{1}{3}$, A करता है = २० दिन
 A प्राकाम = $20 \times \frac{1}{3} = 60$ दिन

B का काम = $\frac{1}{30} - \frac{1}{60} = \frac{2-1}{60} = \frac{1}{60}$ काम

B का समय = ६० दिन

Soln. $(A+B)$ का आदमी तथा ६० दिन एक कार्य को १० दिन में समाप्त करते हैं। जबकि ३ आदमी तथा ७ औरते मिलकर इसे १० दिन में समाप्त करते हैं तो १० औरते इसो कितने दिन में समाप्त करेंगी।

Ans. $(4M+6W) \times 8 = (3M+7W) \times 10 = (10W) \times x$

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$32M+48W = 30M+70W$

$2M = 22W$

$1M = 11W$

$(33+7) \times 10 = 10x$

$x = 40$ दिन

Ques. ३ आदमी, ४ औरते तथा ६ व्यक्ति मिलकर एक कार्य को ७ दिन में समाप्त करते हैं। एव्येक औरत आदमी से छुगुना काम करती है तथा एव्येक व्यक्ति आदमी से आद्या काम करता है तो किसी औरते मिलकर इस काम को ७ दिन में प्राप्त करेगी।

Ans. $(3M+4W+6B) \times 7 = (xW) \times 7$

1 1 1 1

$(6+16+6) \times 7 = 4x \times 7$

$4x = 28$

$x = 7$ औरत

M:W:B
3:4:1

18

72

④७ यदि १० आदमी तथा १५ लड़के किसी कार्य को १५ दिन में समाप्त करते हैं तो १६ आदमी तथा २० लड़के इससे तिथुरे कार्य को कितने दिन में समाप्त करेंगे। जबकि ३ आदमी २ घण्टे में उतना कार्य करते हैं जितना कि ५ लड़के ३ घण्टे में करते हैं।

$$\text{Ans} \quad \frac{(10M + 15B) \times 15}{5} = \frac{(16M + 20B) \times x}{3}$$

$$(50+30) \times 15 \times 3 = (80+40) \times x$$

$$80 \times 15 \times 3 = 120 \times x$$

$$\frac{80}{2} \times \frac{15}{3} = \frac{120}{x}$$

$$x = 30 \text{ दिन}$$

✓ 48 A तथा B मिलकर एक कार्य को 12 दिन में समाप्त करते हैं। जबकि B व C मिलकर इसी 16 दिन में समाप्त करते हैं। पहले इस पर A ने 5 दिन कार्य किया और उन्होंने 7 दिन कार्य किया तब C ने शेष कार्य C ने 13 दिनों में समाप्त किया तो C अकेला उस कार्य को कितने दिन में समाप्त करेगा।

Ans. A का 5 दिन + B का 7 दिन + C का 13 दिन = 1 फार्म

$$\Rightarrow \frac{10x + 3x + 264}{94x}$$

$$13x + 264 = 24x$$

$$11x = 264$$

$$x = 24 \text{ दिन} \quad \underline{\text{Ans}}$$

(19)

49) A किसी कार्य को 9 दिनों में पूरा करता है। यदि B की कार्यक्षमता A से 50% अधिक हो, तो B उकेला उसे कितने दिन में समाप्त करेगा।

Ans: $A : B$
 $100 : 150$
 $2 : 3$
 $A \times 9 = B \times x$
 $2 \times 9 = 3 \times x$
 $x = 6 \text{ दिन}$ *(Ans)*

प्रतीका $A : B$
कार्यक्षमता $2 : 3$
A का समय = 9 दिन
1 दिन का कार्य = $\frac{1}{9}$ कार्य
B का कार्य = $\frac{1}{9} \times 2 \times 3 = \frac{1}{6}$ कार्य
B का समय = 6 दिन *(Ans)*

Note :- यदि A व B के काम करने के समय का अंतर दिया जाया हो तो $\frac{A}{B}$ की गोला कास निकालने के लिए कार्य के अनुपात को उल्टा करके समय के अनुपात में बदल दें।

Q) A की कार्यक्षमता B से दुगुनी है। अतः किसी कार्य को A पूरा करने में B से 20 दिन कम लेता है तो दोनों मिलकर इस कार्य को कितने दिन में समाप्त करेंगे।

Ans $A : B$
कार्यक्षमता $2 : 1$

$$\begin{aligned} A(x-20) &= B \times x = (A+B) \times P \\ 2(x-20) &= x \quad \rightarrow \quad 1 \times 40 = 3 \times P \\ 2x - 40 &= x \\ x &= 40 \end{aligned}$$

$$P = \frac{40}{3} = 13\frac{1}{3} \text{ दिन} \quad \text{(Ans)}$$

II प्रतीका $A : B$
कार्य $2 : 1$
समय $1 : 2$

समय का अंतर = 20 दिन

$$A \text{ का समय} = \frac{20}{1} \times 1 = 20 \text{ दिन}$$

दोनों का काम \Rightarrow

$$\frac{1}{20} + \frac{1}{40} = \frac{2+1}{40} = \frac{3}{40}$$

$$B \text{ का समय} = \frac{20}{1} \times 2 = 40 \text{ दिन}$$

$$\text{समय } \frac{40}{3} = 13\frac{1}{3} \text{ दिन} \quad \text{Ans}$$

~~(*)~~ A की कार्यक्षमता B से हुराजी है। यदि दोनों मिलकर कार्य को 31 दिन में समाप्त करते हैं तो A अकेला उस कार्य को कितने दिनों में समाप्त करेगा।

