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## Time and work Questions for SBI PO Pre, IBPS PO Pre, SBI Clerk Mains, IBPS Clerk Mains & LIC AAO Exams.

Direction: Read the following questions carefully and choose the right answer.

1. Sunder and Subhash are chefs in a hotel. In 15 minutes, Sunder can cut 112 onions and Subhash is 125% as efficient as Sunder. One day, in the hotel 4200 onions were to be cut. If Sunder and Subhash started working together, then in how many hours they can complete the work?

A. 4 hours 10 minutes      B. 4 hours 20 minutes      C. 4 hours 50 minutes      D. 4 hours 15 minutes  
E. None of these

2. A, B and C can do a certain piece of work in 16, 20 and 24 days respectively. They started the work together but after ' $x - 8$ ' days, A left the job. ' $x$ ' days before completion of the work B also left. If the whole work is completed in ' $x+5$ ' days, then find the value of ' $x$ '.

A. 12      B. 14      C. 15      D. 18      E. None of these

3. Four friends A, B, C and D are assigned to complete a work. A, C and D together can complete the task in 8 days while A and C together can complete the same work in  $\frac{72}{7}$  days. If B is 20% more efficient than D, then find the sum of number of days taken by B and C to complete the task individually, if it is given that ratio of efficiency of A and C is 3: 4, respectively.

A. 56 days      B. 42 days      C. 36 days      D. 48 days      E. 54 days

4. It takes 8 women, each working at the same rate a total of 20 days to build a room. If 8 women start to build the room on January 1, 2006 and one man per day is added beginning from January 7, 2006, at the end of which day will the room be completed given that each man can work twice as fast as each woman?

A. January 12, 2006      B. January 13, 2006      C. January 14, 2006      D. January 16, 2006  
E. January 15, 2006

5. A and B together can do a work in 18 days and B and C together can do it in 30 days. All three arrive on the work site and for the first 14 days only B and C work together, then A worked alone for some days and then he left for his home. After A has left B and C complete the remaining work in 18 days with B working on every 1st and 3rd day and C working on every 2nd day. After how many days A left the work site?

A. 18 days      B. 20 days      C. 6 days      D. 12 days      E. None of these

6. Rocky and Monty decided to do a task. They can do the task in  $z$  and  $(z + 10)$  days respectively. They were paid Rs. 2000 for completing the task in  $16 \frac{2}{3}$  days. They took help of Jolly and completed the work in time. If Jolly's share is Rs. 500, find the time taken by Rocky and Monty to complete the task individually?

- A. 20, 30 days      B. 30, 40 days      C. 40, 50 days      D. 45, 55 days      E. None of these

7. In a restaurant, the owner plan to do a work in 8 days with 4 machines. But after 2 days, they find that only 40% of the work is done with the machines running for 6 hours a day. If they want to complete the work in the planned time with the machines, how many hours per day the machines have to work?

- A. 4 hours      B. 5 hours      C. 6 hours      D. 3 hours      E. 7 hours

8. A farmer can sow 80 seeds in an hour. He had 1000 seeds to be sown in 2 days time working 5 hours daily. To accomplish this work he took the help of his wife and both of them started working together to complete the work. Find out how many seeds can be sown by his wife in an hour?

- A. 30      B. 25      C. 24      D. 28      E. 20

9. Amit, Bhola and Chandan can do some specific part (and not whole) of work in 6 days, 9 days and 12 days respectively. If they work together for 24 days to complete some additional piece of work, how many days will Bhola and Chandan together take to complete this additional piece of work done by all three of them in 24 days?

- A. 44 days      B.  $31 \frac{2}{9}$  days      C. 50 days      D.  $44 \frac{4}{7}$  days      E. 42 days

10. 24 men get a target of completing a work in 35 days. They started working together and found that after 20 days they just completed 50% of the work. How many more men need to be included so that work finishes in time?

- A. 8      B. 10      C. 12      D. 11      E. 15

11. Pankaj can do as much work in 4 days as Kamal can do in 6 days, and Kamal can do as much work in 5 days as Ambuj in 8 days. What wages does Ambuj get for a piece of work which Pankaj can do in 70 days, if Ambuj gets Re. 1 for 1 day?

- A. Rs. 144      B. Rs. 124      C. Rs. 168      D. Rs. 130      E. None of these

12. 2 employees and 3 trainees together can finish a project in 7 days, 6 employees and 13 trainees together can finish the same project in 2 days. Find the time taken by 4 employees and 4 trainees together to finish the same work.

- A. 4 days                      B. 5 days                      C. 6 days                      D. 8 days                      E. None of these

13. A work is started by a man and it is assumed that he will finish the work in 11 days if working alone. Each subsequent day a new man joined the work. In how many days the four times the original work will be completed, if after the 8th day from the starting of the work no new man will be further added?

- A. 11                      B. 10                      C. 9                      D. 8                      E. None of these

14. 20 men, 12 women and 18 boys were given a project of doing 3960 designs of a building in 5 days. The ratio of the number of designs made by them respectively in 1 day is 3 : 2 : 1. If on the 1<sup>st</sup> day all of them worked, on the 2<sup>nd</sup> day 4 women and 6 boys went absent and on the 3<sup>rd</sup> day, 6 men and 10 boys went absent but still the work got finished on the 3<sup>rd</sup> day. Then find the number of designs designed by them on the 3<sup>rd</sup> day?

- A. 1021                      B. 1110                      C. 1621                      D. 1210                      E. None of these

15. The work done by a women worker in 10 hours is equal to the work done by men worker in 8 hours and by a girl worker in 12 hours. If working 12 hours per day 10 men worker can finish a work in 16 days. In how many days 32 men worker, 32 women worker and 32 girl's worker together finish the same work working 8 hours per day?

- A.  $2\frac{1}{71}$  days                      B.  $2\frac{2}{65}$  days                      C.  $3\frac{3}{74}$  days                      D.  $2\frac{2}{69}$  days                      E. None of these

16. 4 Men can complete a piece of work in 58 days. They started the work together but at the end of every 5th day one man leaves the work and in the place of the man, one woman joins the work and the women continue doing the work and finish it despite all the men left in the mid of the work. Find the total number of days they take to complete the work in this manner if the efficiency of one women is 25% of the efficiency of one man.

- A. 174.5 days                      B. 194.5 days                      C. 116 days                      D. 174 days                      E. None of these

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17. 3 workers Peroola, Rahul and Prashant can complete a piece of work in 6 days. Peroola takes 15 days less than Rahul to complete the same work. Find in how many days will Prashant complete the whole work alone with 75% of his original efficiency, if Rahul can complete the work alone in 35 days?

A.  $\frac{560}{37}$  days

B.  $\frac{499}{36}$  days

C.  $\frac{361}{17}$  days

D.  $\frac{555}{43}$  days

E. None of these

**18.** Three persons A , B, and C complete a piece of work in 6 days for which they are paid a sum of Rs. 480.If the efficiency of A, B and C are in ratio 4 : 5 :7, then find the daily income of B?

A. Rs. 25

B. Rs. 30

C. Rs. 150

D. Rs. 20

E. None of these

**19.** Rashmi and Pallavi can make a carpet in 3 days and 12 days more than the time taken if both of them worked together. Find the time in which Rashmi can make the carpet alone.

A. 9 days

B. 6 days

C. 12 days

D. 8 days

E. None of these

**20.** Three workers Trump, Putin and Jinping are appointed to do a job. They together started the job but Jinping left after 3 days when 37% of the job was done. The remaining job was completed by Trump and Putin in 7 days. The ratio of efficiency of Trump and Putin is 4 : 5. Find the number of days required by the slowest worker to complete the entire job alone?

