Time And Work & Pipes And Cisterns Exercise

1. A does a work in 10 days and B does the same work in 15 days. In how many days they together will do the same work?
(a) 5 days (b) 6 days
(c) 8 days (d) 9 days

2. A man can do a piece of work in 10 days but with the assistance of his son, the work is done in 8 days. In how many days, his son alone can do the same piece of work?
(a) 15 days (b) 22 days
(c) 30 days (d) 40 days

3. A can finish a work in 18 days and B can do the same work in half the time taken by A. Then, working together, what part of the same work they can finish in a day?
(a) $\frac{1}{6}$ (b) $\frac{1}{9}$
(c) $\frac{2}{5}$ (d) $\frac{2}{7}$

4. George takes 8 hours to copy a 50 page manuscript while Sonia can copy the same manuscript in 6 hours. How many hours would it take them to copy to 100 page manuscript, if they work together?
(a) $6\frac{6}{7}$ (b) 9
(c) $9\frac{5}{7}$ (d) 14

5. A can do a piece of work in 25 days and B in 20 days. They work together for 5 days and then A goes away. In how many days will B finish the remaining work?
(a) 17 days (b) 11 days
(c) 10 days (d) None of these

6. A man is twice as fast as a woman. Together the man and the woman do the piece of work in 8 days. In how many days each will do the work if engaged alone?
(a) man-14 days, woman-28 days
(b) man-12 days, woman-24 days
(c) man-10 days, woman-20 days
(d) None of these

7. A and B can do a job in 16 days and 12 days respectively. 4 days before finishing the job, A joins B. B has started the work alone. Find how many days B has worked alone?
(a) 6 days (b) 4 days
(c) 5 days (d) 7 days

8. A contractor undertakes to built a walls in 50 days. He employs 50 peoples for the same. However after 25 days he finds that only 40% of the work is complete. How many more man need to be employed to complete the work in time?
(a) 25 (b) 30
(c) 35 (d) 20

9. A is 30% more efficient than B. How much time will they, working together, take to complete a job which A alone could have done in 23 days?
(a) 11 days (b) 13 days
(c) $20\frac{3}{17}$ days (d) None of these

10. A and B can finish a work in 10 days while B and C can do it in 18 days. A started the work, worked for 5 days, then B worked for 10 days and the remaining work was finished by C in 15 days. In how many days could C alone have finished the whole work?
(a) 30 days (b) 15 days
(c) 45 days (d) 24 days

11. 24 men working 8 hours a day can finish a work in 10 days. Working at the rate 10 hours a day, the number of men required to finish the same work in 6 days is:
(a) 30 (b) 32
(c) 34 (d) 36

12. 12 men complete a work in 18 days. Six days after they had started working, 4 men joined them. How many days will all of them take to complete the remaining work?
(a) 10 days (b) 12 days
(c) 15 days (d) 9 days

13. A tyre two punctures. The first puncture along would have made the tyre flat in 9 minutes and the second alone would have done it in 6 minutes. If air leaks out at a constant rate, how long does it take both the punctures together to make it flat?
(a) $1\frac{1}{2}$minutes (b) $3\ \frac{1}{2}$minutes
(c) $3\frac{3}{5}$minutes (d) $4\ \frac{1}{4}$minutes

14. A man, a woman or a boy can do a job in 20 days, 30 days or 60 days respectively. How many boys must assist 2 men and 8 women to do the work in 2 days?
(a) 15 boys (b) 8 boys
(c) 10 boys (d) None of these

15. A can do 50% more work as B can do in the same time. B alone can do a piece of work in 20 hours. A, with the help of B, can finish the same work in how many hours?
(a) 12 (b) 8
(c) $13\ \frac{1}{3}$ (d) $5\ \frac{1}{2}$

16. A machine P can print one lakh books in 8 hours, machine Q can print the same number of books in 10 hours while machine R can print them 12 hours. All the machines are started at 9 a.m. while machine P is closed at 11 a.m. and the remaning two machines complete the work. Approximately at what time will the work be finished?
(a) 11:30 am (b) 12 noon
(c) 12:30 pm (d) 1 pm

17. A can do a piece of work in 10 days, while B alone can do it in 15 days. They work together for 5 days and the rest of the work is done by C in 2 days. If they get `450 for the whole work, how should they divide the money?
(a) `225, `150, `75 (b) `250, `100, `100
(c) `220, `150, `100 (d) `175, `175, `100

18. A alone would take 8 days more to complete the job than if both A and B would together. If B worked alone, he took $4\ \frac{1}{2}$days more to complete the job then A and B worked together. What time would they take if both A and B worked together?
(a) 7 days (b) 5 days
(c) 4 days (d) 6 days

19. 10 men and 15 women together can complete a work in 6 days. It takes 100 days for one man alone to complete the same work. How many days will be required for one woman alone to complete the same work?
(a) 90 (b) 125
(c) 145 (d) None of these

20. After working for 8 days, Anil finds that only $\frac{1}{3}$of the work has been done. He exploys Rakesh who is 60% efficient as

Anil. How many more days will Anil take to complete the job?
(a) 15 days (b) 12 days
(c) 10 days (d) 8 days

21. A sum of `25 was paid for a work which A can do in 32 days, B in 20 days, B and C in 12 days and D in 24 days. How much did C receive if all the four work together?
(a) $`\frac{14}{3}$ (b) $`\frac{16}{3}$
(c) $`\frac{15}{3}$ (d) $`\frac{17}{3}$

22. A and B can do a job 15 days and 10 days respectively. They began the work together but A leaves after some days and B finished the remaining job in 5 days. After how many days did A leave?
(a) 2 days (b) 3 days
(c) 1 day (d) None of these

23. Mr. Suresh is on tour and he has `360 for his expenses. If he exceeds his tour by 4 days he must cut down daily expenses by `3. The number of days of Mr. Suresh's tour programmer is:
(a) 20 days (b) 24 days
(c) 40 days (d) 42 days

24. A can do a job in 3 days less time than B. A works at it alone for 4 days and then B takes over and completes it. If altogether 14 days were required to finish the job, then in how many days would each of them take alone to finish it?
(a) 17 days, 20 days (b) 12 days, 15 days
(c) 13 days, 16 days (d) None of these

25. Two workers A and B working together completed a job in 5 days. If A worked twice as efficiently as he actually did and B worked $\frac{1}{3}$as efficiently as he actually did, the work would have completed in 3 days. Fine the time for A to complete the job alone.
(a) $6\frac{1}{4}$ days (b) $5\frac{3}{4}$ days
(c) 5 days (d) None of these

26. 12 men can complete a piece of work in 4 days, while 15 women can complete the same work in 4 days. 6 men start working on the job and after working for 2 days, all of them stopped working. How many women should be put on the job to complete the remaining work, if it is to completed in 3 days?
(a) 15 (b) 18
(b) 22 (d) Data inadequate

27. If 6 men and 8 boys can do a piece of work in 10 days while 26 men and 48 boys can do the same in 2 days, the time taken by 15 men and 20 boys in doing the same type of work will be:
(a) 4 days (b) 5 days
(c) 6 days (d) 7 days

28. A contract is to be completed in 46 days and 117 men were set to work, each working 8 hours a day. After 33 days, 4/7 of the work is completed. How many additional men may be employed so that the work may be completed in time, each man now working 9 hours a day?
(a) 80 (b) 81
(c) 82 (d) 83

29. Ramesh is twice as good a workman as Sunil and finishes a piece of work in 3 hours less than Sunil. In how many hours they together could finish the same piece of work?