Ans. $A : B$

कार्यक्षमता $2 : 1$

$$(A+B) \times 21 = A \times x$$

$$63 = 2x$$

$$x = 31\frac{1}{2} \text{ दिन}$$

II तरीका

$$A : B$$

कार्यक्षमता $2 : 1$

दोनों का समय = 31 दिन

काम = $\frac{1}{31}$ काम

$$A \text{ का काम} = \frac{1}{31 \times 2} = \frac{2}{63} \text{ काम}$$

$$\therefore \text{काम} = 31\frac{1}{2} \text{ दिन} \quad \text{Ans}$$

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~~(*)~~ x, y की ट्रलना में उग्रा तेजी से कार्य करता है। अतः वह y की ट्रलना में एक कार्य उससे 40 दिन पहले पूरा करता है, तो वह दोनों मिल कर वही कार्य कितने दिनों में शरा करेगे।

Ans. $x : y$

कार्यक्षमता $3 : 1$

$$X(x-40) = Y(x) = (x+y) \times p$$

$$3x - 120 = x$$

$$2x = 120$$

$$x = 60$$

$$60 = 4 \times p$$

$$P = 15 \text{ दिन} \quad \text{Ans}$$

II तरीका $x : y$

कार्य $3 : 1$

समय $1 : 3$

समय का अन्तर = 40 दिन

$$X \text{ का समय} = \frac{40}{2} \times 1 = 20 \text{ दिन}$$

$$Y \text{ का समय} = \frac{40}{2} \times 3 = 60 \text{ दिन}$$

$$\text{दोनों का समय} = \frac{1}{20} + \frac{1}{60} = \frac{3+1}{60}$$

$$= \frac{60}{4} = 15 \text{ दिन} \quad \text{Ans}$$

(21)

- (53) युनील एक कार्य को 7 दिन में तबा दिनेश उस कार्य को 6 दिन में पूरा कर सकता है। रमेश की कार्य क्षमता युनील से $\frac{2}{3}$ गुनी है। तीनों शिलकर उस कार्य को कितने दिन में समाप्त कर सकेंगे।

$$\text{Ans} \quad \begin{array}{ccccccc} \text{युनील} & \xrightarrow{\text{दिनेश}} & \text{दिनेश} & \xrightarrow{\text{रमेश}} & \text{कुल काम} \\ 4 \text{ दिन} & & 6 \text{ दिन} & \downarrow & 1 \text{ cm} \\ 1 \text{ दिन का काम} & ⑥ & ④ & 6 \times \frac{2}{3} = ① & & ④ \end{array}$$

$$\text{तीनों का } 1 \text{ दिन का काम} = 6 + 4 + 9 = 19$$

$$19 \text{ काम} = 1 \text{ दिन}$$

$$24 \text{ काम} = \frac{1}{19} \times 24 = 1\frac{5}{19} \text{ दिन} \quad \text{Ans}$$

- (54) 40 आदमी किसी कार्य 40 दिनों में पूरा करते हैं। उन्होंने एक साथ कार्य शुरू किया परन्तु 10वें दिन के अन्त में 5 आदमी काम छोड़ते रहे तो काम कितने दिनों में पूरा हुआ।

$$\text{Ans} \quad \begin{array}{ccc} \text{आदमी} & \xrightarrow{\text{दिन}} & \text{कुल काम} \\ 40 & 40 & 1600 \end{array}$$