A. 22 days

B. 20 days

C. 24 days

D. 18 days

E. 30 days

**21.** A group of men decided to do a job in 4 days, but 20 men dropped out everyday. Find the number of men who initially decided to do the job, if job was completed in 7 days?

A. 70

B. 110

C. 140

D. 120

E. None of these

**22.** Two male workers A and B can complete a piece of work in 20 and 35 hours respectively. A female worker, C can complete the whole work alone in H hours with three - fourth of her original efficiency. If all the three working together with their usual efficiency can complete the whole work in 6 hours, then find the value of H.

A.  $\frac{460}{37}$  days

B.  $\frac{560}{27}$  days

C.  $\frac{460}{17}$  days

D.  $\frac{560}{37}$  days

E. None of these

**23.** Raj can do a piece of work in 20 days and Rohan can do it in 12 days. On which date will they complete the work, if they work together on prime number dates starting on 29<sup>th</sup> April?

A. 7<sup>th</sup> MayB. 17<sup>th</sup> MayC. 13<sup>th</sup> MayD. 23<sup>rd</sup> May

E. None of these

**24.** To do a certain task Bhuvan would take 3 times as long as Abir and Varun together; and Varun would takes 4 times as long as Abir and Bhuvan together. Three of them together can complete the task in 5 days. How much time is taken by Bhuvan and varun to complete the task?

- A.  $14\frac{1}{2}$  days      B.  $13\frac{1}{3}$  days      C. 12 days      D.  $11\frac{1}{9}$  days      E.  $10\frac{1}{3}$  days

**25.** If 5 men and 5 women work together then they can finish a work in 5 days but if 5 women work alone then they take  $\frac{40}{3}$  more days than the time required by 5 men. Find efficiency of one woman is how much percentage less than one man?

- A. 60%      B. 66.66%      C. 40%      D. 62.5%      E. None of these

**26.** A can do  $\frac{3}{5}$ <sup>th</sup> of work in 15 days. Efficiency of B is 25% more than that of A. Both A and B started working together and left the work after five days. C completed the remaining work in 11 days. Efficiency of C is what percent more/less than that of A ?

- A. 20% less      B. 25% more      C. 20% more      D. 25% less      E. 33.33% more

**27.** Ramesh and Suresh can complete a piece of work in 25 and 40 days respectively. They started working alternatively starting with Ramesh. After working for few days, Ganesh has also joined with condition that Ganesh will work only when Ramesh is working. But Suresh left the work three days before the completion of work. If it is known that efficiency of Ganesh is half to that of Ramesh, then after how many days Ganesh has joined the work? (Given that the ratio of work done by Ramesh, Suresh and Ganesh are in ratio of 6 : 3 : 1)

- A. 10 days      B. 12 days      C. 20 days      D. 15 days      E. 25 days

**28.** N number of workers with same efficiency started working on one project. On Second day, N more number of workers with same efficiency joined them. On third day N more number of workers joined them. After working for four days, numbers of workers started decreasing by N from next day. It took 7 days to complete the work. How much time will it take, if 4N workers worked continuously on that project ?

- A. 3 days      B. 2 days      C. 8 days      D. 4 days      E. Can't be determined

**29.** 'A' alone can do half of a work in 35 days. The time taken by B to do one third of the work is equal to the time taken by A to do one fourth of the work. Find the number of days A and B together will take to complete the work?

- A. 35 days      B. 40 days      C. 30 days      D. 60 days      E. None of these

**30.** A and B together can complete a piece of work in 30 days but C can destroy the work in 120 days. If B and C work together, then they take 240 days to complete the work. Find the number of days, A alone will take to complete the work?

- A. 36 days      B. 42 days      C. 60 days      D. 48 days      E. None of these

31. Ram takes 10 hours more to complete a piece of work than that of Ramya. If they work together then by what percentage should Ramya decrease her efficiency so both of them complete the work in 20 hours and both of them had completed the piece of work in equal proportion?

- A. 20%                      B. 25%                      C. 40%                      D. 50%                      E. Can't be determined

32. A and B together can complete a piece of work in 12 days but B and C together can complete the same piece of work in  $\frac{40}{3}$  days. A started the work and worked only for 5 days then C alone complete the remaining work in  $\frac{100}{3}$  days. Had A worked for 12 days then C would have taken only 24 days to complete the remaining work. The number of days taken by C alone to complete the whole work is how many more than that by B alone to complete the whole work?

- A. 30 days                      B. 10 days                      C. 25 days                      D. 15 days                      E. None of these

33. The number of days taken by 16 men to complete a piece of work is 2 days less than that by 18 women to complete the same work. If the efficiency of one woman is 20% less than that of one man, then in how many days all 16 men and 18 women together can complete the same work?

- A.  $9\frac{9}{19}$  days                      B.  $9\frac{4}{17}$  days                      C.  $8\frac{1}{17}$  days                      D.  $9\frac{12}{19}$  days                      E. None of these

34. B takes 4 times as long as A and C together and C takes thrice as long as A and B together to complete the work. If A, B and C together complete the work in 20 days, how long would B alone take to complete the work?

- A. 110 days                      B. 80 days                      C. 100 days                      D. 90 days                      E. None of these

35. 24 men started the working on project and complete 40% of the work in 10 days working 8 hours a day. 24 women also joined the project after 15 days from the start of the project. Find the total number of days taken to complete the whole work if efficiency of women is half to that of men and women also worked 8 hours a day.

- A. 21 days                      B.  $\frac{70}{3}$  days                      C.  $\frac{65}{3}$  days                      D. 23 days                      E. None of these

36. A, B and C can do a certain piece of work in 32, 24 and 28 days respectively. They started working together but after 'x' days A left the job and 'x + 1' days before completion of the work B also left. Find the value of  $x^2 - 2x + 20$  if the whole work is completed in  $4x - 2$  days.

- A. 23                      B. 28                      C. 35                      D. 44                      E. None of these

37. A and B can complete a work in 18 days and B and C can complete the same work in 30 days. If B alone can complete  $\frac{1}{3}$ rd of the work in 30 days, in how many days A and C can complete the work?

- A. 40 days      B. 30 days      C. 45 days      D. 25 days      E. None of these

38. Three persons A, B and C can complete 11.11%, 5% and 6.66% of a work in one day. In how many days the work will be completed if all three work together?

- A.  $4\frac{14}{39}$  days      B.  $4\frac{11}{39}$  days      C.  $4\frac{16}{41}$  days      D.  $4\frac{13}{41}$  days      E. None of these

39. A and C can build a wall in 9 days and 8 days respectively, while B can destroy the whole wall in 10 days. If A works with C on first day, what is the number of days required to build the wall if A is joined by B and C on alternate days?

- A.  $8\frac{11}{85}$  days      B.  $8\frac{4}{85}$  days      C.  $8\frac{4}{89}$  days      D.  $8\frac{13}{89}$  days      E. None of these

40. For a particular work the efficiency of A is 66.67% more than that of B. If both of them working together can complete 88.88% of work in 10 days, in how many days B alone can complete the work?

- A. 40      B. 25      C. 30      D. 35      E. None of these

41. A, B and C can paint a wall in 10 hrs, 8 hrs and 20 hrs respectively. A and B start painting the left half of the wall and C starts painting only right half of the wall. After 2 hrs only A paints left half of the wall while B and C start painting right half of the wall and thus they complete the work painting only their side of the wall. What is the time difference between the completion of the left and right half of the wall?

- A.  $1\frac{2}{7}$  hrs      B.  $1\frac{9}{14}$  hrs      C.  $1\frac{11}{14}$  hrs      D.  $1\frac{13}{14}$  hrs      E. None of these

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42. The ratio of the number of hours taken by pipes A, B, C and D to empty a container while working individually is 4 : 6 : 5 : 8. Sum of the number of hours taken by them is 230 hours while working individually. If B and C work for the 1st 5 hours and A and D work for the next 5 hours, again B and C work for the next 5 hours and they continue working in this pattern then how much portion would be emptied in the 1st 11 hours given that the container is full initially?