(a) $2\frac{1}{3}$ (b)2

(c) $1\frac{2}{3}$ (d) None of these

30. One hundred men in 10 days do a third of a piece of work. The work is then required to be completed in another 13 days. On the next day (the eleventh day) 50 more men are employed, and on the day after, another 50. How many men must be discharged at the end of the 18^{th} day so that the rest of men, working for the remaining time, will just complete the work?

(a) 100 (b) 105

(c) 110 (d) 115

31. If 12 men or 15 women or 18 boys can do a piece of work in 15 days of 8 hours each, find how many men assisted by 5 women and 6 boys will finish the same work in 16 days of 9 hours each.

(a) 6 men (b) 2 men

(c) 8 men (d) 4 men

32. The work done by a man, a woman and a child is in the ratio of 3:2:1. There are 20 men, 30 women and 36 children in a factory. Their weekly wages amount to ` 780, which is divided in the ratio of work done by the men, women and children. What will be the wages of 15 men, 21 women and 30 children for 2 weeks?

(a) `585 (b) `292.5

(c) `1170 (d) `900

33. Men and boys can do a piece of work in 10 days while men and 2 boys can do the same work in 8 days. In how many days can 2 men and 1 boy to the work?

(a) $12\frac{1}{2}$days (b) $11\frac{1}{2}$days

(c) $15\frac{1}{2}$days (d) $13\frac{1}{2}$days

34. A can do a certain job in 12 days. B is 60% more efficient than A. How many days B alone take to do the same job?

(a) $7\frac{1}{2}$ (b) 11

(c) $8\frac{1}{2}$ (d) 8

35. 12 men and 16 boys can do a piece of work in 5 days, 13 men and 24 boys can do it 4 days. Then the ratio of daily work done by a man to that of a boy is

(a) 2:1 (b) 3:1

(c) 3:2 (d) 5:4

36. x is 3 time as faster as y and is able to complete the work in 40 days less than y. Then the time in which they can complete the work together?

(a) 15 days (b) 10 days

(c) $7\frac{1}{2}$days (d) 5 days

37. Pipe A can fill a tank in 5 hours, pipe B in 10 hours and pipe C in 30 hours. If all the pipes are open, in how many hours will the tank be filled?

(a) 2 (b) 2.5

(c) 3 (d) 3.5

38. Pipe A and B running together can fill a cistern in 6 minutes. If B takes 5 minutes more than A to fill the cistern then the times in which A and B will fill the cistern separately will be, respectively:

(a) 15 min, 20 min (b) 15 min, 10 min

(c) 10 min, 15 min (d) 25 min, 20 min

39. Pipes A and B can fill a tank in 5 and 6 hours respectively. Pipe C can empty it in 12 hours. If all the three pipes are opened together, then the tank will be filled in:

(a) $1\frac{13}{17}$hours (b) $2\frac{8}{11}$hour
(c) $3\frac{9}{17}$hours (d) $4\frac{1}{2}$hours

40. Two taps can fill a tank in 12 and 18 minutes respectively. Both are kept open for 2 minutes and the first is turned off. In how many minutes more will the tank be filled?
(a) 15 min (b) 20 min
(c) 11 min (d) 13 min

41. One fill pipe A is 3 times faster than second fill pipe B and takes 10 minutes less time to fill a cistern than B takes. Find when the cistern will be full if fill pipe B is only opened.
(a) 20min (b) 18min
(c) 15min (d) 10min

42. Two pipes can fill a cistern in 14 and 16 hours respectively. The pipes are opened simultaneously and it is found that due to leakage in the bottom, 32 minutes extra are taken for the cistern to be filled up. If the cistern is full, in what time would the leak empty it?
(a) 110hr (b) 112hr
(c) 115hr (d) 100hr

43. Two pipes A and B can fill a cistern in 10 and 15 minutes respectively. Both fill pipes are opened together, but at the end of 3 minutes, 'B' is turned off. How much time will the cistern take to fill?
(a) 6 min (b) 8 min
(c) 10 min (d) 12 min

44. A cistern has two taps which fill it in 12 minutes and 15 minutes respectively. There is also a waste pipe in the cistern. When all the three are opened, the empty cistern is full in 20 minutes. How long will the waste pipe take to empty the full cistern?
(a) 10 min (b) 12 min
(c) 15 min (d) None of these

45. Two pipes A and B can fill a tank in 15 and 12 hours respectively. Pipe B alone is kept open for $\frac{3}{4}$of time and both pipes are kept open for remaining time. In how many hours, the tank will be full?
(a) 18 h (b) 20 h
(c) 10 h (d) 13.5 h

46. A pipe can fill a tank in 15 minutes and another one in 10 minutes. A third pipe can empty the take in 5 minutes. The first two pipes are kept open for 4 minutes in the beginning and then the third pipe is also opened. In what time will the tank be empited?
(a) 35 min (b) 15 min
(c) 20 min (d) Cannot be empited

47. Two fill pipes A and B can fill a cistern in 12 and 16 minutes respectively. Both fill pipes are opened together, but 4 minutes before the cistern is full, one pipe A is closed. How much time will the cistern take to fill?
(a) $9\frac{1}{7}$min (b) $3\frac{1}{3}$min
(c) 5 min (d) 3 min

48. Two fill tapes A and B can separately fill a cistern in 45 and 40 minutes respectively. They started to fill a cistern together but tap A is turned off after few minutes and tap B fills the rest part of cistern in 23 minutes. After how many minutes, was tap A turned off?
(a) 9 min (b) 10 min
(c) 12 min (d) None of these

49. Three fill pipes A, B and C can fill separately a cistern in 3, 4 and 6 minutes respectively. A was opened first. After 1 minute, B was opened and after 2

minutes from the start of A, C was also opened. Find the time when the cistern will be full?

(a) $2\frac{1}{9}$min (b) $4\frac{1}{2}$min

(c) $3\frac{3}{4}$min (d) None of these

50. A tap can fill a tank in 16 minutes and another can empty it in 8 minutes. If the tank is already ½ full and both the taps are opened together, will the tank to filled or empitied? How long will it take before tank is either filled or empited completely as the case may be?

(a) Empited; 16min (b) Filled; 8min

(c) Empited; 8min (d) Filled; 12min

51. A pump can be operated both for filling a tank and for emptying it. The capacity of tank in $2400m^3$. The emptying capacity of the pump is 10 m^3 per minute higher than its filling capacity. Consequently, the pump needs 8 minutes less to empty the tank to fill it. Find the filling capacity of pump.