आदमी दिन काम

$$40 \times 10 \rightarrow 400$$

$$35 \times 10 \rightarrow 350$$

$$30 \times 10 \rightarrow 300$$

$$25 \times 10 \rightarrow 250$$

$$20 \times 10 \rightarrow 200$$

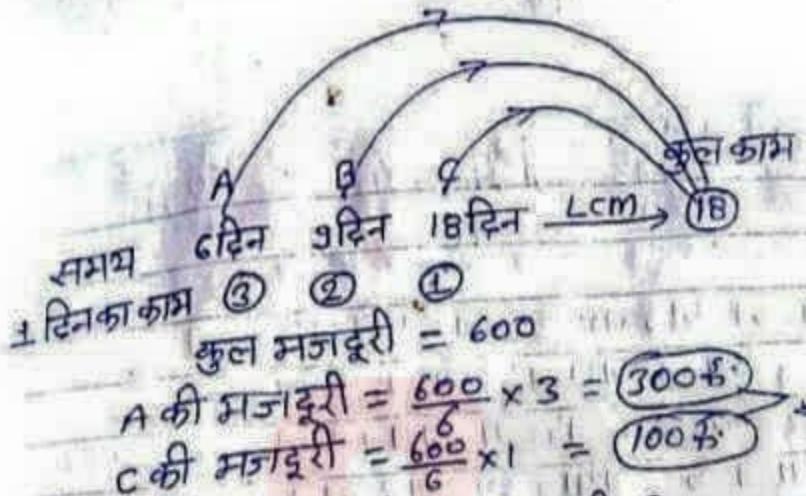
$$\text{शेष काम} = 100$$

$$15 \times x \rightarrow = 100$$

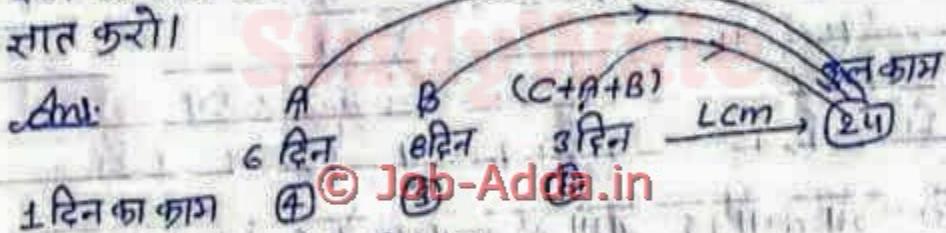
$$x = \frac{100}{15} = 6\frac{2}{3} \text{ दिन}$$

$$\text{कुल समय} = 56\frac{2}{3} \text{ दिन} \quad \text{Ans}$$

- (55) A, B तथा C किसी काम को 6, 9 तथा 18 दिन में कर सकते हैं। तीनों एक साथ कार्य शुरू करते हैं। यदि कुल मजदूरी 600 रु. है तो A तथा C की मजदूरी ज्ञात करें।



56) A तथा B ने मिलकर किसी कार्य की 1200 रु. में करने का ऐसा लिया, A अकेला इस कार्य की 6 दिन में समाप्त करता है जबकि B उसे 8 दिन में समाप्त करता है। मैं दोनों C के साथ मिलकर इस कार्य की 3 दिन में समाप्त करते हैं तो स्वतंत्र काहिसा सात करो।



$$\text{कुल मजदूरी} = 1200 \text{ रु.}$$

$$A \text{ की मजदूरी} = \frac{1200}{8} \times 4 = 600 \text{ रु.}$$

$$B = \frac{1200}{8} \times 3 = 450 \text{ रु.}$$

$$C = \frac{1200}{8} \times 1 = 150 \text{ रु.}$$

57) एक आदमी तथा एक लड़के ने मिलकर 5 दिन कार्य किया। उसकी कुल मजदूरी 800 रु. मिली। यदि आदमी एक ही समय में लड़के से तिगुना काम करते तो लड़की की दैनिक मजदूरी सात करो।

$$5 \text{ दिनों की कुल मजदूरी} = 800 \text{ रु.}$$

$$\text{दोनों की दैनिक मजदूरी} = \frac{800}{5} = 160 \text{ रु.}$$

(23)

आदमी : लड़का | लड़के की दैनिक मजदूरी = $\frac{160}{4} \text{ रु।}$
 3 : 1 = 40 रु।

58) एक डेकेदार ने कोई कार्य 38 दिन से पूरा करने का डेला लिया। उसने 30 व्यक्ति काम पर लगाये, 25 दिन बाद 5 व्याप्रि काम पर और लगाये तब्दा काम निश्चित समय से 12 दिन पहले समाप्त कर लिया। यदि वह भातिरिहत व्यक्ति काम पर नहीं लगाता तो कार्य कितने दिन और चलता।

Ans. माना 30 व्यक्ति काम पूरा करते हैं = x दिन
 कुल काम = $30x$

$$30x = (30 \times 25) + (35 \times 12)$$

$$30x = 750 + 420$$

$$30x = 1170$$

$$x = 39 \text{ दिन } \quad \textcircled{c} \text{ Job-Adda.in} \quad \text{आत्मरक्षण दिन} = 39 - 38 = \textcircled{1} \text{ दिन} \quad \text{Ans.}$$

59) 10 पुरुष तथा 15 महिलाएँ एक काम को 6 दिन में पूरा करती हैं। यदि आकेला पुरुष इस काम को 100 दिन में पूरा करता है तो आकेली स्त्री इसे कितने दिन में पूरा करेगी।

$$\text{Ans. } (10M + 15W) \times 6 = (1M) \times 100 = (1W) \times x$$

$$60M + 90W = 100M$$

$$90W = 40M$$

$$9W = 4M$$

$$9 \times 100 = 4 \times x$$

$$x = 225 \text{ दिन}$$

Ans.

60) 5 घण्टे प्रतिदिन कार्य करके A किसी कार्य को 8 दिन तक 6 घण्टे प्रतिदिन कार्य करके B उसे 10 दिन में पूरा करता है। तो 8 घण्टे प्रतिदिन कार्य करके दीनो इस कार्य को कितने दिन में समाप्त करेंगे।

$$\text{Ans} \quad A \times 5 \times 8 = B \times 6 \times 10 = (A+B) \times 8 \times x$$

\downarrow \downarrow \downarrow

$$40A = 60B$$

$$2A = 3B$$

$$2 \times \frac{3}{2} \times 10 = 3 \times 8 \times x$$

$$x = 5 \text{ दिन}$$

Ans.