A.  $\frac{12}{81}$

B.  $\frac{761}{907}$

C.  $\frac{12}{17}$

D.  $\frac{163}{400}$

E. None of these

43. A and B alone can complete a work in 24 and 48 days, respectively. 50% of the work is completed by C in 3x days and remaining work is completed by A and B working together in 'x' days, find the time taken by B and C to complete the work while working together.

A. 16 days

B. 24 days

C. 20 days

D. 18 days

E. 32 days

44. Daily wage of A is  $\frac{4}{5}$  of the daily wage of B, and daily wage of C is  $\frac{3}{2}$  of the daily wage of A. If the average daily wage of A, B and C is taken together is Rs. 3000, then which of the following is the daily wages of each of them?

A. Rs. 2200, Rs. 2800, Rs. 4000

B. Rs. 2400, Rs. 3000, Rs. 3600

C. Rs. 2880, Rs. 3600, Rs. 4200

D. Rs. 1200, Rs. 1800, Rs. 6000

E. None of these

45. A can complete a piece of work in 12 days, A, B and C can complete the work in 6 days. Efficiency of B is 0.5 times the efficiency of A. In how many days C can complete the work alone?

A. 10 days

B. 16 days

C. 24 days

D. 12 days

E. None of these

46. A and B together can complete a piece of work in 12 days, B and C together can complete a piece of work in 16 days, A and C together can complete a piece of work in 24 days. Find the number of days in which A, B and C together can complete the work.

A.  $\frac{31}{5}$

B.  $\frac{32}{3}$

C.  $\frac{32}{5}$

D.  $\frac{31}{3}$

E. None of these

47. A can complete a piece of work in 24 days and B can complete the work in 36 days. Efficiency of C is twice the efficiency of A and B together. Find the number of days in which C can complete the work alone.

A.  $4\frac{1}{5}$  days

B.  $7\frac{1}{5}$  days

C.  $5\frac{1}{5}$  days

D.  $6\frac{1}{5}$  days

E. None of these

48. A can complete a piece of work in 36 days. Efficiencies of B and C are 1.5 times and 2 times respectively the efficiency of A. Find the number of days taken by all of them to complete the work.

A. 15 days

B. 9 days

C. 12 days

D. 8 days

E. None of these

49. P can complete a piece of work in 12 days, Q can complete the same work in 15 days and R can complete the work in 20 days. Doing that work together, they get an amount of Rs.84000. Find the sum of shares of P and Q.

A. Rs. 56000

B. Rs. 63000

C. Rs. 42000

D. Rs. 49000

E. None of these

**50. 10 men can do a piece of work in 18 days and 15 women can do the same work in 24 days. If the work is started by 5 men and 6 women and they work for 10 days after that all the remaining work is done by 5 men. How many days in total are required to complete the work?**

A. 30 days

B. 20 days

C. 26 days

D. 13 days

E. None of these

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**CORRECT ANSWERS:**

<b>1</b>	A	<b>11</b>	C	<b>21</b>	C	<b>31</b>	B	<b>41</b>	C
<b>2</b>	E	<b>12</b>	A	<b>22</b>	D	<b>32</b>	E	<b>42</b>	D
<b>3</b>	D	<b>13</b>	C	<b>23</b>	B	<b>33</b>	A	<b>43</b>	B
<b>4</b>	B	<b>14</b>	B	<b>24</b>	D	<b>34</b>	C	<b>44</b>	B
<b>5</b>	B	<b>15</b>	C	<b>25</b>	B	<b>35</b>	C	<b>45</b>	C
<b>6</b>	C	<b>16</b>	B	<b>26</b>	B	<b>36</b>	B	<b>46</b>	B
<b>7</b>	D	<b>17</b>	A	<b>27</b>	C	<b>37</b>	E	<b>47</b>	B
<b>8</b>	E	<b>18</b>	A	<b>28</b>	D	<b>38</b>	C	<b>48</b>	D
<b>9</b>	D	<b>19</b>	A	<b>29</b>	C	<b>39</b>	B	<b>49</b>	B
<b>10</b>	A	<b>20</b>	E	<b>30</b>	D	<b>40</b>	C	<b>50</b>	A



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## Explanations:

1. In 15 minutes, Sunder can cut 112 onions

Since, Subhash is 125% as efficient as Sunder, he can cut 125% of 112 = 140 onions in 15 minutes

In 15 minutes, the number of onions cut by Sunder and Subhash together = (112 + 140) = 252 onions

In 1 hour, they together can cut  $252 \times 4 = 1008$  onions

The number of hours taken by them to cut 4200 onions

$$= \frac{4200}{1008} = 4 \text{ hours } 10 \text{ minutes}$$

Hence, option A is correct.

2. Number of days A worked =  $(x - 8)$  days

Number of days B worked =  $(x + 5 - x) = 5$  days

Number of days C worked =  $(x + 5)$  days

$$\text{So, } \frac{x-8}{16} + \frac{5}{20} + \frac{x+5}{24} = 1$$

$$15(x - 8) + 60 + 10(x + 5) = 240$$

$$15x - 120 + 60 + 10x + 50 = 240$$

$$25x = 250 ; x = 10$$

Hence, option E is correct.

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3. Let, total work be LCM (8, 72) = 72 units

Number of units of work done by A, C and D together in one day  
 $= \frac{72}{8} = 9$  units

Number of units of work done by A and C together in one day  
 $= \frac{72}{72/7} = 7$  units

So, number of units of work done by D alone in one day =  $9 - 7 = 2$  units

Therefore, number of days taken by D alone to complete the work  
 $= \frac{72}{2} = 36$  days

So, time taken by B alone to complete the work  
 $= \frac{36}{1.2} = 30$  days

So, number of units of work done by A alone in one day  
 $= \frac{3}{7} \times 7 = 3$  units

So, number of units of work done by C alone in one day =  $7 - 3 = 4$  units

So, time taken by C alone to complete the work  
 $= \frac{72}{4} = 18$  days

Therefore, required number of days =  $18 + 30 = 48$  days

Hence, option D is correct.

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4. Given, 8 women take a total of 20 days to build the room.

$8 \times 20 = 160$  woman days are required to build the room.

Till January 6, 2006, the number of woman days, completed =  $8 \times 6 = 48$  woman days

Also each man works twice as fast as a woman. One man day = 2 woman days

From January 7, 2006 onwards one man per day is added. Which is equal to the adding of two women per day.

Therefore, January 7, 2006 onwards 10 woman day, 12 woman days, 14 woman days, -----are completed on successive days.

Number of woman days required to complete the work from January 7, 2006 =  $160 - 48 = 112$  woman days

$$\rightarrow 10 + 12 + 14 + 16 + \dots = 112$$

The above equation is in arithmetic progression.

$$\text{Let } 10 + 12 + 14 + \dots + [10 + (n - 1)2] \geq 112$$

Where n is the number of days required to complete 112 woman days. Consider,

$$n \left[ \frac{10 + \{10 + (n - 1)2\}}{2} \right] = 112$$

$$\rightarrow n^2 + 9n = 112 \rightarrow n^2 + 9n - 112 = 0$$

$$(n + 16)(n - 7) = 0$$

$n = 7$ , because n is positive

Total number of days required to build the room =  $6 + 7 = 13$  days.

The room will be ready by the end of January 13, 2006.

Hence, option B is correct.