(a) 50 m^3/min (b) 60 m^3/min

(c) 58 m^3/min (d) None of these

52. A cistern has three pipes, A, B and C. The pipes A and B can fill it in 4 and 5 hours respectively and C can empty it in 2 hours. If the pipes are opened in order at 1, 2 and 3 a.m. respectively, when will the cistern be empty?

(a) 3 p.m. (b) 4 p.m.

(c) 5 p.m. (d) 6 p.m.

53. A tank is filled in 5 hours by three pipes A, B and C. The pipe C is twice as fast as B and B is twice as fast as A. How much time will pipe A alone take to fill the tank?

(a) 20 hrs (b) 25 hrs

(c) 35 hrs (d) Cannot be determind

54. Two pipes A and B can fill a tank in 15 hours and 20 hours respectively while a third pipe C can empty the full tank in 25 hours. All the three pipes are opened in the beginning. After 10 hours, C is closed. In how much time, will the tank be full?

(a) 12hrs (b) 13hrs

(c) 16hrs (d) 18hrs

55. Three taps A, B and C can fill a tank in 12, 15 and 20 hours respectively. If A is open all the time and B and C are open for one hour each alternately, then the tank will be full in:

(a) 6hrs. (b) $6\frac{2}{3}$hrs.

(c) 7hrs. (d) $7\frac{1}{2}$hrs.

56. Two pipes can fill a tank in 20 and 24 minutes respectively and a waste pipe can empty 3 gallons per minute. All the three pipes working together can fill the tank in 15 minutes. The capacity of the tank is:

(a) 60 gallons (b) 100 gallons

(c) 120 gallons (d) 180 gallons

57. A hot pipe takes 3 minutes longer to fill a tank than the cold pipe. Together they take 6 minutes 40 second. Time taken by the cold pipe alone to fill the tank is:

(a) 6 minutes (b) 18 minutes

(c) 9 minutes (d) 12 minutes

58. Water flows at 3 metres per sec through a pipe of radius 4 cm. How many hours will it take to fill a tank 40 metres long, 30 metres broad and 8 metres deep, if the pipe remains full?

(a) 176.6 hours (b) 120 hour

(c) 135.5 hours (d) None of these

59. 4 pipes each of 3 cm diameter are to be replaced by a single pipe discharging the same quantity of water. What should be the diameter of the single pipe, if the speed of water is the same.
(a) 2 cm (b) 4 cm
(c) 6 cm (d) 8 cm

60. A ship 55 kms from the shore springs a leak which admits 2 tones of water in 6 min; 80 tones would suffer to sink her, but the pumps can throw out 12 tones an hour. Find the average rate of sailing that she may just reach the shore as she begins to sink.
(a) 5.5 km/h (b) 6.5 km/h
(c) 7.5 km/h (d) 8.5 km/h

61. Two pipes A and B can fill a tank in 24 minutes and 32 minutes respectively. If both the pipes are opened simultaneously, after how much time should B be closed so that the tank is full in 18 minutes?
(a) 6 min. (b) 8 min.
(c) 12 min. (d) 14 min.

62. A can build up a wall in 8 days while B can break it in 3 days. A has worked for 4 days and then B joined to work with A for another 2 days only. In how many days will A alone build up the remaining part of wall?
(a) $13\frac{1}{3}$days (b) $7\frac{1}{3}$days
(c) $6\frac{1}{3}$days (d) 7 days

63. A group of men decided to do a job in 4 days. But since 20 men dropped out every day, the job completed at the end of the 7^{th} day. How many men were there at the beginning?
(a) 240 (b) 140
(c) 280 (d) 150

64. One man and six women working together can do a job in 10 days. The same job is done by two men in 'p' days and by eight women in p+5 days. By what percentage is the efficiency of a man greater than that of a woman?
(a) 300% (b) 500%
(c) 600% (d) 700%

65. The total number of men, women and children working in a factory is 18. They can earn `4000 in a day. If the sum of the wages of all men, all women and all children is in the ratio of 18: 10: 12 and if the wages of an individual man, woman and child is in the ration 6: 5: 3, then how much a woman earn in a day?
(a) `400 (b) `250
(c) `150 (d) `120

66. A can do a job in 3 days less time than B. A works at it alone for 4 days and then B takes over and completes it. If altogether 14 days were required to finish the job, then in how many days would each of them take alone to finish it?
(a) 17 days, 20 days (b) 12 days, 15 days
(c) 13 days, 16 days (d) None of these

67. 3 small pumps and a large pump are filling a tank. Each of the three small pumps works at $2/3^{rd}$ the rate of the large pump. If all 4 pumps work at the same time, they should fill the tank in what fraction of the time that it would have taken the large pump alone?
(a) 4/7 (b) 1/3
(c) 2/3 (d) 3/4

68. The Bubna dam has four inlets. Through the first three inlets, the dam can be filled in 12 minutes; through the second, the third and the fourth inlet, it can be filled in 15 minutes; and through

the first and the fourth inlet, in 20 minutes. How much time will it take all the four inlets to fill up the dam?
(a) 8 min (b) 10 min
(c) 12 min (d) None of these

69. Seventy-five men are employed to lay down a railway line in 3 months. Due to certain emergency conditions, the work was to be finished in 18 days. How many more men should be employed to complete the work in the desired time?
(a) 300 (b) 325
(c) 350 (d) 375

70. A, B and C together can do a piece of work in 40 days. After working with B and C for 16 days. A leaves and then B and C complete the remaining work in 40 days more. A alone could do the work in
(a) 80 days (b) 90 days
(c) 100 days (d) 120 days

71. Three pipes A, B and C can fill in 6 hours. After working it together for 2 hours, C is closed and A and B can fill the remaining part in 7 hours. The number of hours taken by C alone to fill the tank is
(a) 10 (b) 12
(c) 14 (d) 16

72. Pratibha is thrice as efficient as Sonia and is therefore able to finish a piece of work in 60 days less than Sonia. Pratibha ad Sonia can individually complete the work respectively in
(a) 30, 60 days (b) 60, 90 days
(c) 30, 90 days (d) 40, 120 days

73. A can do a certain work in the same time which B and C together can do it. If A and B together could do it in 10 days and C alone in 50 days, then B alone could do it in
(a) 15 days (b) 20 days
(c) 25 days (d) 30 days

74. A can do a piece of work in 6 days. B can do the same work in 15 days. How long would both of them take to do the same work?
(a) 2 days (b) 4 days
(c) 6 days (d) 8 days

75. 12 men construct 1.5 km of road in 7 days. 28 men will construct 12 km of roads in
(a) 20 days (b) 24 days
(c) 28 days (d) 38 days

76. X and Y can do a piece of work in 30 days. They work together for 6 days and then X quits and Y finishes the work in 32 more days. In how many days can Y do the piece of work alone?
(a) 30 days (b) 32 days
(c) 34 days (d) 40 days

