TIME & WORK
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Question 1: Mohan can do a work in 15 days. After working for 3 days he is joined by Vinod. If they complete the remaining work in 3 more days, in how many days can Vinod alone complete the work?
A. 10 days
B. 8 days
C. 5 days
D. 12 days
E. 15 days

Question 2: Arun can do a certain work in the same time in which Bipasha and Rahul together can do it. If Arun and Bipasha together could do it in 10 days and Rahul alone in 50 days, then Bipasha alone could do it in:
A. 15 days
B. 20 days
C. 25 days
D. 30 days
E. 35 days

Question 3: Sekar, Pradeep and Sandeep can do a piece of work in 15 days. After all the three worked for 2 days, Sekar left. Pradeep and Sandeep worked for 10 more days and Pradeep left. Sandeep worked for another 40 days and completed the work. In how many days can Sekar alone complete the work if Sandeep can complete it in 75 days?
A. 25 days
B. 20 days
C. 30 days
D. 35 days
E. 15 days

Question 4: Dinesh does 80% of a work in 20 days. He then calls in Gokul and they together finish the remaining work in 3 days. How long Gokul alone would take to do the whole work?
A. 39 days
B. 37 days
C. 37 ½ days
D. 40 days
E. 39 ½ days

Question 5: Hari and Vijay can together finish a work in 30 days. They worked together for 20 days and then Vijay left. After another 20 days, hari finished the remaining work. In how many days hari alone can finish the work?
A. 45
B. 60
C. 35
D. 50
E. 65

Question 6: Madhavan can finish a work in 5 hours. He invites Manohar and Manjima who can work 3/4th as fast as he can to join him. He also invites Mani and Mohan who can work only 1/5th as fast as he can to join him. If the five person team works the same job and they start together, how long will it take for them to finish the job?
A. 50/97 days
B. 87 days
C. 50/29 days
D. 78 days
E. 62 days

Question 7: A typing work is done by three person P, Q and R. P alone takes 10 hours to type a single booklet but B and C working together takes 4 hours, for the completion of the same booklet. If all of them worked together and completed 14 booklets, then how many hours have they worked?
A. 30hrs
B. 40hrs
C. 25hrs
D. 45hrs
E. 50hrs

Question 8: Nakul and Ram are working on a production company. Nakul takes 6 hours to make 32 products, while Ram takes 5 hours to make 40 products. How much time will they take, working together to make 110 products?
A. 8 hours
B. 8 hours 15 minutes
C. 9 hours
D. 8 hours 25 minutes  
E. 9 hours 15 minutes  

**Question 9:** Gopal does a work in 90 days, Vikash in 40 days and Santhosh in 12 days. They work one after another for a day each, starting with Gopal followed by Vikash and then by Santhosh. If the total wages received are Rs 360 and Gopal, Vikash, Santhosh share them in the ratio of the work done, find their respective individual wages.  
A. Rs 44, Rs 80 and Rs 264  
B. Rs 40, Rs 87 and Rs 276  
C. Rs 36, Rs 81 and Rs 243  
D. Rs 42, Rs 86 and Rs 232  
E. Rs 37, Rs 89 and Rs 284  

**Question 10:** When Ashok and Karthik are working alone, they can complete a piece of work in 25 days and 30 days respectively. On day 1, Karthik started the work and Ashok joined B from day 3 onwards. Find approximately after how many days will the work be completed?  
A. 20 days  
B. 10 days  
C. 15 days  
D. 25 days  
E. 30 days  

**Question 11:** P can do 2/5 of the work in 10 days and Q can do 4/5 of the work in 16 days. If both of them start working together then the time in which the work can be done?  
a) 12.1/9 days  
b) 11.1/9 days  
c) 11.2/9 days  
d) 12.4/9 days  
e) None of these  

**Question 12:** A does half as much work as B does in one sixth of the time. If together they take 20 days to complete the work, then what is the time taken by B to complete the work independently.  
a) 80 days  
b) 100 days  
c) 120 days
d) 140 days

e) None of these

**Question 13:** A contractor undertakes to make a mall in 60 days and he employs 30 men. After 30 days it is found that only one-third of the work is completed. How many extra men should he employ so that the work is completed on time?

a) 20 men
b) 25 men
c) 30 men
d) 40 men
e) None of these

**Question 14:** 50 men could complete a work in 200 days. They worked together for 150 days, after that due to bad weather the work is stopped for 25 days. How many more workers should be employed so as to complete the work in time?

a) 25  
b) 35  
c) 50  
d) 60  
e) None of these

**Question 15:** P and Q were assigned to do a work for an amount of 1200. P alone can do it in 15 days while Q can do it in 12 days. With the help of R they finish the work in 6 days. Find the share if C.

a) 100  
b) 120  
c) 140  
d) 160  
e) None of these

**Question 16:** A can do a work in 32 days. P who is 60 percent more efficient than A. Find how much time they will take together to do the same work?

a) 150/13 days  
b) 160/13 days  
c) 170/3 days  
d) 190/3 days  
e) None of these
Question 17: P does half as much work as Q in three-fourth of the time. If together they take 24 days to complete the work, how much time shall P take to complete the work?
   a) 50 days  
   b) 60 days  
   c) 70 days  
   d) 80 days  
   e) None of these

Question 18: X and Y can do a piece of work in 12 and 15 days respectively. They began their work but before 3 days of its completion Y left. In how many days the work will be completed.
   a) 6 days  
   b) 8 days  
   c) 10 days  
   d) 12 days  
   e) None of these

Question 19: Neha takes 5 hours to type 40 pages while sunil takes 6 hours to type 60 pages. How much time will they take working together on different computer to type an assignment of 180 pages.
   a) 5hr  
   b) 7hr  
   c) 9hr  
   d) 11hr  
   e) none of these

Question 20: P and Q together can complete a job in 90days, Q and R takes 60 days to complete the same work and P and R will take 45 days to complete the same work. How much time will P, Q and R will take to complete the work together.
   a) 40 days  
   b) 42 days  
   c) 36 days  
   d) 44 days  
   e) None of these

Question 21: The work done by a woman in 8 hours is equal to the work done by a man in 6 hours and by a boy in 12 hours. If working 6 hours per day 9 men can complete a work in 6
days then in how many days can 12 men, 12 women and 12 boys together finish the same work working 8 hours per day?
(a) 4/3 days
(b) 11/3 days
(c) 3 days
(d) 3/2 days
(e) None of these

Question 22: A is thrice as good a workman as B and takes 10 days less to do a piece of work than B takes. B alone can do the whole work in
   a) 15 days
   b) 10 days
   c) 9 days
   d) 8 days

Question 23: 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) 40 days
   b) 35 days
   c) 30 days
   d) 25 days

Question 24: Worker A takes 8 hours to do a job. Worker B takes 10 hours to do a job. How long should it take both A and B, working together to do same job.
   a) 49
   b) 249
   c) 349
   d) 449

Question 25: 5 men and 2 boys working together can do four times as much work as a man and a boy. Working capacity of man and boy is in the ratio
   a) 1:2
   b) 1:3
   c) 2:1
   d) 2:3

Question 26: A piece of work can be done by 6 men and 5 women in 6 days or 3 men and 4 women in 10 days. It can be done by 9 men and 15 women in how many days?
a) 3 days  
b) 4 days  
c) 5 days  
d) 6 days  

**Question 27:** A can do a piece of work in 15 days and B alone can do it in 10 days. B works at it for 5 days and then leaves. A alone can finish the remaining work in  
a) 5 days  
b) 6 days  
c) 7.5 days  
d) 8.5 days  

**Question 28:** To complete a work A and B takes 8 days, B and C takes 12 days, A, B and C takes 6 days. How much time A and C will take  
a) 24 days  
b) 16 days  
c) 12 days  
d) 8 days  

**Question 29:** A and B can together complete a piece of work in 4 days. If A alone can complete the same work in 12 days, in how many days can B alone complete that work ?  
a) 4 days  
b) 5 days  
c) 6 days  
d) 7 days  