⑥1 रोजा एक घण्टे में 32 रसगुल्ले खा सकती है। उसकी बह्य लीला को इतने ही रसगुल्ले खाने में 3 घण्टे लगते हैं। ये दोनों मिलकर 32 रसगुल्ले खाने में कितना समय लेंगी।

$$\text{Ans} \quad \frac{A \times 1}{32} = \frac{L \times 3}{32} = \frac{(R+L) \times x}{32}$$

$$\frac{R}{32} = \frac{3L}{32} \quad | \quad \frac{3}{32} = \frac{4 \times x}{32} \quad x = \frac{3}{4} \text{ घण्टे}$$

$$1R = 3L \quad | \quad \frac{3}{4} \times 60 = 45 \text{ मिनट}$$

Ans.

⑥2 A एक कार्य को 9 घण्टे प्रतिदिन कार्य करके 7 दिन में समाप्त करता है। यदि B प्रतिदिन 7 घण्टे कार्य करके उस कार्य की 6 दिन में समाप्त करता है। दोनों मिलकर 8 $\frac{2}{5}$ घण्टे प्रतिदिन कार्य करके कितने दिनों में कार्य समाप्त कर सकेंगे।

$$\text{Ans} \quad A \times 9 \times 7 = B \times 7 \times 6 = (A+B) \times \frac{42}{5} \times x$$

\downarrow \downarrow \downarrow

$$63A = 42B$$

$$3A = 2B$$

$$3 \times \frac{2}{3} \times 6 = 8 \times \frac{42}{5} \times x$$

$$x = 3 \text{ दिन}$$

Ans.

⑥3 A एक गड्ढा 1 घण्टे में खोदता है तबा उसी प्रकार का गड्ढा B सब घण्टे में खोदता है। ऐसे 72 गड्ढे खोदने के लिए A तथा B मिलकर 8 घण्टे प्रतिदिन कार्य करती कार्य कितने दिनों में समाप्त होंगा।

(25)

$$\text{Ans} \quad \frac{A \times 1}{1} = \frac{B \times 5}{1 \times 4} = \frac{(A+B) \times 8 \times x}{72}$$

$$A = \frac{5B}{4} \quad \left| \quad \frac{5x}{4} = \frac{8 \times 8 \times x}{8 \times 2}$$

$$4A = 5B \quad \left| \quad x = 5 \text{ दिन} \quad \text{Ans}$$

(4) A तथा B एक कार्य को 5 दिन में, B तथा C इसे 7 दिन में एवं C तथा A इसे 4 दिन में समाप्त कर सकते हैं। इनमें से कौनसा अकेला कार्य को समाप्त करने में सबसे कम समय लेगा।

$$\text{Ans} \quad A+B = 5 \text{ दिन}$$

$$B+C = 7 \text{ दिन}$$

$$C+A = 4 \text{ दिन}$$

$$2(A+B+C) = 16$$

$$A+B+C = \textcircled{E} \text{ Job-Adda.in}$$

आतः सबसे कम समय लेगा

$$= \textcircled{A} \text{ Ans}$$

सबसे आधिक समय लेगा = \textcircled{B}

(5) 10 आदमी, 10 औरत तथा 10 बच्चे किसी काम को समाप्त करने में क्रमशः 10, 20 तथा 30 दिन लेते हैं तो 5 आदमी, 5 औरत तथा 5 बच्चे इस काम को कितने दिनों में करेंगे।

$$\text{Ans} \quad (10M) \times 10 = (10W) \times 20 = (10B) \times 30 = (5M+5W+5B) \times$$

$$100M = 200W = 300B$$

$$1M = 2W = 3B$$

$$M : W : B$$

$$6 : 3 : 2$$

$$20 \times 30 = (30+15+10) \times x$$

$$\frac{20}{4} \times 30 = \frac{55}{11} x$$

$$x = \frac{120}{11} = \textcircled{F} \text{ 10 } \frac{10}{11} \text{ दिन} \quad \text{Ans}$$

66 किसी कार्य को करने में A की दक्षता B से आधी है तबा C की दक्षता A तथा B की कुल कार्य दक्षता से जाधी है। यदि C अकेला इस कार्य को 40 दिन में समाप्त करे तो तीनों मिल कर कार्य की कितने दिन में समाप्त करें।

$$\text{Ans: } A : B : C \\ \text{कार्य } 2 : 4 : 3$$

$$Cx40 = (A+B+C) \times x$$

$$3x40 = 38x x$$

$$x = 13\frac{1}{3} \text{ दिन}$$

$$\text{प्रतीका } A : B : C$$

$$\text{कार्य दक्षता } 2 : 4 : 3$$

$$C \text{ का समय} = 40 \text{ दिन}$$

$$C \text{ का कार्य} = \frac{1}{40} \text{ दिन}$$

$$\text{तीनों का कार्य} = \frac{1}{40 \times 3} \times 38 = \frac{3}{40} \text{ कार्य}$$

$$\text{तीनों का समय} = \frac{40}{3} = 13\frac{1}{3} \text{ दिन}$$

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Q1. A and B can do a piece of work in 15 days. B and C can do the same work in 10 days and A and C can do the same work in 12 days. Time taken by A, B and C together to do the job is?