77. 40 men can finish a piece of work in 60 days. After some days, 10 men leave the work so that the work is finished in 70 days. The number of days after which 10 men left the work is
(a) 20 days (b) 25 days
(c) 30 days (d) 40 days

ANSWER KEY

1.(b)	2.(d)	3.(a)	4.(a)	5.(b)
6.(b)	7.(c)	8.(a)	9.(b)	10.(c)
11.(b)	12.(d)	13.(c)	14.(b)	15.(b)
16.(d)	17.(a)	18.(d)	19.(d)	20.(c)
21(b)	22.(b)	23.(a)	24.(b)	25.(a)
26.(a)	27.(a)	28.(b)	29.(a)	30.(c)
31.(b)	32.(c)	33.(a)	34.(a)	35.(a)
36.(a)	37.(c)	38.(c)	39.(c)	40.(d)
41.(c)	42.(b)	43.(b)	44.(a)	45.(c)

46.(c)	47.(a)	48.(a)	49.(a)	50.(c)
51.(a)	52.(c)	53.(c)	54.(a)	55.(c)
56.(c)	57.(d)	58.(a)	59.(c)	60.(a)
61.(b)	62.(b)	63.(b)	64.(b)	65.(b)
66.(b)	67.(b)	68.(b)	69.(a)	70.(c)
71.(c)	72.(c)	73.(c)	74.(c)	75.(b)
76.(d)	77.(c)			

Time And Work & Pipes And Cisterns Hints & Explanations

1. (b) A's 1 day's work $=\frac{1}{10}$ and B's 1 day's work $=\frac{1}{15}$

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

So, both together will finish the work in 6 days.

2. (d) (Man+Son)'s one day's work $=\frac{1}{8}$

Man's one day's work $=\frac{1}{10}$

=>Son's one day's work $=\frac{1}{8}+\frac{1}{10}=\frac{1}{40}$

∴ Son can do it in 40 days.

3. (a) A's 1 day's work $=\frac{1}{18}$ and B's 1 day's work $=\frac{1}{9}$.

∴ (A+B)'s 1 day's work $=\left[\frac{1}{18}+\frac{1}{9}\right]=\frac{1}{6}$.

4. (a) In an hour, George and Sonia together can copy $\frac{1}{6}+\frac{1}{8}=\frac{7}{24}$ of a 50-page manuscript.

i.e. In an hour they together can copy $\frac{7}{48}$ of the 100-page manuscript.

i.e. They together can copy a 100-page manuscript in $\frac{48}{7}$ hours, i.e. $6\frac{6}{7}$ hours.

5. (b) (A+B)'s 5 day's work

$=5\left[\frac{1}{25}+\frac{1}{20}\right]=\frac{45}{100}=\frac{9}{20}$

Remaining work $=\left[1-\frac{9}{20}\right]=\frac{11}{20}$

$\frac{11}{20}$ of the work would be finished by B in $\frac{11/20}{1/20}$ = 11 days.

6. (b) Let the man alone do the work in x days.

Then, the woman alone do the work in 2x days.

Their one day's work = $\frac{1}{8}$th part of whole work.

i.e. $\frac{1}{x}+\frac{1}{2x}=\frac{1}{8}$

=> x = 12 days

∴ Man takes 12 days and woman 2x=24 days.

7. (c) A's one day's work = $\frac{1}{16}$th work

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

Let B has worked alone = x days. Then,

A's amount of work + B's amount of work=1

$=>4\left[\frac{1}{16}\right]+(x+4)\frac{1}{12}=1$

$=>\frac{1}{4}+\frac{x+4}{12}=1$ => x = $\frac{3}{4}$x 12-4

=>x = 5 days

8. (a) 50 men complete 0.4 work in 25 days.

Applying the work rule, $m_1 \text{ x} d_1 \text{x} w_2 = m_2 \text{ x } d_2 \text{ x } w_1$ we have.

50 x 25 x 0.6 = m_2 x 25 x 0.4

Or $m_2 = \frac{50X25X0.6}{25X0.4}$ = 75 men

Number of additional men required=(75-50)=25

9. (b) Ratio of times taken by A and B=100;130=10:13. Suppose B takes x days to do the work.

Then, 10:13::23:x=>x $=\left[\frac{23X13}{10}\right]$=> x= $\frac{299}{10}$.

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

(A+B)'s 1day's work = $\left[\frac{1}{23}+\right.$

10299=23299=113.

∴ A and B together can complete the job in 13 days. Alternate Method:

A and B together complete work in $\frac{1.3\ X\ 23}{1.3+1}$=13days

10. (c) Let C completes the work in x days.

Work done by (A+B) in 1 day = $\frac{1}{10}$

Work done by (B+C) in 1 day = $\frac{1}{18}$

A's 5 day's work + B's 10 day's work + C's 15 day's work = 1

Or (A+B)'s 5 day's work + (B+C)'s 5 day's work + C's 10 day's work = 1

Or $\frac{5}{10}+\frac{5}{18}+\frac{10}{x}=1$ or x=45 days

11. (b) m_1 x d_1 x t_1 = m_2 x d_2 xt_2

24 x 10 x 8=m_2 x 6 x 10

=>$m_2 = \frac{24\ X10X8}{6X10}$ = 32 men

12. (d) In 1 day, work done by 12 men = $\frac{1}{18}$

In 6 days, work done by 12 men = $\frac{6}{18}$ = $\frac{1}{3}$

Remaining work = $\frac{2}{3}$

Now, m_1 x d_1 x w_2 = m_2 x d_2 x w_1

Or 12x18x $\frac{2}{3}$ = 16 x d_2 x 1

Or $d_2 = \frac{4X18X2}{16}$ = 9 days

13. (c) 1 minute's work of both the punctures $=\left[\frac{1}{9}+\frac{1}{6}\right]=\frac{5}{18}$.

So, both the punctures will make the tyre flat in $\frac{18}{5}$ = 3$\frac{3}{5}$min.

14. (b) Man's two day's work=2x$\frac{1}{20}^{th}$ work = $\frac{1}{10}$th work Woman's two day's work.

=2x$\frac{1}{30}$th work = $\frac{1}{15}$th work

Boy's two day's work 2x$\frac{1}{60}$th work = $\frac{1}{30}$th work

Now, let 2 men, 8 women and x boys can complete work in 2 days. Then,

2 men's work + 8 women's work + x boy's work =1

$2\left[\frac{1}{10}\right]+8\left[\frac{1}{15}\right]+x\left[\frac{1}{30}\right]=1$

=>x=$\left[1-\frac{1}{5}-\frac{8}{15}\right]$x30=> x=8 boys

15. (b) B alone can do a work in 20 hours.