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5. A and B take 18 days

B and C take 30 days

Common Multiple (18, 30) = 180

Let total work = 180 units

Time taken by A and B = 18 days

1 day work of A and B = 10 units

Time taken by B and C = 30 days

1 day work of B and C = 6 units

Let A works alone for "x" days

First 14 days – B and C work

For x days – A works alone

For 18 days – B and C work --- B work on 1<sup>st</sup> and 3<sup>rd</sup> day and C work on 2<sup>nd</sup> day.

So, out of 18 days B works for 12 days and C works for 6 days

This is equivalent to B and C working together for 6 days and B working alone for 6 days

(B + C) – 14 days

A alone – x days

(B + C) – 6 days

B alone – 6 days

Total work done by B and C while working together = 20 days × 6 units/day = 120units

Work remaining = (180 – 120) = 60units

A and B can do 10units/day

If A and B work for 6 days –  $6 \times 10 = 60$  units

So, A works alone for 6 days

Hence, A leaves the work site after  $14 + 6 = 20$  days

Hence, the correct answer is 20 days.

Hence, option B is correct.

6. Rocky and Monty can do  $(1/z)$ th and  $[1/(z+10)]$ th part of the total task in a day respectively.

In  $50/3$  days, they can do  $50/3 [1/z + 1/(z+10)]$  of the total work

Total profit was Rs. 2000 and Jolly is getting Rs. 500 as his for the task he did

$$x = \frac{500}{2000}$$

$$x = \frac{1}{4}$$

so, Jolly did  $1/4$ th of the task, rest will be done by Rocky and Monty i.e.,  $3/4$ th

$$\rightarrow 16 \frac{2}{3} \left[ \frac{1}{z} + \frac{1}{z+10} \right] = \frac{3}{4}$$

$$\frac{50}{3} \left[ \frac{1}{z} + \frac{1}{z+10} \right] = \frac{3}{4} \dots(i)$$

Solving this we get the value of  $z = 40$

Hence, option C is correct.

7. Machines do 40% of the work in 2 days, or  $2 \times 6 = 12$  hours.  
So the rest of the (i.e., 60% of the work) can be done in

$$\frac{60 \times 12}{40} = 18 \text{ hours}$$

This 18 hours of work has to be done in the remaining  $(8 - 2) = 6$  days.

Machine have to work  $\frac{18}{6} = 3$  hours

a day to complete the work in the planned time.

Hence, option D is correct.

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8. Seeds sown by the farmer in one hour = 80

Seeds sown by him working 5 hours daily in one day =  $80 \times 5 = 400$

Seeds sown by him in 2 days =  $400 \times 2 = 800$

Remaining seeds =  $1000 - 800 = 200$

Now these 200 seeds will be sown by the wife, in 2 days working 5 hours daily.

Seeds sown by the wife =  $\frac{200}{10} = 20$  seeds

Hence, option E is correct.

9. Initially let the amount of work be  $x$  units which Amit, Bhola and Chandan do in 6, 9 and 12 days respectively.

Amit does  $x/6$  units of work in a day

Bhola does  $x/9$  units of work in a day

Chandan does  $x/12$  units of work in a day

So, they can do  $\{x/6 + x/9 + x/12\}$  units of work by working together, in 1 day.

In 24 days the amount of work done is

$$24 \times \frac{13x}{36} = \frac{26x}{3} \text{ units}$$

Bhola and Chandan can do  $26x/3$  units of work in

$$\frac{\frac{26x}{3}}{\frac{x}{9} + \frac{x}{12}} = 44 \frac{4}{7} \text{ days}$$

Hence, option D is correct.

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10. Total work =  $24 \times 35 = 840$  units

Work done in 20 days =  $840 \times 0.50 = 420$  units

Work left =  $840 - 420 = 420$  units

So,

$$\frac{24 \times 20}{420} = \frac{(24 + x) 15}{420}$$

$$\rightarrow 480 = 360 + 15x$$

$$\rightarrow x = 8$$

So, 8 more men are required to complete the work on time.

Hence, option A is correct.

11. Let, Pankaj, Kamal and Ambuj as P, Q and R respectively.

$$P \times 4 = Q \times 6$$

$$\Rightarrow \frac{P}{Q} = \frac{3}{2}$$

$$Q \times 5 = R \times 8$$

$$\Rightarrow \frac{Q}{R} = \frac{8}{5}$$

$$P : Q : R = 12 : 8 : 5$$

Let R do the work in x days which P can do in 70 days.

$$\text{Then, } P \times 70 = R \times x$$

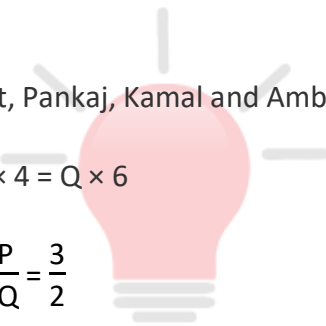
$$\Rightarrow 12 \times 70 = 5 \times x$$

$$\Rightarrow x = 168 \text{ days}$$

Now, Cost of R for 1 day = Rs. 1

Cost of R for 168 days = Rs. 168

Hence, option C is correct.



**12.** Let time taken by 4 employees and 4 trainees together is 'x'.

Let one day work of one employee and one trainee is 'E' and 'T' respectively.

$$\text{Total work} = 7 \times (2E + 3T) = 2 \times (6E + 13T)$$

$$\Rightarrow 14E + 21T = 12E + 26T$$

$$\Rightarrow 2E = 5T \text{ ..... (1)}$$

$$\text{Total work done by 4 employees and 4 trainees together in 'x' days} = x \times (4E + 4T) = 2 \times (6E + 13T)$$

From equation (1)-

$$\Rightarrow x \times (10T + 4T) = 2 \times (15T + 13T)$$

$$\Rightarrow x = \frac{56T}{14T} = 4 \text{ days}$$

Hence, option A is correct..

**13.** One day work of a man = 1 unit

$$\text{Total work} = 4 \times 11 = 44 \text{ units}$$

If on each subsequent day a new man joined -

The work on 2nd day = 2 unit

The work on 3rd day = 3 unit

So on....

Than for the first 8 days the total work =  $1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 = 36$  units

$$\text{Remaining work} = 44 - 36 = 8 \text{ units}$$

This remaining 8 unit of work will be completed in 1 more day as 8 men are employed in the work.

Hence total time taken =  $8 + 1 = 9$  days.

Therefore, option C is correct.

**14.** Let the number of designed by men, women and boys in 1 day be  $3x$ ,  $2x$  and  $x$  respectively.  
Designs of building on the 1st day



$$\Rightarrow 20 \times 3x + 12 \times 2x + 18 \times x$$

$$\Rightarrow 102x$$

$$\text{On the 2}^{\text{nd}} \text{ day} = 20 \times 3x + 8 \times 2x + 12 \times x = 88x$$

$$\text{On the 3}^{\text{rd}} \text{ day} = 14 \times 3x + 12 \times 2x + 8 \times x = 74x$$

$$\text{Now, } 102x + 88x + 74x = 3960$$

$$\Rightarrow 264x = 3960$$

$$\Rightarrow 74x = \frac{3960}{264} \times 74$$

$$\Rightarrow 74x = 1110$$

Hence, option B is correct.

- 15.** The work done by a women worker in 10 hours is equal to the work done by men worker in 8 hours and by a girl worker in 12 hours.

So, the work done by a women worker in 1 hour =  $\frac{8}{10}$  × the work done by a men worker in 1 hour.

And, the work done by a girl worker in 1 hour =  $\frac{8}{12}$  × the work done by a men worker in 1 hour.

Working 12 hours per day 10 men worker can finish a work in 16 days.

So, 10 men worker can finish the work in =  $16 \times 12 = 192$  hours.