Q2. A, B and C can complete a work in 10, 12 and 15 days respectively. A left the work 5 days before the work was completed and B left 2 days after A had left. Number of days required to complete the whole work is?

- (a) $8\frac{2}{3}$ days (b) $6\frac{2}{3}$ days
(c) 7 days (d) 6 days

Q3. A can complete a piece of work in 10 days, B in 15 days and C in 20 days. A and C worked together for two days and then A was replaced by B. In how many days, altogether, the work was completed?

Q4. A can complete a piece of work in 18 days, B in 20 days and C in 30 days. B and C together start the work and are forced to leave after 2 days. The time taken by A alone to complete the remaining work is?

Q5. A can do a piece of work in 20 days and B in 30 days. They work together for 7 days and then both leave the work. Then C alone finishes the remaining work in 10 days. In how many days will C finish the full work?

Q6. X can do a piece of work in 24 days. When he had worked for 4 days, Y joined him. If complete work was finished in 16 days, Y can alone finish that work in how many days?

Q7. If 6 men and 8 boys can do a piece of work in 10 days and, 26 men and 48 boys can do the same in 2 days. Then, the time taken by 15 men and 20 boys to do the same type of work will be?

Q8. If 10 men or 20 women or 40 children can do a piece of work in 7 months. Then, 5 men, 5 women and 5 children together can-do half of the work in?

Q9. A company employed 200 workers to complete a certain work in 150 days. If only one-fourth of the work has been done in 50 days, then in order to complete the whole work in time, the number of additional workers to be employed was?

Q10. A contractor was engaged to construct a road in 16 days. After working for 12 days with 20 workers it was found that only $\frac{5}{8}$ th of the road had been constructed. To complete the work in stipulated time the number of extra workers required is?

Q11. Two pipes A and B can fill a tank in 24 minutes and 32 minutes respectively. If both the pipes are opened simultaneously, after how much time should B be closed so that the tank is full in 15 minutes?

- (a) 12 min (b) 4 min
(c) 6 min (d) 8 min

Q12. If two pipes function simultaneously the reservoir is filled in 12 hours. One pipe fills the reservoir 10 hours faster than the other. How many hours does the faster pipe take to fill the reservoir?

Q13. Three pipes A, B and C can fill a cistern in 6 hrs. After working together for 4 hours, C is closed, and A and B fill the cistern in 4 hours. Then find the time in which the cistern can be filled by pipe C?

Q14. A tank has a leak which would empty it in 8 hours. A tap is turned on which admits 6 litres a minute into the tank, and it is now emptied in 12 hours. How many litres does the tank hold?

Q15. A tank is normally filled in 8 hours but takes 2 hours longer to fill because of a leak in its bottom. If the cistern is full, in how many hours will the leak in the bottom empty half of the tank?

Q16. A alone can complete a work in 16 days and B alone in 12 days. Starting with A, they work on alternate days. The total work will be completed in:

- | | |
|--------------------------|--------------------------|
| (a) 12 days | (b) 13 days |
| (c) $13\frac{5}{7}$ days | (d) $13\frac{3}{4}$ days |

Q17. 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 |

Q18. 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 |

Q19. 10 men can complete a piece of work in 15 days and 15 women can complete the same work in 12 days. If all the 10 men and 15 women work together, in how many days will the work get completed?

- | | |
|--------------------|--------------------|
| (a) 6 | (b) $6\frac{1}{3}$ |
| (c) $6\frac{2}{3}$ | (d) $7\frac{2}{3}$ |

Q20. 12 men complete a work in 9 days. After they have worked for 6 days, 6 more men join them. How many days will they take to complete the remaining work?

- | | |
|------------|------------|
| (a) 2 days | (b) 3 days |
| (c) 4 days | (d) 5 days |

Q21. Three men, four women and six children can complete a work in seven days. A woman does double the work a man does and a child does half the work a man does. How many women alone can complete this work in 7 days?

- | | |
|--------|--------------------------|
| (a) 7 | (b) 8 |
| (c) 12 | (d) Cannot be determined |

Q22. A man, a woman and a boy can complete a job in 3, 4 and 12 days respectively. How many boys must assist 1 man and 1 woman to complete the job in $\frac{1}{4}$ of a day?

- | | |
|--------|--------|
| (a) 1 | (b) 4 |
| (c) 19 | (d) 41 |

Q23. 10 men and 15 women together can complete a work in 6 days. It takes 100 days for one man alone to complete the same work. How many days will be required for one woman alone to complete the same work?

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Q24. 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?

Q25. Twenty-four men can complete a work in sixteen days. Thirty-two women can complete the same work in twenty-four days. Sixteen men and sixteen women started working and worked for twelve days. How many more men are to be added to complete the remaining work in 2 days?