**Question 30:** A can do a certain job in 25 days which B alone can do in 20 days. A started the work and was joined by B after 10 days. The number of days taken in completing the work were ?  
a) 1423kmph  
b) 1523kmph  
c) 1623kmph  
d) 1723kmph  

**Question 31:**  
A takes three times as long as B and C together to do a job. B takes four times as long as A and C together to do the same work, If all three, working together can complete the job in
24 days, then the number of days, A alone will take to finish the job is:
   a) 100
   b) 96
   c) 95
   d) 90
   e) None of these

**Question 32:** 4 boys and 3 women can do a piece of work in 6 days while 2 boys and 4 women can do the same piece of work in 9 days. How much time will be taken by 7 boys and 9 women to do the same piece of work?
   a) 3 days
   b) 7 days
   c) 8 days
   d) 12 days
   e) None of these

**Question 33:** Working alone, Typewriters A, B, C can do a certain typing job, consisting of a large number of pages, in 12, 15 and 18 hours, respectively. What is the ratio of the time it takes Typewriter A to do the job, working alone at its rate, to the time it takes Type writer B and C to do the job, working together at their individual rate?

\[
\frac{4}{11} \quad \frac{1}{2} \quad \frac{15}{22} \quad \frac{22}{15}
\]

**Question 34:** A, B and C can do a piece of work in 4, 7 and 8 days respectively. They undertook to finish the work together for Rs. 53650. Find the difference (in Rs.) between the share of A and that of B.
   a) 10100
b) 11100
c) 11650
d) 12560
e) None of these

Question 35:
A takes twice as much time as B or thrice as much time as C to finish a piece of work. Working together, they can finish the work in 2 days. B can do the work alone in:
A. 4 days
B. 6 days
C. 8 days
D. 12 days

Question 36:
A and B can complete a work in 15 days and 10 days respectively. They started doing the work together but after 2 days B had to leave and A alone completed the remaining work. The whole work was completed in:
A. 8 days
B. 10 days
C. 12 days
D. 15 days

Question 37:
A and B can do a piece of work in 30 days, while B and C can do the same work in 24 days and C and A in 20 days. They all work together for 10 days when B and C leave. How many days more will A take to finish the work?
A. 18 days
B. 24 days
C. 30 days
D. 36 days
Question 38:
A works twice as fast as B. If B can complete a work in 12 days independently, the number of days in which A and B can together finish the work in :
A. 4 days
B. 6 days
C. 8 days
D. 18 days

Question 39:
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

Question 40: A can do a piece of work in 10 days, B in 15 days. They work together for 5 days, the rest of the work is finished by C in two more days. If they get Rs. 3000 as wages for the whole work, what are the daily wages of A, B and C respectively (in Rs):
  a) 200, 250, 300
  b) 300, 200, 250
  c) 200, 300, 400
  d) None of these

Question 41: A, B and C can do a piece of work in 24 days, 30 days and 40 days respectively. They began the work together but C left 4 days before the completion of the work. In how many days was the work completed?
  a) 11days
  b) 12days
  c) 13days
  d) 14days
Question 42: 12 men can complete a work in 8 days. 16 women can complete the same work in 12 days. 8 men and 8 women started working and worked for 6 days. How many more men are to be added to complete the remaining work in 1 day?
   a) 8  
   b) 12  
   c) 16  
   d) 24  

Question 43: 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) 60/11  
   b) 61/11  
   c) 71/11  
   d) 72/11  

Question 44: 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  
   b) 24  
   c) 30  
   d) 36  

Question 45: A works twice as fast as B. If B can complete a work in 18 days independently, the number of days in which A and B can together finish the work is:
   a) 4  
   b) 6  
   c) 8  
   d) 10  

Question 46: A can do a certain work in the same time in which B and C together can do it. If A and B together could do it in 20 days and C alone in 60 days, then B alone could do it in:
   a) 20  
   b) 40
c) 50  
 d) 60

Question 47: A Contractor employed a certain number of workers to finish constructing a road in a certain scheduled time. Sometime later, when a part of work had been completed, he realised that the work would get delayed by three-fourth of the scheduled time, so he at once doubled the no of workers and thus he managed to finish the road on the scheduled time. How much work he had been completed, before increasing the number of workers?
   a) 10%  
   b) 14(2/7%)  
   c) 20%  
   d) 30%

Question 48: A is thrice efficient as B and C is twice as efficient as B. what is the ratio of number of days taken by A,B and C, when they work individually?
   a) 2:6:3  
   b) 2:3:6  
   c) 1:2:3  
   d) 3:1:2

Question 49: The ratio of efficiency of A is to C is 5:3. The ratio of number of days taken by B is to C is 2:3. A takes 6 days less than C, when A and C completes the work individually. B and C started the work and left after 2 days. The number of days taken by A to finish the remaining work is:
   a) 4  
   b) 5  
   c) 6  
   d) 9

Question 50: (x-2) men can do a piece of work in x days and (x+7) men can do 75% of the same work in (x-10)days. Then in how many days can (x+10) men finish the work?
   a) 27  
   b) 12  
   c) 25  
   d) 18
Question 51: A is twice efficient as B and together they do the same work in as much time as C and D together. If C and D can complete the work in 20 and 30 days respectively, working alone, then in how many days A can complete the work individually:
   a) 12
   b) 18
   c) 24
   d) 30

Question 52: An air conditioner can cool the hall in 40 minutes while another takes 45 minutes to cool under similar conditions. If both air conditioners are switched on at the same instance then how long will it take to cool the room approximately?
   a) 18
   b) 19
   c) 22
   d) 24

Question 53: A group of workers was put on a job. From the second day onwards, one worker was withdrawn each day. The job was finished when the last worker was withdrawn. Had no worker been withdrawn at any stage, the group would have finished the job in 55% of the time. How many workers were there in the group?
   a) 50
   b) 40
   c) 45
   d) 10

Question 54: Ram starts working on a job and works on it for 12 days and completes 40% of the work. To help him complete the work, he employs Ravi and together they work for another 12 days and the work gets completed. How much more efficient is Ram than Ravi?
   a) 50%
   b) 200%
   c) 60%
   d) 100%

Question 55: If A and B work together, they will complete a job in 7.5 days. However, if A works alone and completes half
the job and then B takes over and completes the remaining half alone, they will be able to complete the job in 20 days. How long will B alone take to do the job if A is more efficient than B?
a) 20 days
b) 40 days
c) 30 days
d) 24 days

Question 56: A tank is fitted with 8 pipes, some of them that fill the tank and others that are waste pipe meant to empty the tank. Each of the pipes that fill the tank can fill it in 8 hours, while each of those that empty the tank can empty it in 6 hours. If all the pipes are kept open when the tank is full, it will take exactly 6 hours for the tank to empty. How many of these are filling pipes?
a) 2
b) 4
c) 6
d) 4.5

Question 57: A can finish a work in 12 days while B can finish the same work in 15 days. If both work together, then calculate the Time taken to complete the work.
a) 6 2/3 days
b) 6 days
c) 8 days
d) 4 days

Question 58: As a worker, Ajit is thrice as good as Dev. If both working together can finish the work in 5 days, then determine the Time taken by Ajit to complete the work alone.
a) 10/3 days
b) 5 days
c) 4 days
d) 20/3 days

Question 59: A and B can do a work in 12 days, B and C can do the same work in 15 days and A and C can complete the work in 20 days. In how many days A, B and C working together can complete the whole work?
a) 10 days
b) 12 days  
c) 8 days  
d) 14 days  

**Question 60:** A can finish the work in 16 days while B can finish the work in 8 days. After A started the work alone, B joined him after 4 days. Find out the total Time taken to finish the work. 

a) 4 days  
b) 8 days  
c) 6 days  
d) 14 days  

**Question 61:** Amit takes 20 days to complete a certain work. Amit started the work and Suraj joined him 4 days before the work was completed. Find out the number of days for which Amit worked alone if Suraj’s efficiency is 25% more than that of Amit’s. 