32 men worker will finish the work in =  $\frac{192 \times 10}{32} = 60$  hours

The work done by 32 men worker in 1 hour =  $\frac{1}{60}$

Then, the work done by 32 women worker in 1 hour =  $\frac{8}{10} \times \frac{1}{60} = \frac{1}{75}$

And, the work done by 32 girl's worker in 1 hour =  $\frac{8}{12} \times \frac{1}{60} = \frac{1}{90}$

So, the work done by 32 men, 32 women and 32 girl's worker in 1 hour =  $\frac{1}{60} + \frac{1}{75} + \frac{1}{90} = \frac{37}{900}$

Then, 32 men, 32 women and 32 girl's workers can finish the work in  $(200/23)$  hours.

∴ 32 men worker, 32 women worker and 32 girl's worker together finish the same work working 8 hours per day

$$= \frac{900}{37} \times \frac{1}{8} = \frac{225}{74} \text{ days} = 3 \frac{3}{74} \text{ days}$$

Hence, option C is correct.

- 16.** Total work =  $4 \times 58 = 232$  units (let the efficiency of one man is 1 unit)

Total work was done in the first 5 days =  $5 \times 4 = 20$  units =  $\frac{80}{4}$  units

Now 3 men and one woman will work in the next five days = efficiency of  $3m + 1w = 3 + \frac{1}{4} = \frac{13}{4}$

Total work was done in the second 5 days =  $13 \times \frac{5}{4} = \frac{65}{4}$  units

Total work was done in the third 5 days =  $2m + 2w = 2 + \frac{1}{2} = 5 \times \frac{5}{2} = \frac{25}{2} = \frac{50}{4}$  units

Total work was done in the fourth 5 days =  $1m + 3w = 1 + \frac{3}{4} = \frac{7}{4} = 7 \times \frac{5}{4} = \frac{35}{4}$  units

After the fourth, 5 days only women will work therefore the total units of work done in the first four, five days = 20 days

$$= \frac{80}{4} + \frac{65}{4} + \frac{50}{4} + \frac{35}{4} = \frac{230}{4} \text{ units}$$

$$\text{Remaining work} = 232 - \frac{230}{4} = \frac{698}{4} = 174.5 \text{ units}$$

$$\text{Efficiency of 4 women} = 1 \times \frac{4}{4} = 1 \text{ unit}$$

The number of days taken by 4 women to do 174.5 units = 174.5 days

Total number of days =  $174.5 + 20 = 194.5$  days

Hence, option B is correct.

- 17.** Peroola + Rahul + Prashant = 6  
Rahul = 35  
Peroola =  $(35 - 15) = 20$   
Total units of work = 420  
(Peroola + Rahul + Prashant)'s one day work = 70 units  
Peroola's one day work = 21 units  
 $\Rightarrow$  Rahul = 12 units  
Prashant's one day work =  $70 - 33 = 37$  units

$$\text{Prashant's efficiency to do the work alone} = \frac{75}{100} \times 37$$

$$\text{Time required to complete the work} = \frac{420 \times 4}{37 \times 3} = \frac{560}{37} \text{ days}$$

Hence, option A is correct.

- 18.** Total amount earned by A, B, and C in 6 days = Rs 480

$$\text{The amount earned by them in 1 day} = \frac{480}{6} = \text{Rs } 80$$

Amount of money earned is proportional to the amount of work done

Let work done by A, B and C be  $4x$ ,  $5x$  and  $7x$ .

$\therefore$  Total work done by A, B and C together =  $16x$

Work done by B =  $5x$

Daily income of B =  $\frac{5x}{16x} \times 80 = \text{Rs. } 25$

Hence, option A is correct.

- 19.** Let the time both of them together will take to make the carpet be  $x$  days

Time taken by Rashmi alone =  $x + 3$  days

Time taken by Pallavi alone =  $x + 12$  days

One day work when they both work together = Sum of their individual per day work

$$\frac{1}{x} = \frac{1}{x+12} + \frac{1}{x+3}$$

$$\frac{1}{x} = \frac{2x+15}{x^2+15x+36}$$

$$x^2 + 15x + 36 = 2x^2 + 15x$$

$$x = 6$$

Time taken by Rashmi to make carpet alone =  $6 + 3 = 9$  days

Hence, option A is correct.

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- 20.** Let  $x$ ,  $y$  and  $z$  are the one day's work of Trump, Putin and Jinping respectively.

According to the question,

$$\Rightarrow 3 \times (x + y + z) = 37\% \text{ of the work}$$

$$\Rightarrow 7 \times (x + y) = 63\%$$

$$\Rightarrow x + y = 9\%$$

$\therefore$  The ratio of efficiency of Trump and Putin is 4 : 5,

$\therefore 5x = 4y$  and  $x = 4\%$ ,  $y = 5\%$  work per day.

It implies Trump can complete the job and in 25 days and Putin in 20 days.

In 3 days  $(x + y + z)$  do 37% of the work

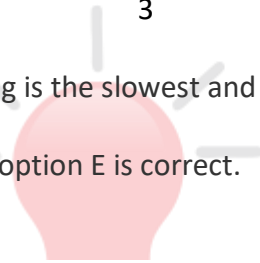
Out of this Trump and Putin would do 27% work =  $(3 \times 9\%)$  of the work.

Remaining work =  $37\% - 27\% = 10\%$  (done by Jinping in 3 days)

$\therefore$  The work of  $z = \frac{10}{3} = 3.33\%$  work per day

$\therefore$  Jinping is the slowest and he would do the work in 30 days.

Hence, option E is correct.



# Smartkeeda

## The Question Bank

**21.** Let the initial number of men be  $m$

Total work =  $4m$

$$m + (m - 20) + (m - 40) + \dots = 4m$$

$$\frac{7}{2} [2m + 6(-20)] = 4m$$

$$\frac{7}{2} (2m - 120) = 4m$$

$$m = 140$$

Hence, option C is correct.

**22.** Total units of work = 420

$(A + B + C)$ 's one hour's work = 70 units

A's one hour's work = 21 units

⇒ B = 12 units

C's one hour's work = 70 – 33 = 37 units

C's efficiency to do the work alone =  $3 \times \frac{37}{4}$

∴ Time reqd. to complete the work =  $420 \times \frac{4}{37 \times 3} = \frac{560}{37}$  hours

Hence, option D is correct.

**23.** Total work = 60 {LCM of 20, 12}

A/day = 3; B/day = 5; together = 8/ days = No. of days = 7.5 days

8<sup>th</sup> prime number date starting from 29<sup>th</sup> April

29<sup>th</sup> April, 2<sup>nd</sup> May, 3<sup>rd</sup> May, 5<sup>th</sup> May, 7<sup>th</sup> May, 11<sup>th</sup> May, 13<sup>th</sup> May, 17<sup>th</sup> May

Hence, option B is correct.

**24.** Let us represent efficiency of Abir, Bhuvan and Varun by A, B and V respectively.

According to the question,

$$\frac{B}{A + V} = \frac{1}{3} \dots\dots\dots(1)$$

$$\frac{V}{A + B} = \frac{1}{4} \dots\dots\dots(2)$$

To equate the ratio in the above equations, let us multiply (1) by 5 and (2) by 4.

So, A : B : V = 11 : 5 : 4

11 + 5 + 4 = 20 units

In 5 days, task completed = 20 × 5 = 100 units (total task)

Time taken by Bhuvan and Varun to complete the task

$$= \frac{100}{4 + 5} = 11 \frac{1}{9} \text{ days}$$

Hence, option D is correct.