∴ A alone can do $\frac{3}{2}$of the work in 20 hours.

i.e. A alone can do the same work in $\frac{40}{3}$hours

∴ (A+B)'s one hour's work= $\frac{3}{40}+\frac{1}{20}=\frac{5}{40}$ = $\frac{1}{8}$

=>A and B together can finish the whole work in 8 hours.

16. (d)(P+Q+R)'s1hour'swork=$\left[\frac{1}{8}+\frac{1}{10}+\right.$

112=37120

Work done by P, Q and R in 2 hours=$\left[\frac{37}{120}X2\right]=\frac{37}{60}$.

Remaining work=$\left[1-\frac{37}{60}\right]=\frac{23}{60}$.

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

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

So, $\frac{23}{60}$work will be done by Q and R in $\left[\frac{60}{11}+\frac{23}{60}\right]=\frac{23}{11}$hours=2 hours..

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

17. (a) Work done by A and B in 5 days

$=\left[\frac{1}{10}+\frac{1}{15}\right]x5=\frac{5}{6}$

Work remaining =1-$\frac{5}{6}=\frac{1}{6}$

∴ C alone can do the work in 6x2 =12 days

Ratio of their share work = $\frac{5}{10}:\frac{5}{15}:\frac{2}{12}=$ 3:2:1

Share of wages= `225, `150, `75.

18. (d) Let if both A and B work together, they take x days.

∴ (A+B)'s 1 day's work= $\frac{1}{x}$th work.

A's 1 day's work = $\frac{1}{x+8}$th work.

B's 1 day's work=$\frac{1}{x+9/2}$th work.

Now, $\frac{1}{x+8}+\frac{2}{2x+9}=\frac{1}{x}$

=> x(2x+9+2x+16)=(x+8)(2x+9)

=> $4x^2+25x=2x^2+25x+72$

=>$x^2=36$=>x=6 days

Alternate Method:

A and B together finish the work in $\sqrt{8X\frac{9}{2}}$=6 days

19. (d) 1 mans 1 day's work=$\frac{1}{100}$

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

15 women's 1 day's work

$=\left[\frac{1}{6}-\frac{10}{100}\right]=\left[\frac{1}{6}-\frac{1}{10}\right]=\frac{1}{15}$

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

∴ 1 woman alone can complete the work in 225 days.

20. (c) In 8 days, Anil does = $\frac{1}{3}^{rd}$ work.

∴ In 1 day, he does=$\frac{1}{24}$th work.

∴ Rakesh's one day's work=60% of $\frac{1}{24}=\frac{1}{40}^{th}$ work.

Remaining work=1-$\frac{1}{3}=\frac{2}{3}$

(Anil and Rakesh)'s one day's work

$=\frac{1}{24}+\frac{1}{40}=\frac{1}{15}$th work

Now, $\frac{1}{15}$th work is done by them in one day

∴ $\frac{2}{3}$rd work is done by them in 15x$\frac{2}{3}$ =10 days

21. (b) A's one day's work = $\frac{1}{32}$

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

(B+C)'s one day's work = $\frac{1}{12}$

∴ C's one day's work = $\frac{1}{12}-\frac{1}{20}=\frac{1}{30}$

D's one day's work = $\frac{1}{24}$

∴ (A+B+C+D)'s one day's work

$=\frac{1}{32}+\frac{1}{20}+\frac{1}{30}+\frac{1}{24}=\frac{75+120+80+100}{2400}$

$=\frac{375}{2400}=\frac{15}{96}=\frac{5}{32}$

∴ Out of $\frac{5}{32}$of work done, $\frac{1}{30}$of the work is done by C.

=>Out of `25 paid of the work, C will receive

∴ $\frac{1/30}{5/32}$ x 25, i.e. $\frac{1}{30}x\frac{32}{5}x25$, i.e. ∴ $\frac{16}{3}$

22. (b) A's one day's work = $\frac{1}{15}$th work.

B's one day's work = $\frac{1}{10}$th work.

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

Let A left after x days.

∴ (A+B)'s x day's work = $\frac{x}{6}$th work.

Remaining work = 1-$\frac{x}{6}=\frac{6-x}{6}$th work.

Now, in 5 days, work done by B= $\frac{6-x}{6}$th work.

∴ In 1 day work done by B = $\frac{6-x}{30}$ th work.

And $\frac{6-x}{30}=\frac{1}{10}$

∴ X=3 days.

23. (a) Let Suresh undertakes a tour of x days.

Then, expenses for each day = $\frac{360}{x}$

Now$\frac{360}{x+4}=\frac{360}{x}-3$

Or $360\left[\frac{1}{x}+\frac{1}{x+4}\right]=3$

Or x^2+4x-480=0 or x=-24 or x=20

Since, x≠-24 we have x = 20

24. (b) Let B can finish the work in x days.

Then A can finish the work in (x-3) days.

B's one day's work = $\frac{1}{x}$th work

A's one day's work= $\frac{1}{x-3}$th work

A's 4 day's work = $\frac{4}{x-3}$th work

Remaining work =1-$\frac{4}{x-3}=\frac{x-7}{x-3}$th work

The remaining work done by B in 14-4=10 days.

Now, in 10 days, work done by B= $\frac{x-7}{x-3}$th work

∴ In 1 day, work done by B= $\frac{1}{10}\left[\frac{x-7}{x-3}\right]$th work

And $\frac{1}{10}\left[\frac{x-7}{x-3}\right]=\frac{1}{x}$

=> x=15days

∴ B will finish in 15 days and A will finish in 12 days

25. (a) (A+B)'s one day's work = $\frac{1}{5}$th work

Let A can do job in x days. Then,

A's one day's work = $\frac{1}{x}$th work

And B's one day's work= $\frac{1}{5}-\frac{1}{x}=\frac{x-5}{5x}$th work

Now, (2A)'s work+$\left[\frac{1}{3}\right]$B's work = $\left[\frac{1}{3}\right]$rd work

=>$\frac{2}{x}+\frac{1}{3}\left[\frac{x-5}{5x}\right]=\frac{1}{3}$ =>x=$\frac{25}{4}=6\frac{1}{4}$

26. (a) 1 man's 1 day's work= $\frac{1}{48}$;

1 woman's 1 day's work= $\frac{1}{60}$.

6 men's 2 day's work=$\left[\frac{6}{48}X2\right]=\frac{1}{4}$.

Remaining work=$\left[1-\frac{1}{4}\right]=\frac{3}{4}$.

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

So, $\frac{3}{4}$work will be done in 3 days by $\left[60X\frac{3}{4}X\frac{1}{3}\right]$=15 women.

27. (a) Let a man's 1 day's work=x and 1 boy's 1 day's work =y.

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

Solving these two equation, we get:

x= $\frac{1}{100}$and y= $\frac{1}{200}$.

∴ (15men+20 boys)'s 1 day's work

=$\left[\frac{15}{100}+\frac{20}{200}\right]=\frac{1}{4}$.