a) 10 days  
b) 8 days  
c) 12 days  
d) 11 days  

**Question 62:** The ratio of number of days taken by B is to C is 2: 3. The ratio of efficiency of A is to C is 5: 3. A takes 4 days less than C, when A and C complete the work individually. A, B and C started the work and B & C left after 2 days. The number of days taken by A to complete the remaining work is: 

a) 1 day  
b) 2 days  
c) 3 days  
d) 5 days  

**Question 63:** A takes 4 days less than B and 2 days more than C to do a job. A and B together can do the job in the same Time as C. Determine the ratio of number of days taken by A and B to complete the job individually. 

a) 2: 3  
b) \((1 + \sqrt{3}): (3 + \sqrt{3})\)  
c) 1: \(\sqrt{2}\)  
d) \((1 + \sqrt{3}): (2 + \sqrt{6})\)
Question 64: Two companies GIL and NCC are working together to build a flyover in Delhi. GIL working on its own would have finished the project in 5 months but working with NCC it is able to finish the project in 4 months. NCC has two teams, one headed by Ramesh and other headed by Sanjeev working on this project. They are doing the same kind of work but efficiency of Sanjeev’s team is 75% of the efficiency of Ramesh’s team. If the total value of the contract for building this flyover is Rs. 35, 00, 000 then determine the money obtained by Sanjeev’s team.

a) Rs. 4, 00, 000
b) Rs. 3, 50, 000
c) Rs 2,50, 000
d) Rs. 3, 00, 000

Question 65: 15 workers working 4 hours a day for 25 days can build a platform of width 120 meters, length 10 meter and height 14 meters. How many days will 12 workers working 5 hours a day will take if they have to build a platform of width 600 meters, length 14 metres and height 12 metres?

a) 150
b) 130
c) 125
d) 120

Question 66: 12 Men can complete a project in 15 days and 10 women can complete the same project in 24 days. 9 men start working and after 6 days they are replaced by 12 women. In how many days will 12 women complete the remaining work?

(a) 20
(b) 10
(c) 16
(d) 18
(e) 14

Question 67: Arjun and Suman together can complete an assignment of data entry in 6 days. Suman’s speed is 60% of Arjun’s speed and the total key are 5,76,000. What is Arjun’s speed in key depressions per hour if they work for 12 hours a day?
(a) 4800  
(b) 6400  
(c) 5000  
(d) 7200  
(e) 8400  

**Question 68:** There are two taps to fill a tank and a third to empty it. When the third tap is closed, they can fill the tank in 10 min and 12 min, respectively. If all the three taps be opened, the tank is filled in 15 min. If the first two taps are closed, in approximately what time can the third tap empty the when it is full?  
(a) 8 min and 34 second  
(b) 9 min and 32 second  
(c) 7 min  
(d) 6 min  
(e) 12 min  

**Question 69:** A is twice as efficient as C. B takes thrice as many days as A. C takes 12 days to finish the work alone. If they work in pairs (i.e., BC, AB, CA) starting with BC on the first day, AB on the second day and AC on the third day and so on, then how many days are required to finish the work?  
(a) 31/5 days  
(b) 4.5 days  
(c) 46/9 days  
(d) 8 days  
(e) 4 days  

**Question 70:** There are two auto closed pipes X and Y which get closed if there is any disturbance can fill a tank in 10 and 15 hrs. respectively. Both the pipes are opened to fill the tank but when the tank is 1/3 rd full, a leak develops in the tank which results in closing of both pipes. Through the leak one-third water supplied by both the pipes goes out & after it the leak was get closed by some means and both filling pipes again start filling the tank. The total time taken to fill the tank is  
(a) 12 hr  
(b) 8 hr  
(c) 4 hr
(d) 6 hr  
(e) 10 hr.  

**Question 71:** A certain number of people were supposed to complete a work in 20 days. The work, however, took 28 days, since 8 people were absent throughout. How many people were supposed to be working originally?  
(a) 32  
(b) 27  
(c) 36  
(d) 30  
(e) 28

**Question 72:** X and Y start from the same point and run around a circular stadium, whose circumference is 2800 m, at the rate of 250 m and 350 m per minute respectively in the opposite direction. They will meet each other in  
(a) 14/3 min  
(b) 16/3 min  
(c) 12/5 min  
(d) 18/5 min  
(e) 11/3 min

**Question 73:** If 300 men dig a 5.5 m wide, 4 m deep and 405 m long canal in an hour, then how long a canal will 2000 men working for 6 hrs, dig if it is 20 m wide and 16 m deep?  
(a) 6452 m  
(b) 6682.5 m  
(c) 2694.5 m  
(d) 4082 m  
(e) None of these

**Question 74:** In an army camp there was sufficient food for 250 soldiers for 30 days. After 20 days 125 soldiers left the camp. For how many extra days will the rest of the food last for the remaining soldiers?  
(a) 12 days  
(b) 10 days  
(c) 8 days  
(d) 6 days  
(e) 14 days

**Question 75:** Arun can do a piece of work in 40 days, but Bala can do the same work in 5 days less, than Arun, when
working alone. Arun and Bala both started the work together but Bala left after some days and Arun finished the remaining work in 30 days with half of his efficiency but he did the work with Bala with his complete efficiency. For how many days they had worked together?
A. 25/3 days  
B. 31/3 days  
C. 35/3 days  
D. 38/3 days  
E. None of these

Question 76: Kiran can do a work in 20 days, while Karan can do the same work in 25 days. They started the work jointly. Few days later Suman also joined them and thus all of them completed the whole work in 10 days. All of them were paid total Rs.1000. What is the share of Suman?
A. 200  
B. 400  
C. 100  
D. 300  
E. 500

Question 77: 7 Indian and 4 American finish a job in 6 days. 7 African and 3 American finish the same job in 8 days. The efficiency of each person of a particular nationality is same but different from others. One Indian One American and One African will complete the work in:
A. 10 days  
B. 12 days  
C. 24 days  
D. 36 days  
E. None of these

Question 78: Chitra is twice efficient as Arun. Bala takes thrice as many days as Chitra. Arun takes 12 days to finish the work alone. If they work in pairs(i.e Arun-Bala, Bala-Chitra, Chitra-Arun) starting with Arun – Bala on the first day, Bala – Chitra on the second day and Chitra – Arun on the third day and so on, then how many days are required to finish the work?
A. 26/9 days  
B. 46/9 days
C. 16/9 days
D. 56/9 days
E. None of these

**Question 79:** A work is done by 30 workers not all of them have the same capacity to work. Every day exactly 2 workers, do the work with no pair of workers working together twice. Even after all possible pairs have worked once, all the workers together works for six more days to finish the work. Find the number of days in which all the workers together will finish the work?
A. 22 days
B. 20 days
C. 24 days
D. 35 days
E. 32 days

**Question 80:** Arun can do a piece of work in 10 days, Bala in 15 days. They work together for 5 days, the rest of the work is finished by Chitra in two more days. If they get Rs. 5000 as wages for the whole work, what are the daily wages of Arun, Bala and Chitra respectively (in Rs)?
A. 600, 400, 500
B. 200, 300, 400
C. 500, 300, 400
D. 600, 500, 300
E. 400, 300, 200

**Question 81:** A Contractor employed a certain number of workers to finish constructing a building in a certain scheduled time. Some time later, when a part of work had been completed, he realized that the work would get delayed by half of the scheduled time, so he at once doubled the no of workers and thus he managed to finish the building on the scheduled time. How much work he had been completed, before increasing the number of workers?
A. 200/3 %
B. 100/3 %
C. 300/3 %
D. Can’t be determined
E. None of these
Question 82: \((x-2)\) person can do a work in \(x\) days and \((x+7)\) person can do 75% of the same work in \((x-10)\) days. Then in how many days can \((x+10)\) person finish the work?
A. 27 days
B. 12 days
C. 25 days
D. 18 days
E. None of these

Question 83: The ratio of efficiency of Arun is to Chitra is 5:3. The ratio of number of days taken by Bala is to Chitra is 2:3. Arun takes 6 days less than Chitra, when Arun and Chitra complete the work individually. Bala and Chitra started the work and left after 2 days. The number of days taken by Arun to finish the remaining work is?
A. 4 days
B. 5 days
C. 6 days
D. 9 days
E. None of these

Question 84: Arun is twice efficient as Bala and together they do the same work in as much time as Chitra and David together. If Chitra and David can complete the work in 20 and 30 days respectively, working alone, then in how many days A can complete the work individually?
A. 12 days
B. 18 days
C. 24 days
D. 30 days
E. None of these

Question 85: A is twice efficient as B. A and B together do the same work in as much time as C and D can do together. If the ratio of the number of alone working days of C to D is 2:3 and if B worked 16 days more than C then no of days which A worked alone?
A. 18 Days
B. 20 Days
C. 30 Days
D. 36 Days
E. Cannot be determined
Question 86: A can do a piece of work in 40 days B can do the same piece of work in 60 days. A and B started the work together in the first 15 days A worked with 50% of his efficiency, in the next 15 days B worked with 50% of his efficiency. Now in how many days does the remaining work will be completed if both of them work with their full efficiencies?