Q26. 12 men can complete a piece of work in 4 days, while 15 women can complete the same work in 4 days. 6 men start working on the job and after working for 2 days, all of them stopped working. How many women should be put on the job to complete the remaining work, if it is to be completed in 3 days?

- (a) 15
(c) 22

(b) 18
(d) Data inadequate

Q27. A, B and C are employed to do a piece of work for Rs. 529. A and B together are supposed to do $\frac{19}{23}$ of the work and B and C together $\frac{8}{23}$ of the work. What amount should A be paid?

Q28. A and B can do a piece of work in 45 days and 40 days respectively. They began to do the work together but A leaves after some days and then B completed the remaining work in 23 days. The number of days after which A left the work was:

Q29. Kim can do a work in 3 days while David can do the same work in 2 days. Both of them finish the work together and get Rs. 150. What is the share of Kim?

Q30. 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?

pectively. They began to do the

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Solution

S1. Ans.(c)

Sol.

$$\begin{array}{r} A+B \\ \hline 15 & 4 \end{array}$$

$$\begin{array}{r} B+C \\ \hline 10 & 60 & 6 \end{array}$$

$$\begin{array}{r} A+C \\ \hline 12 & 5 \end{array}$$

$$2(A+B+C) = 15$$

$$A + B + C = \frac{15}{2}$$

$$\text{Time } (A + B + C) = \frac{60}{15/2} = 4 \times 2 = 8 \text{ days}$$

S2. Ans.(c)

Sol.

$$\begin{array}{r} A & 10 & 6 \\ \hline \end{array}$$

$$\begin{array}{r} B & 12 & 60 & 5 \\ \hline \end{array}$$

$$\begin{array}{r} C & 15 & 4 \\ \hline \end{array}$$

$$4x + 6(x - 5) + 5(x - 3) = 60$$

$$4x + 6x - 30 + 5x - 15 = 60$$

$$15x = 105$$

$$x = 7 \text{ days}$$

S3. Ans.(d)

Sol.

$$\begin{array}{r} A & 10 & 6 \\ \hline \end{array}$$

$$\begin{array}{r} B & 15 & 60 & 4 \\ \hline \end{array}$$

$$\begin{array}{r} C & 20 & 3 \\ \hline \end{array}$$

$$2 \text{ days' work of } (A + C) = 9 \times 2 = 18$$

$$\text{Remaining work} = 60 - 18 = 42$$

$$1 \text{ day's efficiency of } B + C = 4 + 3 = 7$$

$$\text{Time} = \frac{42}{7} = 6 \text{ days}$$

$$\text{Work was completed in} = 6 + 2 = 8 \text{ days}$$

S4. Ans.(c)

Sol.

$$\begin{array}{r} A & 18 & 10 \\ \hline \end{array}$$

$$\begin{array}{r} B & 20 & 180 & 9 \\ \hline \end{array}$$

$$\begin{array}{r} C & 30 & 6 \\ \hline \end{array}$$

$$(B + C)'s 1\text{-day work} = 15$$

$$(B + C)'s 2\text{-day work} = 30$$

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Remaining work = $180 - 30 = 150$

Time taken by A to complete remaining work = $\frac{150}{10}$
= 15 days

S5. Ans.(c)

Sol.

A	20	3	
		60	

B	30	2	
		60	

(A + B)'s 1-day work = 5

(A + B)'s 7-day work = $7 \times 5 = 35$

Remaining work = $60 - 35 = 25$

Efficiency of C = $\frac{25}{10}$

C will finish the full work in = $\frac{60}{25} \times 10$
= 24 days

S6. Ans.(c)

Sol. $x \rightarrow 24$ days

Let efficiency of x be $\rightarrow 1/\text{day}$

Work done by x in 4 days = 4

Remaining work = $24 - 4 = 20$

20 work done by (x & y) in 12 days

Efficiency of $(x + y) = \frac{20}{12} = \frac{5}{3}$

Efficiency of y = $\frac{5}{3} - 1 = \frac{2}{3}$

Complete work done by y is = $\frac{24}{2/3}$
= 36 days

S7. Ans.(b)

Sol. $(6M + 8B) \times 10 = (26M + 48B) \times 2$

$8M = 16B$

$1M = 2B$

$6M + 8B = 20B$

$15M + 20B = 50B$

$20B \times 10 \text{ days} = 50B \times x \text{ days}$

$x \text{ days} = 4 \text{ days}$

S8. Ans.(b)

Sol. $10M = 20W = 40C$

$1M = 2W, \quad 1M = 4C, \quad 1W = 2C$

$5M + 5W + 5C = 10W + 5W + \frac{5}{2} W$

$= \frac{35}{2} W$

$20 \times 7 = \frac{35}{2} W \times \text{days}$

Full work is completed in = 8 months

Half work is completed in = $8/2 = 4$ months

S9. Ans.(a)

Sol.

$$\frac{200 \times 50}{1/4} = \frac{(200 + x) \times 100}{3/4}$$

$$300 = 200 + x$$

$$x = 100 \text{ more workers}$$

S10. Ans.(d)

Sol.

$$\frac{20 \times 12}{5/8} = \frac{(20 + x) \times 4}{3/8}$$

$$36 = 20 + x$$

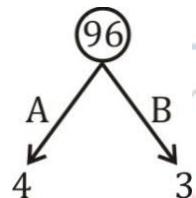
$$x = 16$$

S11. Ans.(a)

Sol. A can fill in $\rightarrow 24$ min

B can fill in $\rightarrow 32$ min

Let the capacity of the tank = L.C.M (24, 32) = 96 unit.