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

28. (b) Let x additional men employed.
117 men were supposed to finish the hole work in 46x8=368 hours.
But 117 men completed $\frac{4}{7}$of the work in 33x8=264 hours
∴ 117 men and could complete the work in 462 hours.
Now (117+x) men are supposed to do $\frac{3}{7}$of the working 9 hours a day, in 13x9=117 hours, so as to finish the work in time.
i.e.(117+x) men are supposed to complete the whole work in 117x$\frac{7}{3}$ = 273 hours.
∴ (117+x) x 273=117 x 462
=> (117+x) x7=3 x 462
=> x+117=3 x 66=198=> x=81
∴ Required number of additional men to finish the work in time=81.

29. (b) Let Sunil finished the job in x hours.
Then, Ramesh will finish the job in $\frac{x}{2}$hours.
We have, x -$\frac{x}{2}$ =3 => x=6
Therefore, Sunil finishes the job in 6 hours and Ramesh in 3 hours.
Work done by both of them in 1hour= $\frac{1}{6}+\frac{1}{3}=\frac{1}{2}$
They together finish the piece of work in 2 hours.

30. (c) Suppose the X men must be discharge at the end of the 18th day.
100x10+150=1 200x7+(200-X)x 5=100x30
5X=550 => 110 men

31. (b) Given 12 men=15 women=18 boys
∴ 1 Man=1.5 boys, 1 woman=6/5 boys.
Now, 5W+6B=12B.
Required answer is calculated as follows:
Total no.of boys reqd=18x$\left[\left(\frac{15}{16}\right)X\left(\frac{8}{9}\right)\right]$=15 boys
The number of boys already present=12.
Hence, 3 boys more required.
But 3 boys=2men.
So, 2 men are required.

32. (c)

	Men	Women	Children
Work	3	2	1
Numbers	20	30	36

Ratio of wages=(3x20):(2x20):(1x36)=5:5:3
Total wages of men= $\frac{5}{13}$x780=`300
∴ Wages of a man=`15
Similarly, wages of woman=`10
And wages of child=`5
Total waves of 15 men, 21 women and 30 children=15x15+21x10+30x5=585
Total wages for 2 week=□1170

33. (a) Let 1 man's 1 day's work=x& 1 boy's 1 day's work=y
Then, 2x+3y= $\frac{1}{10}$and 3x+2y=$\frac{1}{8}$
Solving, we get:x= $\frac{7}{200}$and y= $\frac{1}{100}$
∴ (2men+1 boy)'s 1 day's work
=$\left[2X+\frac{7}{200}\times\frac{1}{100}\right]$=$\frac{16}{200}=\frac{2}{25}$
So, 2 men and 1 boy together can finish the work in 12$\frac{1}{2}$days.

34. Ratio of time taken by A and B=160:100=8.5
Suppose, B alone takes x days to do the job then, 8:5::12:x
8x=5x12

x=$\frac{5X12}{8}$ = $7\frac{1}{2}$days.

35. (a) Let 1 man's 1 day's work=x
1 boy's 1 day's work=y
12x+16y=$\frac{1}{5}$
13x+24y= $\frac{1}{4}$
Solving these two equation we get,
X=$\frac{1}{100}$, y=$\frac{1}{200}$
Required ration=2:1

36. (a) If x complete a work in x days. Y will do the same task in 3x days.
3x-x=40
=> x=20
Y will finish the task in 60 days
(x+y)'s 1 day's work
=$\frac{1}{20}$+$\frac{1}{60}$ = $\frac{1}{15}$
Both of them will complete the work in 15 days.

37. (c) part filled by (A+B+C) in 1 hour
=$\left[\frac{1}{5}+\frac{1}{10}+\frac{1}{30}\right]$= $\frac{1}{3}$
∴ All the three pipes together will fill the tank in 3 hours.

38. (c) Let pipe A fills the cistern in x minutes.
Therefore, pipe B will fill the cistern in (x+5) minutes.
Now, $\frac{1}{x}$+$\frac{1}{x+5}$ = $\frac{1}{6}$ =>x=10
Thus, the pipes A and B can fill the cistern in 10 minutes and 15 minutes, respectively

39. (c) Net part filled in 1 hour=$\left[\frac{1}{5}+\frac{1}{6}+\right.$
112= 1760.
∴ The tank will be full in $\frac{60}{17}$hrs i.e., $3\frac{9}{17}$hrs.

40. (d) Part filled by first tap in one min= $\frac{1}{12}$th
Part filled by second tap in one min= $\frac{1}{18}$th
Now, 2 $\left[\frac{1}{12}+\frac{1}{18}\right]$+ unfilled part=1
=>unfilled part= $\frac{13}{18}$th
∴$\frac{1}{18}$th part of tank is filled by second tap in 1 min.
∴$\frac{13}{18}$th part of tank is filled by second tap in 1 min.
=18$X\frac{13}{18}$min=13 min.

41. (c) Let B can fill the cistern in x min. Then, then A can fill the cistern in $\frac{x}{3}$min
Given x-$\frac{x}{3}$ =10 => x=15 min

42. (b) cistern filled by both pipes in one hour
=$\frac{1}{14}$+$\frac{1}{16}$ = $\frac{15}{112}$th
∴ Both pipes filled the cistern in $\frac{112}{15}$hrs.
Now, due to leakage both pipes filled the cistern in $\frac{112}{15}$+$\frac{32}{60}$ = 8 hrs.
∴ Due to leakage, filled part in one hour= $\frac{1}{8}$
∴part of cistern emptied, due to leakage in one hour=$\frac{15}{112}$ - $\frac{1}{8}$ = $\frac{1}{112}$th
In 112 hr, the leakage would empty the cistern.

43. (b) In one min,(A+B) fill the cistern= $\frac{1}{10}$+$\frac{1}{15}$=$\frac{1}{6}$th
In 3 min,(A+B) fill the cistern= $\frac{3}{6}$ = $\frac{1}{2}$th
Remaining part=1-$\frac{1}{2}$ = $\frac{1}{2}$
∴$\frac{1}{10}$th part filled by A in one coin

∴ $\frac{1}{2}$nd part filled by A in 10x $\frac{1}{2}$ = 5 min.

∴Total time=3+5=8 min

44. (a) Work done by the waste pipe in 1 minutes

= $\frac{1}{20}$ - $\left[\frac{1}{12}+\frac{1}{15}\right]$=-$\frac{1}{10}$[-ve sign means emptying]

∴waste pipe will empty the full cistern in 10 minutes.

45. (c) Let the required time be x hours, then$\frac{1}{12}\left[\frac{3}{4}x\right]+\frac{1}{15}\left[x-\frac{3}{4}x\right]+\frac{1}{12}\left[x-\right.$ $34x$=1

=>$\frac{x}{16}+\frac{x}{60}+\frac{x}{48}$ = 1

=> x=10 hours

46. (c) Proportion of the volume of the tank filled by both the pipes in 4 min=4$\left[\frac{1}{15}+\right.$ 110=23rd of the tank. Volume of the tank filled by all the pipes working together=$\frac{1}{15}+\frac{1}{10}-\frac{1}{5}=\frac{-1}{30}$

i.e.$\frac{1}{30}$tank is emptied in 1 min.