A. 1 Day  
B. 1.5 Days  
C. 2 Days  
D. 2.5 Days  
E. None

Question 87: A can do a piece of work in 30 days, B can do in 45 days and C can do same work alone in 60 days. If on the first day A worked alone and on the second day A and B worked together and on the third day A and C worked together. If they repeat the cycle as follows then in how many days total work can be completed?

A. 21 Days  
B. 21 7/8 Days  
C. 21 5/6 Days  
D. 21 4/9 Days  
E. None

Question 88: Ramu completes 30% of work in 7.5 days. Raju is 50% as efficient as Ramu, Venu is 50% as efficient as Raju. Now Raju and Venu joined with Ramu for the rest of the work then in how many days will take to complete the work?

A. 9 Days  
B. 10 Days  
C. 12 Days  
D. 15 Days  
E. None of these

Question 89: A can do a piece of work in 21 days. B is 50% more efficient than A. C is twice efficient than B. A started the work alone and worked for some days and left the work then B and C joined together and completed the work in 2 days. Then how many days does A worked alone?

A. 7 Days  
B. 12 Days
Question 90: A can do a piece of work in 60 days working 14 hours. B has the same efficiency as A. A and B started working together. A works 5, 6, 7 and 8 hours respectively on first four days and repeats the cycle again. Then B has to work how many hours daily if they together completed the work in 80 days?

A. 1 Hour
B. 2 Hours
C. 3 Hours
D. 4 Hours
E. None of these

Question 91: Sruthi, Swetha and Swati together can cut 216 apples of the same size in 3 hours. Number of apples cut by Sruthi in 9 hours is same as the number of apples cut by Swati in 7 hours. In one hour, Swati can cut as many apples more than Swetha as Swetha can cut more than Sruthi. Then the number of apples cut by Swetha in one hour?

A. 21
B. 24
C. 27
D. 29
E. None

Question 92: A can type 100 letters in 5 minutes. B and C typing together can type 50 letters in 2 minutes. If all of them working together then can type 90 letters in how many minutes?

A. 2 minutes
B. 4 minutes
C. 5 minutes
D. 10 minutes
E. None

Question 93: If A and B work together can complete a work in 8/5 days. A started the work alone and completed 50% of the work and left the work then B started the work alone and finished the rest of work. They took total 5 days to complete the work. Then in how many days B can complete the work if
A is more efficient than A?
A. 1 Day
B. 2 Days
C. 3 Days
D. 4 Days
E. None

Question 94: A piece of work is to be completed in 100 days. 11 Men are employed to do the work. It is found that after 50 days only 1/3rd work is completed. Now additionally how many more Men are to be employed to work to finish the work in time?
A. 5
B. 6
C. 7
D. 11
E. None

1. C
   Explanation:
   Total days Mohan worked = 3 + 3 = 6
   \( \frac{6}{15} = \frac{2}{5} \)
   So \( \frac{3}{5} = \frac{3}{x} \)
   \( x = 5 \)

2. C
   Explanation:
   Arun, Bipasha and Rahul’s 1 day work = \( \frac{1}{10} + \frac{1}{50} = \frac{6}{50} = \frac{3}{25} \)
   Arun’s 1 day work = Bipasha + Rahul’s 1 day work
   \( 2 \times (\text{Arun’s 1 day work}) = \frac{3}{25} \)
   Arun’s 1 day work = \( \frac{3}{50} \)
   Bipasha’s 1 day work = \( \frac{1}{10} - \frac{3}{50} = \frac{2}{50} = \frac{1}{25} \)

3. C
   Explanation:
   Assume the total work to be 600 units. (LCM of all the numbers)
   Then Sandeep’s 1 day work = 8 units.
   All three’s 1 day work = 40 units. All work together in the first 2 days
Work done in the first 2 days = 40 \times 2 = 80 \text{ units}
Sanddeep alone works during the last 40 days
Work done in the last 40 days = 40 \times 8 = 320 \text{ units}
Remaining work = 600 – (320 + 80) = 200 \text{ units}
This work is done by pradeep and sandeep in 10 days.
Pradeep and Sandeep together’s 1 day work = 20 \text{ units}
Sekar’s 1 day work = All three 1 day work – Pradeep and Sandeep together’s 1 day work = 40 \text{ units} – 20 \text{ units} = 20 \text{ units}
Sekar can do the work of 600 units in 30 days.

4. C
Explanation:
Dinesh work done = 20 \times \frac{5}{4} = 25 \text{ days}
\frac{1}{5} \text{ work done by Dinesh and gokul in 3 days.}
Whole work done = 15 \text{ days}
Dinesh 1 days work = \frac{1}{25}
Dinesh and gokul’s 1 day work = \frac{1}{15}
Gokul’s 1 day work = \frac{1}{15} – \frac{1}{25} = \frac{2}{75}
Gokul alone in 75/2 days or 37 \frac{1}{2} \text{ days.}

5. B
Explanation:
Hari + vijay 20 days work = \frac{1}{30} \times 20 = \frac{2}{3}
Remaining work = \frac{1}{3}
\frac{1}{3} \text{ work in 20 days so whole work in 60 days.}

6. C
Explanation:
Let the work be 100 units.
Madhavan’s 1 hour work = \frac{100}{5} = 20 \text{ units}
Manohar and Manjima’s 1 day work = \frac{3}{4} \times 20 = 15 \text{ units.}
Mohan and Mani’s 1 day work = \frac{1}{5} \times 20 = 4 \text{ units.}
In one day all five of them can do = 20 + 15 + 15 + 4 + 4 = 58 \text{ units of work. Hence they can complete the work in 100/58 days.}

7. B
Explanation:
\frac{1}{P} = \frac{1}{10}
\frac{1}{P} + \frac{1}{Q} + \frac{1}{R} = \frac{1}{10} + \frac{1}{4} = \frac{7}{20}
In 20 hours, working together, they will complete 7
Thus, in **40 hours** they will complete 14 booklets.

