MATHS

BOOKS - S CHAND IIT JEE FOUNDATION

TIME AND WORK

Solved Examples

1. A person can do a job as fast as his two sons working together. If one son does the job in 6

days and the other in 12 days, how many days does it take the father to do the job ?

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2. A and B can do a piece of work in 8 days, B and C can do the same work in 12 days. If A, B and C can complete the same work in 6 days, in how many days can A and C complete the same work?

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3. A and B together can do a work in 8 days, B and C together in 6 days while C and A together in 10 days, if they all work together, the work will be completed in :

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4. Kamal can do a work n 15 days. Bimal is 50% more efficient than Kamal. The number of days, Bimal will take to do the same piece of work is $7\frac{1}{2}$ b. 10 c. 14 d. 12

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5. A is three times more efficient worker than B and is therefore able to complete a work in 60 days less than B. What is the number of days that a and B together will take to complete the work ?

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6. A and B can do a piece of work in 45 and 40 days respectively. They began the work

together but A leaves after some das and B finished the remaining work in 23 days. After how many days did A leave?

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7. A certain number of men can do a work in 60 days. If there were 8 men more it could be finished in 10 days less. How many men are there?

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8. A can finish a work in 24 days, B in 9 days and C in 12 days. B and C start the work but they are forced to leave after 3 days. The remaining work was done by A in

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9. A and B working separately can do a piece of work in 10 days and 15 days respectively. If they work on alternate days beginning with A, in how many days will the work be complete?

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10. A can do $\frac{1}{2}$ of a piece of work in 5 days, B can do $\frac{3}{5}$ of the same work in 9 days and C can do $\frac{2}{3}$ work in 8 days. In how many can the three of them together do the work ?

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11. If 8 men or 12 women can do a piece of work in 10 days, then what is the number of days

required by 4 men and 4 women to finish the work ?

A. 12 days

B. 22 days

C. 10 days

D. None of these

Answer: 12 days.

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12. How long will two pipes together take to fill a cistern which they can separately fill in 20 and 25 minutes ?

A. $11\frac{1}{9}$ min

B. $10\frac{1}{9}$ min

C. $11\frac{6}{9}$ min

D. $11\frac{2}{9}$ min

Answer: $11\frac{1}{9}$ **min**

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13. An electric pump can fill a tank in 3 hours because of a leak in the tank it took $3\frac{1}{2}$ hours to fill the tank if the tank is full, how much time will the leak take to empty it?

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14. Two taps can fill a tank in 15 and 12 minutes respectively. A third tap can empty it in 20 minutes. If all the taps are opened at the same

time, then in how much time will the tank be filled ?

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15. There are taps to fill a tank and a third to empty it. When the third tap is closed, they can fill the tank in 10 minutes and 12 minutes respectively. If all the three taps are opened, the tank is filled in 15 minutes. If the first two taps are closed, in what time can the third tap empty the tank when it is full ?

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16. Two pipes A and B can fill a cistern in $37\left(\frac{1}{2}\right)$ and 45 min, respectively. Both pipes are opened. The cistern will be filled in just half an hour, if pipe B is turned off after (a) 5 min

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17. Two pipes A and B can fill a cistern in 20 minutes and 25 minutes respectively Both are

opened together at the end of 5 minutes B is turned off What is the total time taken to fill the cistern ?

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Question Bank 13 A

1. A and B together can complete a piece of work in 16 days while B and C together can complete the same work in 12 days and A and C together in 24 days. Find out the number of

days that A will take to compete the work, working alone.

A. 36 days

B. 48 days

C. 96 days

D. 80 days

Answer: C

2. A and B together can do a piece of work in 8 days. B alone can do it in 12 days. B alone works at it for 4 days. In how many more days after that could A alone complete it.

A. 15 days

B. 18 days

C. 16 days

D. 20 days

Answer: C

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3. A man and a boy can do a piece of work in 24 days. If the man works alone for last 4 days, it is complete in 5 days. How long would the boy take to do it alone ?

A. 120 days

B. 20 days

C. 80 days

D. 36 days

Answer: A

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4. 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 ? 18 $days$ b. 24 $days$ c. 30 $days$ d. 36 $days$

A. 18 days

B. 24 days

C. 30 days

D. 36 days

Answer: A

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5. A and B can do a job together in 7 days. A is $1\frac{3}{4}$ times as efficient as B. the same job can be done by A alone in: $9\frac{1}{3}days$ b. $11\ days$ c. $12\frac{1}{4}$ d. $16\frac{1}{3}\ days$

A. $\frac{49}{4}$ days

B. $\frac{49}{3}$ days

C. 11 days

D. $\frac{28}{3}$ days

Answer: C

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6. I can do a piece of work in 8 days, which can be done by you in 10 days How long would it take to do it if we work together ?