**25.** Let the days taken by 5W = x and 5M = y.

One day work of 5W =  $\frac{1}{x}$  and that of 5M =  $\frac{1}{y}$

$$\frac{1}{x} + \frac{1}{y} = \frac{1}{5}$$



$$5(x + y) = xy \text{ -----(1)}$$

$$x = \frac{40}{3} + y$$

$$3(x - y) = 40 \text{ -----(2)}$$

Multiplying eq 1 and 2

$$3(x^2 - y^2) = 8xy$$

Dividing by  $y^2$

$$\frac{3x^2}{y^2} - \frac{8x}{y} - 3 = 0$$

$$\text{Let } \frac{x}{y} = t$$

$$3t^2 - 8t - 3 = 0$$

$$t = 3$$

$$\frac{x}{y} = \frac{3}{1}$$

So ratio of efficiency of W : M = 1 : 3

Efficiency of Women = 66.67% less than that of Men

Hence, option B is correct.

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**26.** A does  $\frac{3}{5}$ <sup>th</sup> of work in 15 days.

Time Taken by A to complete the work

$$= \frac{5}{3} \times 15 = 25 \text{ days}$$

Efficiency of B is 25% more than that of A.

If Work done by A in one day = 4, then work done by B in one day = 5

Ratio of time taken by A and B = 5 : 4

Time taken by B to complete the work

$$= \frac{4}{5} \times 25 = 20 \text{ days}$$

A and B worked for five days.

Total work Completed by A and B in 5 days

$$= 5 \left( \frac{1}{25} + \frac{1}{20} \right)$$

$$= \frac{1}{5} + \frac{1}{4} = \frac{9}{20}$$

Work Left =  $\frac{11}{20}$  which is done by C in 11 days.

Time taken by C to complete the whole work =  $\frac{20}{11} \times 11$

C = 20 days

Ratio of Efficiency of A and C =  $\frac{20}{25}$

Efficiency of C is 25 % more than that of A.

Hence, option B is correct.

**27.** Number of days taken by them Individually to complete the work :

Ramesh = 25 days

Suresh = 40 days

Ganesh = Efficiency of Ganesh is half to that of Ramesh, so he will take double time to complete the work.

Ganesh = 50 days

LCM of 25, 40 and 50 is 200.

Efficiency :

Ramesh = 8

Suresh = 5

Ganesh = 4

Let the total work is 200.

For first few days, Ramesh and Suresh worked alternatively. After few days, Ganesh joined with Ramesh. This pattern continued for few days and then Suresh left the work three days before the completion of work.

Work done by all three are in ratio of 6 : 3 : 1.

Total work is 200.

$$\text{Work Done by Ramesh} = \frac{6}{10} \times 200 = 120$$

$$\text{Work Done by Suresh} = \frac{3}{10} \times 200 = 60$$

$$\text{Work Done by Ganesh} = \frac{1}{10} \times 200 = 20$$

Here, three part are there in work done. First part, Ramesh and Suresh worked alternatively.

Second part, Ramesh with Ganesh and Suresh worked alternatively.

In third part, Ramesh and Ganesh worked daily for three days.

Work done in last three days :

$$\text{Ramesh} = 8 \times 3 = 24$$

$$\text{Ganesh} = 4 \times 3 = 12$$

$$\text{Ganesh worked in Second part} = 20 - 12 = 8$$

He worked for 2 days. So in Second part all of them have worked for two days.

Work done in those two days :

$$\text{Ramesh} = 8 \times 2 = 16$$

$$\text{Suresh} = 5 \times 2 = 10$$

$$\text{Ganesh} = 8$$

$$\text{Work Left by Ramesh} = 120 - 24 - 16 = 80$$

$$\text{Days} = \frac{80}{8} = 10 \text{ days}$$

It means both Ramesh and Suresh worked for total 20 days and then Ganesh Joined.

Hence, option C is correct.

- 28.** Here, efficiency of workers remains same throughout the project.  
First day N workers worked, second day 2N, third day 3N and so on.  
After fourth day, every day N workers decreased.  
Workers on fifth day = 3N  
Workers on Sixth day = 2N  
Workers on Seventh day = N  
Let the one day work of N workers is x  
 $x + 2x + 3x + 4x + 3x + 2x + x = 1$   
 $16x = 1$

$$x = \frac{1}{16}$$

$$\text{Work done by } N \text{ workers in one day} = \frac{1}{16}$$

$$\text{Work done by } 4N \text{ workers in one day} = \frac{1}{4}$$

4N workers will take four days to complete the work.

Hence, option D is correct.

- 29.** A alone can do half of a work in 35 days  
A can do the whole work in  $35 \times 2 = 70$  days

The time taken by B to do one – third of the work is equal to the time taken by A to do one – fourth of the work

$$\frac{B}{3} = \frac{A}{4}$$

$$\frac{A}{B} = \frac{4}{3} = \text{The ratio of time}$$

We know that efficiency is inversely proportional to time

The ratio of efficiency A : B = 3 : 4

Let A's efficiency =  $3x$  then B's efficiency =  $4x$

Total units of work A alone will do in 70 days =  $70 \times 3x$

The total units of work A and B together will do in 1 days =  $3x + 4x = 7x$

$$\text{The number of days they will take if they work together} = 70 \times \frac{3x}{7x} = 30 \text{ days}$$

Hence, option C is correct.

- 30.** Let the total units of work = 240 units then the efficiency of (A + B)

$$= \frac{240}{30} = 8 \text{ units per day}$$

$$\text{The efficiency of C} = \frac{240}{120} = 2 \text{ units per days}$$

$$\text{The efficiency of B and C together} = \frac{240}{240} = 1 \text{ unit per day}$$

The efficiency of B = 1 – c's efficiency

$$1 - 2 = 3 \text{ units per day}$$

The efficiency of A = 8 – B's efficiency = 8 – 3 = 5 units per day

The number of days A alone will take to complete the work =  $\frac{240}{5} = 48$  days

Hence, option D is correct.

**31.** Let Ramya takes x hour to complete the work then Ram will take x + 10 hours to complete the same work

both of them complete the work in 20 hours and both of them had completed the piece of work in equal proportion it means Ram does half of the work in 20 hours and Ramya does half of the Work in 20 hours.

Ram will do the complete work in  $20 \times 2 = 40$  hours and Ramya with new efficiency will do the complete work in  $20 \times 2 = 40$  hours

There is no change in the efficiency of Ram it means  $x + 10 = 40$

$$x = 30 \text{ hours}$$

It means with the original efficiency Ramya can complete the work in 30 hours but with the new efficiency she does in 40 hours

Efficiency is inversely proportional to time

Ramya's original efficiency: Ramya's new efficiency = 40 : 30 = 4 : 3

$$\text{The reqd. \% change} = \frac{(4 - 3) \times 100}{4} = 25\%$$

Hence, option B is correct.

**32.**

$$\frac{1}{A} + \frac{1}{B} = \frac{1}{12}$$

$$\frac{1}{B} + \frac{1}{C} = \frac{3}{40}$$

$$\frac{1}{A} + \frac{2}{B} + \frac{1}{C} = \frac{1}{12} + \frac{3}{40} = \frac{19}{120} \dots\dots\dots(i)$$

$$\frac{5}{A} + \frac{100}{3C} = 1$$

$$3AC = 15C + 100A \text{---(ii)}$$

$$\frac{12}{A} + \frac{24}{C} = 1$$

$$AC = 12C + 24A$$

$$3AC = 36C + 72A \text{----(iii)}$$

Equation (ii) = equation (iii)

$$15c + 100a = 36c + 72a$$

$$28a = 21c$$

$a : c = 3 : 4$  = The ratio of time taken

Put the value of  $A = 3x$  and  $C = 4x$  in the equation (ii) or (iii)

$$3 \times 4x \times 3x = 60x + 300x$$

$$36x = 360$$

$$x = 10$$

The number of days taken by  $A = 3x = 30$  days

The number of days taken by  $C = 4x = 40$  days

Put the value of  $A$  and  $C$  in the equation (i)

$$\frac{1}{40} + \frac{2}{B} + \frac{1}{30} = \frac{19}{120}$$

$$B = 20 \text{ days}$$

$$\text{The required difference} = 40 - 20 = 20$$

Hence, option E is correct.