8. **B**

**Explanation:**
Number of products made by Nakul in 1 hour = \( \frac{32}{6} = \frac{16}{3} \)
Number of products made by Ram in 1 hour = \( \frac{40}{5} = 8 \)
Number of products made by both in 1 hour = \( \frac{16}{3} + 8 = \frac{40}{3} \)
Time taken by both to make 110 products = \( 110 \times \frac{3}{40} = 8 \frac{1}{4} \) hrs

9. **C**

**Explanation:**
Assume there are 360 units of work (LCM of 90, 40 and 12).
Hence, they can do 4, 9 and 30 units per day or together 43 units every 3 days.
So in 24 days, \( 43 \times 8 = 344 \) units of work is completed.
In the next 2 days, 13 units are completed and on 27th day, Santhosh takes 1/10th of a day to finish the rest.
So, Gopal and Vikash worked for 9 days each and have hence put in 36 and 81 units respectively, and the rest of the 243 units is put in by Santhosh.
The wages shall also be distributed in the same ratio as: **Rs 36, Rs 81 and Rs 243.**

10. **C**

**Explanation:**
Fraction of work completed by Karthik on day 1 and day 2 = \( 2 \times \frac{1}{30} = \frac{1}{15} \)
Fraction of work left after 2 days = \( \frac{14}{15} \)
Fraction of work completed by Both = \( \frac{1}{25} + \frac{1}{30} = \frac{11}{150} \)
Number of days after day 2 to complete work = \( \frac{14 \times 150}{15 \times 11} = 13 \) days
So after 2+13 = 15 days works will be completed

11. **B**

**Explanation:**
P can complete the work in 25 days and Q can complete the work in 20 days. So both will complete the work in \( \frac{(20 \times 25)}{45} = \frac{100}{9} \) days
12. **A**  
**Explanation:**  
Let B take X days to complete the work then in one-sixth of the time i.e. \( \frac{x}{6} \) days. Now A do half work as done by B so A will take twice the time i.e. \( 2\times\frac{x}{6} = \frac{x}{3} \) to complete the job alone.  
So \( \frac{1}{x} + \frac{3}{x} = \frac{1}{2} \), \( x = 80 \) days

13. **C**  
**Explanation:**  
Let total work is \( w \) and it is given that one-third of the work is completed after 30 days. Means M*D = 30*30 = \( \frac{w}{3} \), so total work = 30*30*3 = 2700 = 30*30 + (30+p)*30, so we get P = 30 (p = additional men)

14. **C**  
**Explanation:**  
Let additional workers be P,  
\( \frac{(50*150)}{(50*200)} = \frac{3}{4} \) of the work is already completed and now only 1/4 of the work is to be done. So,  
\( \frac{1}{4} = ((50 + P) * 25)/50*200 \), solve for p, we get P = 50

15. **B**  
**Explanation:**  
\( \frac{1}{15} + \frac{1}{12} + \frac{1}{c} = \frac{1}{6} \), we got C = 60 (it means C will take 60 days to complete the work alone)  
so ratio of work done by P:Q:R = 4:5:1  
so c share = \( (1/10)*1200 = 120 \)

16. **B**  
**Explanation:**  
A’s one day work = \( \frac{1}{32} \) so P one day work =  
\( \frac{(160/100)}{1/32} = \frac{1}{20} \), so P will take 20 days to complete the work.  
So Both A and P will take = \( \frac{(32*20)}{52} = \frac{160}{13} \) days

17. **B**  
**Explanation:**  
Let Q take x days to complete the work, so P will take 2*3/4 of X day to complete the work i.e. 3x/2 days  
\( \frac{1}{x} + \frac{2}{3x} = \frac{1}{24} \), we get x = 40 days, so P will take = \( \frac{3}{2} \) of 40 = 60 days

18. **B**
**Explanation**:
\[
(1/12 + 1/15)(T - 3) + 3/12 = 1
\]

19. **E**

**Explanation**:
In one hour number of pages type by neha = 40/5 = 8 and similarly for sunil it is 60/6 = 10.
Now to type 180 pages they will take, (8 + 10)*T = 180, T = 10 hours

20. **A**

**Explanation**:
(1/90 + 1/60 + 1/45)*1/2 = (1/P +1/Q + 1/R) = 1/40
so 40 days

21. **D**

22. **A**

**Explanation**:
Ratio of times taken by A and B = 1:3
Means B will take 3 times which A will do in 1 time

If difference of time is 2 days, B takes 3 days
If difference of time is 10 days, B takes (3/2) * 10 =15 days

23. **C**

**Explanation**:
Suppose B takes x days to do the work.
As per question A will take
2*34*x=3x2days

\[
(A+B) \text{'}s \text{ 1 days work}= 1/18
1/x + 2/3x = 1/18 \text{ or } x = 30 \text{ days}
\]

24. **D**

**Explanation**:
In this type of questions, first we need to calculate 1 hours work, then their collective work as,

A’s 1 hour work is 1/8
B’s 1 hour work is 1/10

\[
(A+B) \text{'}s \text{ 1 hour work } = 1/8 + 1/10
\]
= 9/40

So both will finish the work in 40/9 hours
=449

25. C
Explanation:
Let 1 man 1 day work = x
1 boy 1 day work = y

then 5x + 2y = 4(x+y)
=> x = 2y
=> x/y = 2/1
=> x:y = 2:1

26. A
Explanation:
To calculate the answer we need to get 1 man per day work and 1 woman per day work.

Let 1 man 1 day work =x
and 1 woman 1 days work = y.
=> 6x+5y = 1/6
and 3x+4y = 1/10
On solving, we get x = 1/54 and y = 1/90

(9 men + 15 women)'s 1 days work =
(9/54) + (15/90) = 1/3

9 men and 15 women will finish the work in 3 days

27. C
Explanation:
B’s 5 days work =
110+5=12Remaining work =1-12=12A can finish work
=15*12=7.5days

28. D
Explanation:
A+B 1 day work = 1/8
B+C 1 day work = 1/12
A+B+C 1 day work = 1/6
We can get A work by \( (A+B+C)-(B+C) \)
And C by \( (A+B+C)-(A+B) \)

So A 1 day work = 
\[ 16-\frac{112}{12} = \frac{112}{12} \]

Similarly C 1 day work = 
\[ 16-\frac{18}{12} = 4-\frac{324}{12} = \frac{124}{12} \]

So A and C 1 day work =
\[ \frac{112}{12} + \frac{124}{12} = \frac{324}{12} = \frac{18}{1} \]

So A and C can together do this work in 8 days

29. C
**Explanation:**
\((A+B)’s\) 1 day work = \( \frac{1}{4} \)

A’s 1 day work = \( \frac{1}{12} \)

B’s 1 day work =
\[ \left(14-\frac{112}{12}\right) = 3-\frac{112}{12} = \frac{16}{12} \]

So B alone can complete the work in 6 days

30. D
**Explanation:**
Work done by A in 10 days = \( \frac{1}{25} \) * 10 = \( \frac{2}{5} \)
Remaining work = \( 1 - \frac{2}{5} = \frac{3}{5} \)
\((A+B)s\) 1 days work = \( \frac{1}{25} + \frac{1}{20} = \frac{9}{100} \)

\( \frac{9}{100} \) work is done by them in 1 day.
hence \( \frac{3}{5} \) work will be done by them in \( \frac{3}{5} \) * \( \frac{100}{9} \)
\[ = \frac{20}{3} \) days. \]
Total time taken = \((10 + \frac{20}{3}) = 16\times\frac{2}{3}\) days

31. **B**

Let 1 day's efficiency of each of the individuals is A, B and C respectively.

As per the given information, we get the efficiency equations as follows

\[3A = (B + C) \quad \text{(i)}\]
\[A + B + C = 24 \quad \text{(ii)}\]

Putting 3A in place of \((B + C)\) in eqnation (ii), we get

\[A + 3A = 24\]
\[4A = 24\]

Now, 4A do the whole work in 24 days.

Therefore, A alone will do the whole work in \(24 \times 4 = 96\) days.

Hence, option B is correct.

32. **A**

As per the given information, work done by 4 boys and 3 women in 6 days must be equal to work done by 2 boys and 4 women in 9 days.

Therefore, we get

\[(4B + 3W) \times 6 = (2B + 4W) \times 9\]
\[\Rightarrow 24B + 18W = 18B + 36W\]
\[\Rightarrow 6B = 18W \Rightarrow 1B = 3W\]

Now, \(2B + 4W = (2 \times 3)W + 4W = 10W\)
⇒ 10 women do a piece of work in 9 days.

Similarly, \( 7B + 9W = (7 \times 3)w + 9W = 30W \)

Now, when 10 women do a piece of work in 9 days,

30 women (thrice of 10) will do the same piece of work in 3 days \( (\because \text{Time } \propto \frac{1}{\text{Efficiency}}) \).

Hence, option A is correct.

33. \( \text{D} \)

Since Typewriter B can do the job in 15 hours,

it can do \( \frac{1}{15} \) of the job in 1 hour.