∴$\frac{2}{3}$rd of the tank can be emptied in$\frac{2X30}{3}$ = 20min

47. (a) Let cistern will be full in x min. Then, part filled by B in x min + part filled by A in (x-4)
min =1

=>$\frac{x}{16}+\frac{x-4}{12}$= 1

=> x= $\frac{64}{7}$ = 9$\frac{1}{7}$hours.

48. (a) Let A was turned off after x min. Then cistern filled by A in x min + cistern filled by B in(x+23)min=1

=>$\frac{x}{45}+\frac{x+23}{40}$ = 1

=> 17x+207=360 => x=9 min.

49. (a) Let cistern will be full in x min. Then, part filled by A in x min + part filled by B in(x-1) min + part filled by C in(x-2) min=1

=>$\frac{x}{3}+\frac{x-1}{4}+\frac{x-2}{6}$ = 1

=>9x=19 =>x= $\frac{19}{9}$ = 2$\frac{1}{9}$min

50. (c) If both the pumps are opened together, then the tan will be emptied because the working efficiency of pump empting is more than that of the pump filling it. Thus in 1 min net proportion of the volume of tank filled

=$\left[\frac{1}{8}-\frac{1}{16}\right]$= $\frac{1}{16}$

Or the tank will be emptied in 16 min

=>$\frac{1}{2}$tank will be emptied in 8 min.

51. (a) Let the filling capacity of pump be x m^3/min.

Then, emptying capacity of pump

=(x+10)m^3/min

∴$\frac{2400}{x}-\frac{2400}{x+10}$= 8

=> x^2+10x-3000=0

=> (x-50)(x+60)=0 =>x=50 m^3/min.

52. (c) **Hint:** Let the time be t hours after 1a.m.

∴ $\frac{t}{4}+\frac{(t-1)}{5}-\frac{(t-2)}{2}=0\frac{t}{4}+\frac{t}{5}-\frac{t}{4}=\frac{1}{5}$-1

=> t=16

16 hours from 1 a.m. is 5 p.m.

53. (c) Suppose pipe A alone takes x hours to fill the tank. Then pipes B and C will take $\frac{x}{2}$and $\frac{x}{4}$hours respectively to fill the tank.

∴ $\frac{1}{x}+\frac{2}{x}+\frac{4}{x}=\frac{1}{5}$ =>$\frac{7}{x}=\frac{1}{5}$ => x=35 hrs.

54. (a) Part filled in 10 hours

=10$\left[\frac{1}{15}+\frac{1}{20}-\frac{1}{25}\right]$=$\frac{23}{30}$.

Remaining part=$\left[1-\frac{23}{30}\right]$=$\frac{7}{30}$.

(A+B)'s 1 hour work=$\left[\frac{1}{15}+\right.$ $120=760$ $760:730::1:x$ or x=$\left[\frac{7}{30}X1X\frac{60}{7}\right]$=2 hours.

∴ The tank will be full in(10+2) hrs=12hrs.

55. (c) (A+B)'s 1 hour's work=$\left[\frac{1}{12}+\right.$ $115=960=320$

(A+C)'s 1 hour's work=$\left[\frac{1}{12}+\frac{1}{20}\right]=\frac{8}{60}=\frac{2}{15}$

Part filled in 2 hrs = $\left[\frac{3}{20}+\frac{2}{15}\right]=\frac{17}{60}$

Part filled in 6 hrs = $\left[3X\frac{17}{60}\right]=\frac{17}{20}$

Remaining part = $\left[1-\frac{17}{20}\right]=\frac{3}{20}$

Now, it is the turn of A and B and $\frac{3}{20}$part is filled by A and B in 1 hour.

∴ Total time taken to fill the tank=(6+1) hrs=7hrs.

56. (c) Work done by the waste pipe in 1 minute.

=$\frac{1}{15}$ - $\left[\frac{1}{20}-\frac{1}{24}\right]=\left[\frac{1}{15}-\frac{11}{120}\right]$= - $\frac{1}{40}$. [-ve sign means emptying]

∴ Volume of$\frac{1}{40}$part = 3 gallons.

Volume of whole=(3x40)gallons=120 gallons.

57. (d) Pipe 1 (Hot) →3+X, X→Pipe 2(Cold)

Together $\frac{X(X+3)}{2X+3}=6\frac{2}{3}$min.

=$\frac{X(X+3)}{2X+3}=6\frac{2}{3}$min. = $\frac{20}{3}$

40X+60=3X(X+3)

=> 40X+60=$3X^2$+9X

=>$3X^2$-31X-60=0

=> X=12 minutes

58. (a) Radius of the pipe(r)=4cm=0.04meter

Volume of water flowing out per sec =πr^2X rate of flow

=$\frac{22}{7}$x 0.04^2x 3 cu meters=0.0151 cubic m

Time taken to fill the tan=40x30x$\frac{8}{0.0151}$sec

=$\frac{40X30X8}{0.01}$ x $\frac{1}{3600}$hours = 176.6 hours.

59. (c) Let h be the length of water column discharged in 1 hour or 1 minute.

Volume discharged by the 4 pipes=Volume discharged by the single pipe.

4 x π x$(1.5)^2$x h=π x$(r)^2$x h

∴ r^2=9 ∴ r=3, Diameter=6cm.

60. (a) Rate of admission of water

= $\frac{2}{6}$tonnes/min = $\frac{1}{3}$tonnes/min

Rate of pumping out of water

= $\frac{12}{60}$tonnes/min = $\frac{1}{5}$tonnes/min.

Rate of accumulation = $\left[\frac{2}{6}-\right.$ 1260tonnes/min.

Time to accumulate 80 tonnes of water =

$\frac{Amout\ of\ water}{Accumulation\ rate}=\frac{80}{\left[\frac{1}{3}-\frac{1}{5}\right]}$=600min=10hours

∴ Average sailing rate so as avoid sinking

=$\frac{Distance}{time}=\frac{55}{10}$km/h=5.5km/h

61. (b) Let B closed after x minutes. Then part filled by (A+B) in x min. + part filled by A in(18-x)min=1.

∴ x$\left[\frac{1}{24}+\frac{1}{32}\right]$+(18-x) X $\frac{1}{24}$ = 1

or$\frac{7x}{96}+\frac{18-x}{24}$ = 1 or, 7x+4(18-x)=96

or, 3x=24 ∴ x=8.

So, B should be closed after 8 min.