- 33.** Let the efficiency of one man =  $5x$  then the efficiency of one woman = 20% less than  $5x = 4x$

We know that,

$$M1D1 = M2D2$$

$$16 \times 5x \times y = 18 \times 4x \times (y + 2)$$

$$8y = 144$$

$$y = 18$$

$$\text{Total work} = 16 \times 5x \times 18 = 80x \times 18$$

The total efficiency of 16 men and 18 women =  $16 \times 5x + 18 \times 4x = 80x + 72x = 152x$

The reqd. number of days =  $\frac{80x \times 18}{152x} = \frac{180}{19} = 9\frac{9}{19}$  days

Hence, option A is correct.

**34.** Work done by B/day = X

Work done by A and C per day =  $4X$ .....I

Work done by C/day = Y

Work done by A and B per day =  $3Y$ ....II

Using I and II

$$\frac{X}{Y} = \frac{4}{5} \dots\dots\text{III}$$

Using III in I and II

Per day work of A, B and C

$$A = 11$$

$$B = 4$$

$$C = 5$$

$$\text{Total work } 20 \times 20 = 400$$

$$\text{Time taken by B alone} = \frac{400}{4} = 100 \text{ days}$$

Hence, option C is correct.

**35.** It takes 10 days to complete the 40% work.

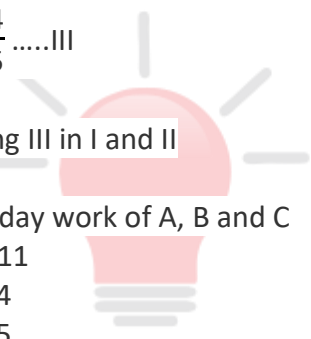
$$\text{Time taken to complete the whole work} = \frac{100}{40} \times 10 = 25 \text{ days.}$$

Now men worked for 15 days. It means they have completed 60% of the total work. Now work left is 40%.

Efficiency of women is half to that of men.

That means it will take 50 days for 24 women to complete the work.

They will complete 2% work daily. While men will complete 4% work daily.



Now, 40% work is left

Time taken by all together to complete the work =  $\frac{40}{6} = 6\frac{2}{3} = \frac{20}{3}$  days

Total days =  $15 + \frac{20}{3} = \frac{65}{3}$  days

Hence, option C is correct.

**36.** Let the total work = 672 units (LCM of 24, 28 and 32)

Amount of work done by A in one day =  $\frac{672}{32} = 21$  units

Amount of work done by B in one day =  $\frac{672}{24} = 28$  units

Amount of work done by C in one day =  $\frac{672}{28} = 24$  units

A worked for  $x$  days, B worked for  $4x - 2 - (x + 1) = 3x - 3$  days and C worked for  $4x - 2$  days

So, according to the question:  $21x + 28(3x - 3) + 24(4x - 2) = 672$

$$21x + 84x - 84 + 96x - 48 = 672$$

$$201x - 132 = 672$$

$$201x = 804 ; x = 4$$

So, the value of  $x^2 - 2x + 20 = 4^2 - 8 + 20 = 28$

Hence, option B is correct.

**37.** A + B complete the work in 18 days

B + C complete the work in 30 days

B alone can complete  $\frac{1}{3}$ <sup>rd</sup> work in 30 days  $\rightarrow$  complete the work in 90 days

Let the work be LCM (18, 30, 90) = 90 units

A + B complete 90units in 18 days  $\rightarrow$  5units/day

B+C complete 90units in 30 days  $\rightarrow$  3units/day

B complete 90 units in 90 days  $\rightarrow$  1 unit/day



$$A + C = 6 \text{ units/day}$$

$$\text{No of days to complete the work} = \frac{90 \text{ units}}{6 \text{ units/day}} = 15 \text{ days}$$

Hence, option E is correct.

**38.**

Work per day	Percent of work per day	Fraction of work per day	No of days to complete work
A	11.11%	1/9	9
B	5%	1/20	20
C	6.66%	1/15	15

Let the total work be LCM (9, 20, 15) = 180 units

$$\text{Work done by A} = \frac{180}{9} = 20 \text{ units/day}$$

$$\text{Work done by B} = \frac{180}{20} = 9 \text{ units/day}$$

$$\text{Work done by C} = \frac{180}{15} = 12 \text{ units/day}$$

Total work done by all three = 20 + 9 + 12 = 41 units/day

$$\text{Total number of days required to complete the work} = \frac{180}{41} = 4\frac{16}{41} \text{ days}$$

Hence, option C is correct.

**39.**

No of days required by A = 9, B = 10 and C = 8

Let the work of building wall be LCM (9, 8, 10) = 360 units

Then the total unit of wall build by A = 40 units/day, by C = 45 units/day and wall demolished by B = 36 units/day

On 1<sup>st</sup> day A and C work and make 40 + 45 = 85 units

2<sup>nd</sup> day A and B work and make 40 – 36 = 4 units

In every 2 days wall build = 85 + 4 = 89 units

In 8 days wall build = 4 × 89 = 356 units

Remaining = 4 units and A and C work on 9<sup>th</sup> day

Work done by A and C in 1 day = 85 units

$$\text{Time reqd. to complete 4 units by A and C} = \frac{4}{85} \text{ day}$$

So, total time =  $8 \frac{4}{85}$  days

Hence, option B is correct.

**40.** Efficiency of A = 166.67% efficiency of B

$$\frac{\text{Eff of A}}{\text{Eff of B}} = \frac{5}{3}$$

The ratio of number of days taken by A and B will be 3 : 5

Let the number of days taken by them to complete the work be 3 k and 5 k

Let the total work be LCM (3 k, 5 k) = 15 k

$$1 \text{ day work by A} = \frac{15 \text{ k}}{3 \text{ k}} = 5 \text{ units/day}$$

$$1 \text{ day work by B} = \frac{15 \text{ k}}{5 \text{ k}} = 3 \text{ units/day}$$

$$\text{Total number of days} = \frac{15 \text{ k}}{8}$$

$$\text{Number of days to complete 88.88\% of work} = \frac{8}{9} \times \frac{15 \text{ k}}{8} = 10$$

Solving we get k = 6

So, the number of days required by B to complete the work = 5k = 5 × 6 = 30 days

Hence, option C is correct.

**41.** Time to paint wall by A = 10 hrs, B = 8 hrs and C = 20 hrs

Let the paint required for total wall be LCM (10, 8, 20) = 40 units

Painting done by A = 4 unit/hr, B = 5 unit/hr and C = 2 unit/hr

Time	Left - 20 units	Right - 20 units
First 2 hrs	A + B - 9 unit × 2 = 18 unit	C - 2 × 2 = 4 unit
After 2 hrs	A - 2 units / 4 unit/hr = 1/2 hr	B + C - 16 units / 7 unit/hr = 16/7 hrs

Work completed in 2 hrs = 9 × 2 + 2 × 2 = 22 unit, work remaining = 18 units

Work remaining on left wall = 20 - 18 = 2 unit and on right wall = 20 - 4 = 16 unit

$$\text{After 2 hrs time taken by A to complete left wall} = \frac{2 \text{ unit}}{4 \text{ unit/hr}} = \frac{1}{2} \text{ hr}$$

and time taken by B and C to complete right wall =  $\frac{16 \text{ unit}}{7 \text{ unit/hr}} = 2\frac{2}{7}$  hrs.

$$\text{Time difference} = 2\frac{2}{7} \text{ hrs} - \frac{1}{2} \text{ hr} = 1\frac{11}{14} \text{ hr}$$

Hence, option C is correct.