Since Typewriter C can do the job in 18 hours

it can do \( \frac{1}{18} \) of the job in 1 hour.

Together Typewriters B and C can do

\[
\left( \frac{1}{15} + \frac{1}{18} \right) = \left( \frac{6}{90} + \frac{5}{90} \right) = \frac{11}{90}
\]

of the job in 1 hour

Which means that it takes them \( \frac{90}{11} \) hours
to complete the job. Since Typewriter A completes the job in 12 hours, the ratio of the time required for A to do the job to the time required for B and C working together to do the job is

\[
\frac{12}{\frac{90}{11}} = \frac{12(11)}{90} = \frac{2(11)}{15} = \frac{22}{15}
\]

Hence, option (D) is correct.
34. B

We know that

The ratio of shares of A, B and C = The ratio of their efficiencies

\[ \frac{1}{4} : \frac{1}{7} : \frac{1}{8} = \frac{14}{56} : \frac{8}{56} : \frac{7}{56} = 14 : 8 : 7 \]

Difference between the shares of A and B in ratio \( \frac{6}{29} \)

\[ \therefore \text{ Actual difference in value} = \frac{6}{29} \times 53650 = 11,100/ - \]

Hence, option B is correct.

35. B

Explanation:

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

Then,

\[ \frac{1}{x} + \frac{2}{x} + \frac{3}{x} = \frac{1}{2} \]

\[ \Rightarrow \frac{6}{x} = \frac{1}{2} \]

\[ x = 12. \]

So, B takes \( \frac{12}{2} = 6 \) days to finish the work.

36. C

Explanation:

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

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

Remaining work = \( 1 - \frac{1}{3} = \frac{2}{3} \).
Now, \( \frac{1}{15} \) work is done by A in 1 day.

\[ \because \frac{2}{3} \text{ work will be done by A in } 15 \times \frac{2}{3} = 10 \text{ days.} \]

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

37. A

**Explanation:**

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

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

Work done by A, B, C in 10 days = \(\frac{10}{16} = \frac{5}{8}\).

Remaining work = \(1 - \frac{5}{8} = \frac{3}{8}\).

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

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.

1. A

**Explanation:**

Ratio of rates of working of A and B = 2 : 1.

So, ratio of times taken = 1 : 2.

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

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

\((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.

39. B

**Explanation:**

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

\[ \therefore \text{ 1 woman's 1 day's work} = \frac{1}{1}. \]
(16 x 15) men can complete the work in 1 day.

\[ \therefore 1 \text{ man's 1 day's work} = \frac{1}{240} \]

So, required ratio

\[ = \frac{1}{240} : \frac{1}{320} \]

\[ = \frac{1}{3} : \frac{1}{4} \]

\[ = 4 : 3 \text{ (cross multiplied)} \]

**40.B**

**Explanation:**

A's 5 days work = 50%
B's 5 days work = 33.33%
C's 2 days work = 16.66%

[100 - (50 + 33.33)]

Ratio of contribution of work of A, B and C

\[ = 50 : 3313 : 162350 : 3313 : 1623 = 3 : 2 : 1 \]

A's total share = Rs. 1500
B's total share = Rs. 1000
C's total share = Rs. 500

A's one day's earning = Rs.300
B's one day's earning = Rs.200
C's one day's earning = Rs.250

**4. A**

**Explanation:**

One day's work of A, B and C = \( \frac{1}{24} + \frac{1}{30} + \frac{1}{40} \) = \( \frac{1}{10} \).

C leaves 4 days before completion of the work, which means only A and B work during the last 4 days.

Work done by A and B together in the last 4 days

\[ = 4 \left( \frac{1}{24} + \frac{1}{30} \right) = \frac{3}{10}. \]
Remaining Work = 7/10, which was done by A, B and C in the initial number of days.
Number of days required for this initial work = 7 days.
Thus, the total numbers of days required = 4 + 7 = 11 days.

42. B
Explanation:

1 man's 1 day work = 1/96 ; 1 woman's 1 day work = 1/192
Work done in 6 days = 6(896 + 8192) = 6 x 18 = 346896 + 8192 = 6 x 18 = 34
Remaining work = 1/4
(8 men + 8 women)'s 1 day work = 1(896 + 8192) 1896 + 8192 = 1/8
Remaining work = 1/4 - 1/8 = 1/8

1/96 work is done in 1 day by 1 man

Therefore, 1/8 work will be done in 1 day by 96 x (1/8) = 12 men

43. A
Explanation:
P can complete the work in (12 x 8) hrs = 96 hrs
Q can complete the work in (8 x 10) hrs = 80 hrs
Therefore, P's 1 hour work = 1/96 and Q's 1 hour work = 1/80
(P + Q)'s 1 hour's work = (1/96) + (1/80) = 11/480. So both P and Q will finish the work in 480/11 hrs
Therefore, Number of days of 8 hours each = (480/11) x (1/8) = 60/11

44. A
Explanation:

2(A+B+C)'s 1 day work = 1/30 + 1/24 + 1/20 = 1/8
=> (A+B+C)'s 1 day's work = 1/16
work done by A, B and C in 10 days = 10/16 = 5/8
Remaining work = $\frac{3}{8}$
A's 1 day's work = $(116-124)=148116-124=148$
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

45. B
Explanation:

Ratio of rates of working of A and B = 2:1. So, ratio of times taken = 1:2
Therefore, A's 1 day's work = $\frac{1}{9}$
B's 1 day's work = $\frac{1}{18}$
(A+B)'s 1 day's work = $\frac{1}{9} + \frac{1}{18} = \frac{1}{6}$
so, A and B together can finish the work in 6 days

46. D
Explanation:

(A+B)'s 1 day's work = $\frac{1}{20}$
C's 1 day work = $\frac{1}{60}$
(A+B+C)'s 1 day's work = $\frac{1}{20} + \frac{1}{60} = \frac{1}{15}$
Also A's 1 day's work = (B+C)'s 1 day's work
Therefore, we get: $2 \times (A's \ 1 \ day's \ work)=\frac{1}{15}$
=> A's 1 day's work = $\frac{1}{30}$

Therefore, B's 1 day's work = $\frac{1}{20} - \frac{1}{30} = \frac{1}{60}$
So, B alone could do the work in 60 days.

47. B
Explanation:

Let he initially employed x workers which works for D days and he estimated 100 days for the whole work and then he doubled the worker for (100-D) days.
\[ D \times x + (100-D) \times 2x = 175x \]
\[ \Rightarrow D= 25 \text{ days} \]
Now, the work done in 25 days = 25x
Total work = 175x
Therefore, work done before increasing the no of workers = $25x175x\times10025x175x\times100 \% = 1427\%$
48. A

Explanation:

A : B : C
Ratio of efficiency 3 : 1 : 2
Ratio of No. of days 1/3 : 1/1 : 1/2
          or
             2 : 6 : 3
Hence A is correct.

49. C

Explanation:

A : C
Efficiency 5 : 3
No of days 3x : 5x
Given that, 5x - 6 = 3x => x = 3
Number of days taken by A = 9
Number of days taken by C = 15

B : C
Days 2 : 3
Therefore, Number of days taken by B = 10

Work done by B and C in initial 2 days = 2[110 + 115] = 2[2110 + 115] = 1/3

Thus, Rest work = 2/3

Number of days required by A to finish 2/3 work = (2/3) x 9 = 6 days
50. B
Explanation:

\[34 \times (x-2)x = (x+7)(x-10)\]
\[\Rightarrow x^2 - 6x - 280 = 0\]
\[\Rightarrow x = 20 \quad \text{and} \quad x = -14\]
so, the acceptable values is \(x = 20\)
Therefore, Total work = \((x-2)x = 18 \times 20 = 360\) unit
Now \(360 = 30 \times k\)
\[\Rightarrow k = 12\] days

51. B
Explanation:

\[
\begin{align*}
\text{A} + \text{B} &= \text{C} + \text{D} \\
\text{Ratio of efficiency} &= \frac{10x + 5x}{9x + 6x} \\
&= \frac{15x}{15x}
\end{align*}
\]
Therefore, ratio of efficiency of A:C = 10:9
Therefore, ratio of days taken by A:C = 9:10
Therefore, number of days taken by A = 18 days

52. C
Explanation:

Let the two conditioners be A and B

'A' cools at 40min

'B' at 45min

Together = \(\frac{(a \times b)}{(a + b)}\)
\[= \frac{(45 \times 40)}{(45 + 40)}\]
\[= \frac{45 \times 40}{85}\]
\[= 21.1764\]
\[= \text{22 min} \quad \text{(approx)}\].