The pipe A must be opened for 15 minutes.

So, work done by pipe A = 15×4

$$= 60 \text{ units}$$

$$\text{Remaining work} = 96 - 60 = 36 \text{ unit}$$

This 36 units must have been done by B.

$$\text{So, time} = \frac{36}{3} = 12 \text{ min}$$

Thus, after 12 min, B should be closed.

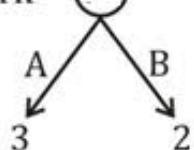
S12. Ans.(a)

Sol. Let's do it by option.

Suppose the faster pipe A takes = 20 hrs.

So, slower pipe B takes = 30 hrs.

$$\text{Work} = 60$$



$$A + B \rightarrow \frac{60}{5} = 12 \text{ hrs.}$$

Thus, option (a) is correct.

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S13. Ans.(b)

Sol. A + B + C → 6 hrs.

Let the total work be 6 unit.

So, work done by them in 1 hour = $\frac{6}{6} = 1$ unit.

According to the question,

They worked for 4 hours, work done = 4 unit

Remaining work = 2 unit

This 2 unit is done by (A + B) in 4 hrs.

So, (A + B) one-day work = $\frac{2}{4} = \frac{1}{2}$

The one-day work of (A + B + C) → 1

So, C → $1 - \frac{1}{2}$

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

Time by C = $\frac{6}{\left(\frac{1}{2}\right)} = 12$ hrs.

S14. Ans.(c)

Sol. In 1 min it admits = 6 liter.

In 60 min it admits → 60×6 liter.

According to the question,

Water leaked in 4 hrs. = Water filled in 12 hours

$$= 12 \times 60 \times 6$$

$$= 4320 \text{ liters.}$$

Thus, the tank holds the water which can be emptied in 8 hrs.

$$= 4320 \times 2$$

$$= 8640 \text{ liters}$$

S15. Ans.(a)

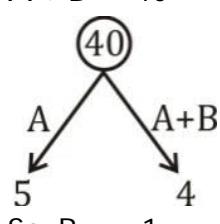
Sol. Filling pipe A takes = 8 hrs.

B is empty pipe.

According to the question,

$$A \rightarrow 8$$

$$A + B \rightarrow 10$$



$$\text{So, } B \rightarrow -1$$

So, leak can empty half of the tank in = $\frac{(40/2)}{1}$

$$= 20 \text{ hrs.}$$

S16. Ans.(d)

$$\text{Sol. } (A + B)'s \text{ 2 days' work} = \left(\frac{1}{16} + \frac{1}{12}\right) = \frac{7}{48}.$$

$$\text{Work done in 6 pairs of days} = \left(\frac{7}{48} \times 6\right) = \frac{7}{8}. \text{ Remaining work} = \left(1 - \frac{7}{8}\right) = \frac{1}{8}.$$

$$\text{Work done by A on 13^{th} day} = \frac{1}{16}. \text{ Remaining work} = \left(\frac{1}{8} - \frac{1}{16}\right) = \frac{1}{16}.$$

On 14th day, it is B's turn.

$$\frac{1}{12} \text{ work is done by B in 1 day. } \frac{1}{16} \text{ work is done by B in } \left(12 \times \frac{1}{16}\right) = \frac{3}{4} \text{ day.}$$

$$\therefore \text{Total time taken} = 13\frac{3}{4} \text{ days.}$$

S17. Ans.(b)

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

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

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

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

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

S18. Ans.(b)

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

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

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

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

$$\text{So, required ratio} = \frac{1}{240} : \frac{1}{320} = 4 : 3.$$

S19. Ans.(c)

$$\text{Sol. } 10 \text{ men's 1 day's work} = \frac{1}{15}; 15 \text{ women's 1 day's work} = \frac{1}{12}.$$

$$(10 \text{ men} + 15 \text{ women})'s \text{ 1 day's work} = \left(\frac{1}{15} + \frac{1}{12}\right) = \frac{9}{60} = \frac{3}{20}.$$

$$\therefore 10 \text{ men and 15 women will complete the work in } \frac{3}{20} = 6\frac{2}{3} \text{ days.}$$

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S20. Ans.(a)

$$\text{Sol. } 1 \text{ man's 1 day's work} = \frac{1}{108}.$$

$$12 \text{ men's 6 days' work} = \left(\frac{1}{9} \times 6\right) = \frac{2}{3}. \text{ Remaining work} = \left(1 - \frac{2}{3}\right) = \frac{1}{3}.$$

$$18 \text{ men's 1 day's work} = \left(\frac{1}{108} \times 18\right) = \frac{1}{6}.$$

$\frac{1}{6}$ work is done by them in 1 day.

$$\therefore \frac{1}{3} \text{ work is done by them in } \left(6 \times \frac{1}{3}\right) = 2 \text{ days.}$$

S21. Ans.(a)

Sol. Let 1 woman's 1 day's work = x.