Direct formula:
Pipe B should be closed after
$\left[1-\frac{18}{24}\right]$X32 = 8min

62. (b) A's one day's work = $\frac{1}{8}$th work
B's one day's work = $\frac{1}{3}$rd work
∴ A's 4 day's work=4 x $\frac{1}{8}$ = $\frac{1}{2}$nd work
∴ In next two days, total wall = $\frac{1}{2}$ + 2$\left[\frac{1}{8}\right]$- 2$\left[\frac{1}{3}\right]$
=$\frac{1}{12}$th wall
Remaining wall= 1- $\frac{1}{12}$ = $\frac{11}{12}$th
Now, $\frac{1}{8}$th wall is built up by A is one day.
∴ $\frac{11}{12}$th wall is built up by A in 8x$\frac{11}{12}$ = 7$\frac{1}{3}$days.

63. (b) Go through option
140x4=(140+120+100+…+20)
560=560
Alternatively: Let n be the initial number of worker then
n x 4 = n+(n-20) + (n-40) +…+ (n-120)
4n=7n-420
=> 3n=420
=> n=140 workers

64. (b) Let the work (in units) done by a man and a woman in one day be M and W respectively. Total work(in units)=10(M+6W)=10M+60W
=>$\frac{10M+60W}{8W}$ - $\frac{10M+60W}{2M}$ = 5
$\frac{5M}{4W}$ - $\frac{30W}{M}$ = $\frac{5}{2}$
On putting $\frac{M}{W}$ = x, we get
$\frac{5x}{4}$ - $\frac{30}{x}$ = $\frac{5}{2}$=> x=6 or $\frac{M}{W}$ = 6
∴ The efficiency of a man is greater than that of a woman by 50%.

65. (b) Ratio of number of men, women and children
= $\frac{18}{6}$: $\frac{10}{5}$: $\frac{12}{3}$ = 3x : 2x : 4x
∴ (3x+2x+4x)=18
∴ x=2
Therefore, number of women=4
Share of all women= $\frac{10}{40}$x 4000=` 1000
(∴ 18+10+12=40)
∴ share of each woman= $\frac{1000}{4}$ =` 250

66. (b) Let B can finish the work in x days.
Then A can finish the work in(x-3) days.
B's one day's work = $\frac{1}{x}$th work
A's one day's work = $\frac{1}{x-3}$th work
A's 4 day's work = $\frac{4}{x-3}$th work
Remaining work = 1- $\frac{4}{x-3}$ = $\frac{x-7}{x-3}$th work
The remaining work done by B in 14-4=10 days.
Now, in 10 days work done by B= $\frac{x-7}{x-3}$th work
∴ In 1 day, work done by B= $\frac{1}{10}\left[\frac{x-7}{x-3}\right]$th work
and$\frac{1}{10}\left[\frac{x-7}{x-3}\right]$= $\frac{1}{x}$
=> B will finish in 15 days and A will finish in 12 days

67. (b) Suppose large pump takes t hours to fill a tank
∴ 1 hour work of large pump fills = $\frac{1}{t}$part
1 hour work of each small pump fills= $\frac{1}{t}$ x $\frac{2}{3}$
1 hour work of each 4 pump fills
= $\frac{1}{t}$ + 3 x $\frac{2}{3t}$ = $\frac{3}{t}$

Therefore, $\frac{3}{t}$part is filled by all 4 pumps in 1 hour

∴ Whole tank woul be filled in 1 x$\frac{t}{3} = \frac{t}{3}$h this is 1/3 of the time taken by large pump i.e. t hour

68. (b) Let the inlets be A, B, C and D
A+B+C=8.33%
B+C+D=6.66%
A+D=5%
Thus 2A+2B+2C+2D=20%
And A+B+C+D=10%
→ 10 minutes would be required to fill the tank completely.

69. (a) More the no. of men less time they take to complete work
Let x men are added.
$\frac{75}{75+x} = \frac{18}{90}$(Inverse Proportion)
$\frac{75}{75+x} = \frac{1}{5}$
375-75=x
X=300

70. (c) (A+B+C)'s 1 day's work= $\left[\frac{1}{40}\right]^{th}$part of whole work
(A+B+C)'s 16 day's work= $\frac{16}{40} = \frac{2}{5}$of whole work (B+C) completes remaining work in 40 day's (B+C) completes $\left[\frac{3}{5}\right]^{th}$part of work in 40 days
(B+C) completes whole work in $\frac{40X5}{3}=\frac{200}{3}$days
$\frac{1}{A}+\frac{1}{B}+\frac{1}{c}=\frac{1}{40}$
$\frac{1}{A}+\frac{3}{200}=\frac{1}{40}$
$\frac{1}{A}=\frac{1}{40}-\frac{1}{200}=\frac{4}{200}$
$\frac{1}{A}=\frac{1}{50}$
A alone can complete whole work in 50 days.

71. (c) $\frac{1}{A}+\frac{1}{B}+\frac{1}{c}=\frac{1}{6}$
(A+B+C) can do $\frac{2}{6} = \frac{1}{3}$part of work in 2 days.
Remaining work = 1- $\frac{1}{3} = \frac{2}{3}$
In one hour (A+B) can do $\frac{2}{3X7}$part of work
$\frac{1}{c}=\frac{1}{6}-\left[\frac{1}{B}+\frac{1}{C}\right]$
$\frac{1}{C}=\frac{1}{6}-\frac{2}{21}=\frac{3}{42}$
C=14 hours

72. (c) Let Pratibha can finish the work in x days then, Sonia can finish the same work in 3x day
According to question
3x-x=60
2x=60 => x=30
Pratibha and Sonia can individually complete the work in 30 days and 90 days respectively.

73. (c) (A+B)'s 1 day's work = $\frac{1}{10}$; Cs 1 day's work= $\frac{1}{50}$
(A+B+C)'s 1 day's work= $\left[\frac{1}{10}+\frac{1}{50}\right]=\frac{6}{10}$
$=\frac{3}{25}$…(1)
Also, A's 1 day's work=(B+C)'s 1 day's work…(2)
From (1) and (2), we get:2 x (A's 1 day's work)=$\frac{3}{25}$
=> A's 1 day's work= $\frac{3}{50}$
∴ B's 1 day's work=$\left[\frac{1}{10}-\frac{3}{50}\right]=\frac{2}{50}=\frac{1}{25}$
So, B alone could do the work in 25 days.

74. (c) A's 1 day's work= $\frac{1}{10}$and B's 1 day's work= $\frac{1}{15}$
∴ (A+B)'s 1day's work=$\left[\frac{1}{10}+\frac{1}{15}\right]=\frac{1}{6}$

So both together will finish the work in 6 days.

75. (b) Let the required number of days be x.
Then, more men, more km(Direct proportion) more days, more km(Direct proportion)men

Men	12	:	28 ::1.5 : 12
Days	7	:	x

∴ 12 X 7 X 12=28 X x X 1.5

$x=\frac{12X7X12}{28X1.5}=24$

76. (d) (x+y)'s 6 day's work= $\left[\frac{1}{30}X6\right]=\frac{1}{5}$

Remaining work=$\left[1-\frac{1}{5}\right]=\frac{4}{5}$

Now, $\frac{4}{5}$work is done by y in 32 days.

Whole work will be done by y in $\left[32X\frac{5}{4}\right]$=40 days.