53. D
Explanation:
Let the number of workers be $x$.

Now, using work equivalence method,

$X + (X-1) + (X-2) + \ldots + 1 = X * 55\%$ of $X$

$\Rightarrow \frac{X \times (X+1)}{2} = X \times \frac{55X}{100}$ [because, Series is in AP.]

Sum of AP = \{No. of terms (first term+ last term)/2\}

Therefore, $X = 10$

54. D

After the first 12 days, in the next 12 days Ram will again do 40% of the work. Hence, Ravi will do 20% of the work.

Therefore Ram is twice as efficient as Ravi. Or 100% more efficient. (since, $(2-1)/1 \times 100 = 100\%$).

55. C

Let’s solve this using answer options. We can see that if B takes 40 days to complete the entire work then he’ll take 20 days to do half of it. But the sum of A and B is 20. Let’s try option c. B will do half the work in 15 days. Now using equation $(1/a) + (1/b) = 2/15$, We see that $a = 10$. Hence half the job is done in 5 days. It’s the correct option.

56. D

Method 1- Using variables

Let the number of filling pipes be $x$ and the number of empty pipes be $y$. Then $y/6 - x/8 = 1/6$. $4(y - 1) = 3x$ Now go from answer options

We see that for $x = y=4$, the relation is getting satisfied. Hence the answer is 4.

Method 2- Using Percentage

Inlet- 8 hours => 12.5% per hour Outlet= 6 hours => 16.66% per hour

The difference = 4.16% As the tank is full, the difference should account for 100% of the tank, as it takes 6 hours to empty 4.16 x 6 = 25% i.e. 25% work is done by one outlet pipe; therefore there has to be 4 outlet pipes therefore the number of inlet pipes = 8-4 = 4. Answer is option (b).

57. A

A can finish the work in 12 days. He can finish 100% of the work in 12 days. In 1 day he can finish $(100/12)\% = 8.33\%$ of the work. Similarly, B can finish $(100/15)\% = 6.67\%$ of the work in 1 day. When they both work together, they can finish $(8.33 + 6.67)$
% = 15% of the work in 1 day So, to complete 100% of the work, they will take 100/15 = 6 2/3 days.

58. D
Suppose Ajit can finish the work in ‘x’ days. In one day he can do (100/x) % of the work.
As Ajit is thrice as good as Dev, Dev will do 1/3rd of what Ajit can do in a day.
So, Dev can do (100/3x)% of work in a day.
Now they complete the work in 5 days, so in 1 day they must be doing 100/5 = 20% of the work.
So, (100/x) + (100/3x) = 20 \Rightarrow x = 20/3.
So, Ajit can complete the work alone in 20/3 days.

59. A
Let a, b and c be the % of the work done by A, B, and C in one day respectively.
A & B can complete the work in 12 days \Rightarrow a + b = 100/12% = 8.33% \ldots (i)
B & C can complete the work in 15 days \Rightarrow b + c = 100/15% = 6.67% \ldots (ii)
A & C can complete the work in 20 days \Rightarrow a + c = 100/20% = 5% \ldots (iii)
Adding (i), (ii) and (iii) 2(a + b + c) = 20% \Rightarrow (a + b + c) = 10%.
So, working together they finish 10% of work in a day. So, they can complete the work in 10 days.

60. B
A can finish the work in 16 days. In one day he can finish (100/16) %= 6.25% of the work.
In 4 days, working alone he will finish [(100/16)*4] = 25% of the work.
Now B joins him. Amount of work left = 100 – 25 = 75%. B can do (100/8)% = 12.33% of the work.
A and B together can do 12.33+ 6.25 = 18.75 % of the work in one day. Work left after A has finished 25% of the work in 4 days = 75%. Hence Time taken = [75/18.75] = 4 days. So, total Time taken = 4 + 4 = 8 days.

61. D
Amit takes 20 days to complete the work. So, in 1 day Amit completes 100/20 = 5% of the work.
Suraj is 25% more efficient than Amit. So, Suraj will do \[5 + (5 \times 0.25)\] = 6.25% of the work in 1 day.

Suraj joined Amit 4 days before the work was completed. This means Suraj worked for 4 days.

In four days Amit and Suraj together complete \[(5 + 6.25)\times 4\] = 45% of the work.

This means rest 55% of the work is done by Amit alone. This 55% of work will be completed in \(55 \div 5\) = 11 days

So, Amit worked alone for 11 days.

62. A

The ratio of efficiency is inversely proportional to the amount of Time taken. Hence A and C will take Time in ratio 3: 5 to complete the same work.

So, in term of numbers, days have taken to complete the work:

B: C = 2: 3  A: C = 3: 5

A: B: C = 9: 10: 15

If A is taking 9x days, B takes 10x days and C takes 15x days.

A takes 4 days less than C ? 9x = 15x – 4 ? x = 2/3.

A takes 6 days, B takes 20/3 days and C takes 10 days.

In one day A does (100/6)%, B does 15% and C does 10% of the work.

If A, B and C work for two days together. So, in 2 days, amount of work done = 2(100/6+ 15 + 10)=250/3 % Amount of work left = 100 – 250/3=50/3%. This can be completed by “A” in 1 day.

63. B

Suppose A takes x days to complete the job. Then B will take x + 4 days and C will take x – 2 days to do the same job.In one day, A does \(1 \div x\)%, B does \(1 \div (x+4)\)% and C does \(1 \div (x-2)\)%.

A & B will do \(1 \div x\)+ \(1 \div (x+4)\)% of the work in a day.

So, Time taken by A & B to complete the work when working together = \(x(x+ 4)/(2x+4)\)

Time taken by C = \((x – 2)\)

Now as given, \(x – 2 = x(x + 4)/(2x+4)\)

Solving we get \(x = 2(1 \pm v3)\), we neglect 2(1 ± v3) because, number of days cannot be negative

So, days taken by A = 2(1 + v3) days taken by B = 2(3 + v3)

Ratio = (1 + v3): (3 + v3).
In one month GIL can do $\frac{100}{5} = 20\%$ of the work. Along with NCC, it is able to do $\frac{100}{4} = 25\%$ of the work in one month. So, amount of work done by NCC = $5\%$ in a month. So, in the 4 months NCC has done $5 \times 4 = 20\%$ of the work. So, share of NCC = 20\% of Rs. 35, 00, 000 = Rs. 7, 00, 000.

Out of these as Sanjeev’s team is only 75\% as efficient as Ramesh’s team, the money will be divided in the ratio of efficiency: Sanjeev’s Team Efficiency = 75: 100 = 3: 4.

So, money earned by Sanjeev’s team = \((\frac{3}{7}) \times 7,00,000 = 3,00,000\).

65. A

Equate the amount of work in terms of man – hours and volume of the platform.

15 workers, 4 hours a day, 25 days == 120 * 10 * 14
12 workers, 5 hours a day, N days = = 600 * 14 * 12

Taking the ratio,

\[(15 \times 4 \times 25)/(12 \times 5 \times N) = (120 \times 10 \times 14)/(600 \times 14 \times 12)\]

N = 150.

They will take 150 days.

66. E

sol.