Then, 1 man's 1 day's work = $\frac{x}{2}$ and 1 child's 1 day's work = $\frac{x}{4}$.

$$\text{So, } \left(\frac{3x}{2} + 4x + \frac{6x}{4}\right) = \frac{1}{7} \Rightarrow \frac{28x}{4} = \frac{1}{7} \Rightarrow x = \left(\frac{1}{7} \times \frac{4}{28}\right) = \frac{1}{49}.$$

\therefore 1 woman alone can complete the work in 49 days.

So, to complete the work in 7 days, number of women required = $\left(\frac{49}{7}\right) = 7$.

S22. Ans.(d)

Sol. (1 man + 1 woman)'s 1 day's work = $\left(\frac{1}{3} + \frac{1}{4}\right) = \frac{7}{12}$.

Work done by 1 man and 1 woman in $\frac{1}{4}$ day = $\left(\frac{7}{12} \times \frac{1}{4}\right) = \frac{7}{48}$.

Remaining work = $\left(1 - \frac{7}{48}\right) = \frac{41}{48}$.

Work done by 1 boy in $\frac{1}{4}$ day = $\left(\frac{1}{12} \times \frac{1}{4}\right) = \frac{1}{48}$.

\therefore Number of boys required = $\left(\frac{41}{48} \times 48\right) = 41$.

S23. Ans.(d)

Sol. 1 man's 1 day's work = $\frac{1}{100}$. (10 men + 15 women)'s 1 day's work = $\frac{1}{6}$.

15 women's 1 day's work = $\left(\frac{1}{6} - \frac{10}{100}\right) = \left(\frac{1}{6} - \frac{1}{10}\right) = \frac{1}{15}$.

1 woman's 1 day's work = $\frac{1}{225}$.

\therefore 1 woman alone can complete the work in 225 days.

S24. Ans.(b)

Sol. 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 these two equations, we get: $x = \frac{11}{400}$, $y = \frac{1}{40}$.

\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.

S25. Ans.(b)

Sol. 1 man's 1 day's work = $\frac{1}{384}$; 1 woman's 1 day's work = $\frac{1}{768}$.

Work done in 12 days = $12\left(\frac{16}{384} + \frac{16}{768}\right) = \left(12 \times \frac{3}{48}\right) = \frac{3}{4}$.

Remaining work = $\left(1 - \frac{3}{4}\right) = \frac{1}{4}$.

(16 men + 16 women)'s 2 days' work = $2\left(\frac{16}{384} + \frac{16}{768}\right) = \left(2 \times \frac{1}{16}\right) = \frac{1}{8}$.

Remaining work = $\left(\frac{1}{4} - \frac{1}{8}\right) = \frac{1}{8}$.

$\frac{1}{384}$ work is done in 1 day by 1 man.

\therefore $\frac{1}{8}$ work will be done in 2 days by $\left(384 \times \frac{1}{8} \times \frac{1}{2}\right) = 24$ men.

S26. Ans.(a)

Sol. 1 man's 1 day's work = $\frac{1}{48}$; 1 woman's 1 day's work = $\frac{1}{60}$.

6 men's 2 days' work = $(\frac{6}{48} \times 2) = \frac{1}{4}$. Remaining work = $(1 - \frac{1}{4}) = \frac{3}{4}$.

Now, $\frac{1}{60}$ work is done in 1 day by 1 woman.

So, $\frac{3}{4}$ work will be done in 3 days by $(60 \times \frac{3}{4} \times \frac{1}{3}) = 15$ women.

S27. Ans.(b)

Sol. Work done by A = $(1 - \frac{8}{23}) = \frac{15}{23}$.

$\therefore A : (B + C) = \frac{15}{23} : \frac{8}{23} = 15 : 8$.

So, A's share = Rs. $(\frac{15}{23} \times 529) = \text{Rs. } 345$.

S28. Ans.(c)

Sol. (A + B)'s 1 day's work = $(\frac{1}{45} + \frac{1}{40}) = \frac{17}{360}$.

Work done by B in 23 days = $(\frac{1}{40} \times 23) = \frac{23}{40}$. Remaining work = $(1 - \frac{23}{40}) = \frac{17}{40}$.

Now, $\frac{17}{360}$ work was done by (A + B) in 1 day.

$\frac{17}{40}$ work was done by (A + B) in $(1 \times \frac{360}{17} \times \frac{17}{40}) = 9$ days.

\therefore A left after 9 days.

S29. Ans.(b)

Sol. Kim's wages : David's wages = Kim's 1 day's work : David's 1 day's work

= $\frac{1}{3} : \frac{1}{2} = 2 : 3$

\therefore Kim's share = Rs. $(\frac{2}{5} \times 150) = \text{Rs. } 60$.

S30. Ans.(b)

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

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

\therefore C's share = Rs. $(\frac{1}{8} \times 3200) = \text{Rs. } 400$.