**42.** According to the question,

Number of hours taken by A, B, C and D is 40, 60, 50, 80 hours respectively

$$\text{Portion emptied in the 1<sup>st</sup> 5 hours} = 5 \times \left(\frac{1}{60} + \frac{1}{50}\right) = \frac{11}{60}$$

$$\text{Portion emptied in the next 5 hours} = 5 \times \left(\frac{1}{40} + \frac{1}{80}\right) = \frac{3}{16}$$

$$\text{Portion emptied in the next 1 hour} = \left(\frac{1}{60} + \frac{1}{50}\right) = \frac{11}{300}$$

$$\text{So, portion emptied in the 1<sup>st</sup> 11 hours} = \frac{11}{60} + \frac{3}{16} + \frac{11}{300}$$

$$= \frac{220 + 225 + 44}{1200} = \frac{489}{1200} = \frac{163}{400}$$

Hence, option D is correct.

**43.** Time taken by A and B to complete the work while working together

$$= \frac{24 \times 48}{24 + 48} = 16 \text{ days}$$

$$\text{So, } x = \frac{16}{2} = 8$$

(since 50% of the work is done by A and B together)

As, time taken by C to complete 50% of the work =  $8 \times 3 = 24$  days

So, time taken by C to complete the entire work =  $24 \times 2 = 48$  days

Therefore, time taken by B and C to complete the work while working together

$$= \frac{48 \times 48}{48 + 48} = 24 \text{ days}$$

Hence, option B is correct.

44. According to the question,

$$A = \frac{4}{5} \times B$$

$$\text{Also, } C = \frac{3}{2} \times A$$

$$\text{Also, } A + B + C = 3000 \times 3$$

$$A + B + C = 9000$$

Using the above equations,

$$A + \frac{5}{4}A + \frac{3}{2}A = 9000$$

$$\frac{4A + 5A + 6A}{4} = 9000$$

$$15A = 36000$$

$$A = \frac{36000}{15} = 2400$$

$$\text{So, } A = \text{Rs. } 2400$$

$$\text{So, wage of B} = \frac{5}{4} \times 2400 = \text{Rs. } 3000$$

$$\text{Wage of C} = \frac{3}{2} \times 2400 = \text{Rs. } 3600$$

Hence, option B is correct.

45. Time taken by B to complete the work

$$= \frac{12}{0.5} = 24 \text{ days}$$

$$\frac{1}{A} + \frac{1}{B} + \frac{1}{C} = \frac{1}{6}$$

$$\frac{1}{A} = \frac{1}{12}$$

$$\frac{1}{B} = \frac{1}{24}$$

$$\frac{1}{A} + \frac{1}{B} + \frac{1}{C} - \frac{1}{A} - \frac{1}{B} = \frac{1}{6} - \frac{1}{12} - \frac{1}{24}$$

$$\Rightarrow \frac{1}{C} = \frac{4 - 2 - 1}{24}$$

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$$\Rightarrow \frac{1}{C} = \frac{1}{24}$$

Hence, C can complete the work alone in 24 days.

Hence, option (C) is correct.

**46. Traditional approach:**

$$\frac{1}{A} + \frac{1}{B} = \frac{1}{12}$$

$$\frac{1}{B} + \frac{1}{C} = \frac{1}{16}$$

$$\frac{1}{A} + \frac{1}{C} = \frac{1}{24}$$

Adding all the above equations, we get

$$2 \left( \frac{1}{A} + \frac{1}{B} + \frac{1}{C} \right) = \frac{1}{12} + \frac{1}{16} + \frac{1}{24}$$

$$\Rightarrow 2 \left( \frac{1}{A} + \frac{1}{B} + \frac{1}{C} \right) = \frac{4+3+2}{48}$$

$$\Rightarrow \frac{1}{A} + \frac{1}{B} + \frac{1}{C} = \frac{9}{96}$$

$$\Rightarrow \frac{1}{A} + \frac{1}{B} + \frac{1}{C} = \frac{3}{32}$$

Hence, A, B and C together can complete the work in  $\frac{32}{3}$  days.

**Smart approach:**

Total work = LCM of 12, 16 and 24 = 48

$$\text{Efficiency}(A + B) = \frac{48}{12} = 4$$

$$\text{Efficiency}(B + C) = \frac{48}{16} = 3$$

$$\text{Efficiency}(A + C) = \frac{48}{24} = 2$$

$$2 \times \text{Efficiency}(A + B + C) = 9$$

$$\text{Efficiency}(A + B + C) = \frac{9}{2}$$

$$\text{Required number of days} = \frac{48}{9/2} = \frac{96}{9} = \frac{32}{3} \text{ days}$$

Hence, option (B) is correct.

**47. Traditional approach:**

Let A and B together can complete the work in x days.

$$x \left( \frac{1}{24} + \frac{1}{36} \right) = 1$$

$$\Rightarrow x \frac{3+2}{72} = 1$$

$$\Rightarrow x = \frac{72}{5}$$

Hence, number of days taken by C to complete the work alone

$$= \frac{72}{5} \times \frac{1}{2} = \frac{36}{5} \text{ days} = 7\frac{1}{5} \text{ days}$$

**Smart approach:**

Total work = LCM of 24 and 36 = 72

$$\text{Efficiency(A)} = \frac{72}{24} = 3$$

$$\text{Efficiency(B)} = \frac{72}{36} = 2$$

$$\text{Efficiency(C)} = (3 + 2) \times 2 = 10$$

$$\text{Number of days taken by C to complete the work alone} = \frac{72}{10} = \frac{36}{5} = 7\frac{1}{5} \text{ days}$$

Hence, option (B) is correct.

**48.** Let the number of days taken by all of them to complete the work = x

$$\text{Number of days taken by B to complete the work} = \frac{36}{1.5} = 24 \text{ days.}$$

$$\text{Number of days taken by C to complete the work} = \frac{36}{2} = 18 \text{ days.}$$

According to the question

$$x \left( \frac{1}{36} + \frac{1}{24} + \frac{1}{18} \right) = 1$$

$$\Rightarrow x \frac{2+3+4}{72} = 1$$

$$\Rightarrow x = \frac{72}{9}$$

$$\Rightarrow x = 8 \text{ days}$$

Hence, option (D) is correct.

**49.**

$$\text{Part of work done by A in 1 day} = \frac{1}{12}$$

$$\text{Part of work done by B in 1 day} = \frac{1}{15}$$

$$\text{Part of work done by C in 1 day} = \frac{1}{20}$$

Efficiency ratio:

$$A : B : C = \frac{1}{12} : \frac{1}{15} : \frac{1}{20}$$

$$= 5 : 4 : 3$$

$$\text{Sum of shares of P and Q} = \frac{5+4}{12} \times 84000$$

$$= \frac{9}{12} \times 84000 = \text{Rs. } 63000$$

Hence, option B is correct.

**50.**  $m = 1$  man's capacity,  $w = 1$  woman's capacity

$$10m \times 18 = 15w \times 24$$

$$1m = 2w$$

$$\text{Hence, } 5m + 6w = 5m + 3m = 8m$$

Total work = (work done by 5 men and 6 women in 10 days) + (remaining work done by 5 men in  $x$  days)

$$10m \times 18 = 8m \times 10 + 5m \times x$$

$$180 = 80 + 5x$$

$$180 - 80 = 5x$$

$$5x = 100$$

x = 20 days



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Total days =  
20 + 10  
= 30 days  
Hence, option A is correct.