One minute work of 1 man = \(\frac{1}{12 \times 15}\)

\(\therefore\) One minute work of 9 men = \(\frac{9}{12 \times 15} = \frac{1}{20}\)

and one minute’s work of 12 women = \(\frac{12}{10 \times 24} = \frac{1}{20}\)

Let required time is x days

\(\therefore\) \(\frac{6}{20} + \frac{x}{20} = 1\)

\(\Rightarrow x = 14\) days

67. C
Sol.
Let Arjun’s speed = x depressions per hr.
∴ Suran’s speed = 0.6x depressions per hr.

ATQ,

\[(x + 0.6x) \times 12 \times 6 = 5,76,000\]

\[\Rightarrow x = 5000\] depressions per hour

68. A

Sol.
One minute’s work of third tap

\[= \left( \frac{1}{10} + \frac{1}{12} \right) - \frac{1}{15}\]

\[= \frac{7}{60}\]

∴ time taken by third tap to empty the filled tank

\[= \frac{60}{7} \text{ min} \quad \text{or} \quad 8 \text{ min } 34 \text{ sec.}\]

69. C
Sol.

Time taken by C = 12 days

Time taken by B = \(3 \times \frac{12}{2} = 18\) days

Time taken by A = \(\frac{12}{2} = 6\) days

One day’s work of pair BC

\[\frac{1}{12} + \frac{1}{18} = \frac{5}{36}\]

One day’s work of pair AB = \(\frac{1}{12} + \frac{1}{6} = \frac{3}{9}\)

One day’s work of pair CA = \(\frac{1}{6} + \frac{1}{12} = \frac{1}{4}\)

\(\therefore\) ATQ, First three days work = \(\frac{5}{36} + \frac{2}{9} + \frac{1}{4} = \frac{13}{18}\)

Next two days work (by BC and AB together) = \(\frac{5}{36} + \frac{3}{9} = \frac{13}{36}\)

Remaining work after 5 days = \(1 - \left(\frac{13}{18} + \frac{13}{36}\right) = \frac{1}{36}\)

\(\therefore\) Required time = \(3 + 2 + \frac{4}{36} = 5\frac{1}{9}\) days

70. B

Sol.

Time taken by both pipes X and Y to fill 1/3rd of the tank

\[\frac{1}{3} \times \left(\frac{10 \times 15}{25}\right) = 2\text{ hrs.}\]

\(\therefore\) Total time to fill the tank

\[= 2 + \frac{(10 \times 15)}{25}\]

= 8 hrs.

71. E
Sol.

Let \( x \) people were supposed to work

\[
\therefore (x - 8) \times 28 = x \times 20
\]

\[
\Rightarrow 7x - 56 = 5x
\]

\[
\Rightarrow x = 28
\]

72. A
Sol.

Let \( X \) covers \( x \) metres in the time after which he meets \( Y \).

\[
\therefore \frac{x}{250} = \frac{2500 - x}{250}
\]

\[
\Rightarrow 7x = 14,000 - 5x
\]

\[
\Rightarrow x = 3500/3 \text{ m}
\]

\[
\therefore \text{Required time} = \frac{3500}{250 \times 3} = \frac{14}{3} \text{ min.}
\]

Alternative: Required time = \( \frac{2500}{250 + 250} = \frac{14}{3} \text{ min.} \)

73. B
Sol.

Let required length is \( x \) metres.

\[
\frac{300 \times 1}{(405 \times 5.5 \times 4)} = \frac{2000 \times 6}{20 \times 16 \times x}
\]

\[
\Rightarrow x = 6682.5 \text{ m}
\]

74. B
Sol. \( 250 \times 30 = 20 \times 200 + x \times 125 \)

Or, \( x = 20 \) days

\[
\therefore \text{Food last for} 20 - 10 \text{ i.e. 10 days after 30 days}
\]

75. C
Explanation:
1 day work of Arun and Bala = \( 1/40 + 1/35 = 15/280 \)
Arun finished the remaining work in 30 days = \( 30 \times 1/40 \times 2 = \)
3/8
Remaining work done by Arun and Bala = 5/8
Worked together = (5/8)/(15/280) = 35/3 days.

76. C
Explanation:
Efficiency of Kiran = 5%
Efficiency of Karan = 4%
They will complete only 90% of the work = [(5+4)*10] = 90
Remaining work done by Suman = 10%.
Share of Suman = 10/100 * 1000 = 100

77. C
Explanation:
7I + 4Am = 1/6
7Af + 4Am = 1/8
7I + 7Af + 7Am = 7/24
1I + 1Af + 1Am = 1/24
One Indian One American and One African will complete the work in – 24 days.

78. B
Explanation:
No of days taken by Arun = 12 days
No of days(Arun:Bala:Chitra) = 2:3:1
1 day work of (Arun+Bala) = 5/36
1 day work of (Bala+Chitra) = 8/36
1 day work of (Chitra+Arun) = 9/36
5 days total work – 35/36
1/36 is done by Arun-Chitra
Number of days taken by Arun-Chitra for the rest of the work = (1/36)/(9/36) = 1/9
Total time taken to complete the work = 5 + 1/9 = 46/9 days

79. D
Explanation:
30 workers work in pairs, with no same pair of workers working together twice
29[1/w1 + 1/w2 ...... + 1/w30] + 6[1/w1 + 1/w2 ...... + 1/w30] = 1
[1/w1 + 1/w2 ...... + 1/w30] = 1/35
35 days.

80. A
Explaination:
A’s 5 days work = 50%  
B’s 5 days work = 33.33%  
C’s 2 days work = 16.66%  
[100 - (50 + 33.33)]

Ratio of contribution of work of Arun, Bala and Chitra = 3:2:1

Arun’s total share = Rs. 3000  
Bala’s total share = Rs. 2000  
Chitra’s total share = Rs. 1000  
Arun’s one day’s earning = Rs.600  
Bala’s one day’s earning = Rs.400  
Chitra’s one day’s earning = Rs.500

81. B
Explaination:
Explanation:
D * x +(100-D) * 2x= 150x  
=> D= 50 days
work done in 50 days = 50x
Total work = 150x
50x/150x * 100 = 100/3

82. B
Explaination:
3/4 * (x-2)x = (x+7)(x-10)

x - 6x - 280 = 0
x = 20; x = -14
(x-2)x = 18 * 20 = 360
360 = 30 * y
y = 12 days

83. C
Explaination:
Ratio of number of days = 9:10:15
Work done By B and C in first two days = 2/3
Rest of the work = 2/3
Number of days = (2/3)/(1/9) = 6 days

84. B
Explaination:
1/x + 1/2x = 1/20 + 1/30
3/2x = 1/12
Number of days taken by Arun = 18 days

85. A
**Explanation:**
Assume working days
A = x, B = 2x, C = 2y, D = 3y
1/x+1/2x = 1/2y+1/3y
And 2x-2y = 16
Solving we get x = 18 days.

86. B
**Explanation:**
15*(1/80+1/60) + 15*(1/120+1/40) + x*(1/40+1/60) = 1
X= 3/2 = 1.5

87. C
**Explanation:**
First day = 1/30
Second day = 1/30+1/45
Third day = 1/30+1/60
3 days work = 3/30+1/45+1/60 = 25/180
3*7 = 21 days work = 175/180
Now 1/36 work is left which can be completed by A alone
1/36*30 = 5/6
21+5/6 = 21 5/6 Days

88. B
**Explanation:**
Ramu takes 25 days to complete work.
Raju = 50 days Venu = 100 days
Now 70% work is left.
They can complete whole work in = 1/ 1/25+1/50+1/100
100/7 days then 70% in 10 days

89. B
**Explanation:**
A = 21 B = 14 C =7
x/21+2*(1/14+1/7) = 1
x = 12.

90. D
**Explanation:**
20*(5+6+7+8+4x)/840 = 1
x= 4 hours

91. B
**Explanation:**
U+v+W = 72
9U = 7W
W-V = V-U
V = 24

92. A
Explanation:
\((1/5+1/4)\)
\[\frac{20}{9} \times \frac{90}{100} = 2\]

93. D
Explanation:
\(1/A+1/B = 5/8\)
\(x/A+y/B = 1\)
x+y = 5
y = 4

94. D
Explanation:
\(11 \times \frac{50}{1/3} = (11+x) \times \frac{50}{2/3}\)
X = 11
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