A. $4\frac{4}{9}$ days

B. $5\frac{3}{9}$ days

C. $5\frac{1}{2}$ days

D. $4\frac{7}{9}$ days

Answer: A

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7. X is twice as good as a workman as Y. X finished a piece of work in 3 hours less than Y.

In how many hours could they have finished that piece of work together ?

A. 3

B. 2

C. 4

D. 5

Answer: B

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8. A can cultivate $\frac{2}{5}$ the of a land in 6 days and B can cultivate $\frac{1}{3}$ rd of the same land in 10 days. Working together A and B can cultivate $\frac{4}{5}$ the of the land in

A. 4 days

B. 5 days

C. 8 days

D. 10 days

Answer: C

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9. The time taken by 4 men to complete a job is double the time taken by 5 children to complete the same job. Each man is twice as fast as a woman. How long will 12 men, 10 children and 8 women take to complete a job, given that a child would finish the job in 20 days.

A. 2 days

B. $2\frac{1}{8}$ days

C. 4 days

D. 1 day

Answer: D

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

A. 7 days

B. 8 days

C. 9 days

D. 10 days

Answer: B

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11. A can do a piece of work in 20 days and B in 40 days. A begins the work and there after

they work alternately one on each day. One which day will the work be completed ?

A. 24th day

B. 25th day

C. 26th day

D. 27th day

Answer: D

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12. A can complete a work in 9 days, B in 10 days and C in 15 days. B and C together started the work but left the work after 2 days. The time taken to complete the remaining work by A will be

A. 6 days

B. 8 days

C. 9 days

D. 5 days

Answer: A

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13. A can do a piece of work in 4 hours, B and C together in 3 hours, and A and C together in 2 hours. How long will B alone take to do it? $8\ hours$ b. $10\ hours$ c. $12\ hours$ d. $24\ hours$

A. 10 hours

B. 12 hours

C. 8 hours

D. 24 hours

Answer: B

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14. Ram can do a piece of work in 6 days and Shyam can finish the same work in 12 days. How much work will be finished if both work together for 2 days ?

A. One - fourth of the work

B. One - third of the work

C. Half of the work

D. Whole of the work

Answer: C

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15. A is twice as fast a workman as B and together they finish a piece of work in 14 days. In how many days can A alone finish the work ?

A. 18 days

B. 21 days

C. 24 days

D. 27 days

Answer: B

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16. A does half as much work as B in one-sixth of the time.If together they take 10 days to complete a work,how much time shall B alone take to do it?

A. 70 days

B. 30 days

C. 40 days

D. 50 days

Answer: C

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17. A work could be completed in 100 days by some workers. However, due to the absence of

10 workers, it was completed in 110 days. The original number of workers was:

A. 100

B. 110

C. 55

D. 50

Answer: B

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18. A man and a boy received 800 as wages for 5 days for the work they did together. The man's efficiency in the work was three times that of the boy. What are the daily wages of the boy? $Rs.40$ b. $Rs.44$ c. $Rs.56$ d. $Rs.76$

A. Rs. 76

B. Rs. 56

C. Rs. 44

D. Rs. 40

Answer: D

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19. a certain number of persons can complete a piece of work in 55 days. If there were 6 persons more the work could be finished in 11 days less. How many persons were originally there ?

A. 17

B. 24

C. 30

D. 22

Answer: B

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20. A can complete a work in 18 days, B can do the same work in half the time as A. What part of work can be completed by both of them working together in 1 day

A. $\frac{1}{6}$

B. $\frac{2}{5}$

C. $\frac{1}{9}$

D. $\frac{2}{7}$

Answer: A

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21. A, B and C can complete a work in 10, 12 and 15 days respectively. They started the work together. But A left the work 5 days before its completion. B also left the work 2 days after A

left. In how many days was the work completed? 4 b. 15 c. 7 d. 8

A. 4

B. 5

C. 7

D. 8

Answer: C

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22. A and B together can complete a work in 12 days. A alone can complete it in 20 days. If B does the work only for half a day daily, then in how many days A and B together will complete the work? $110\,days$ b. $11\,days$ c. $15\,days$ d. $20\,days$

A. 10 days

B. 11 days

C. 15 days

D. 20 days

Answer: C

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23. A, B and C can do a piece of work in 20, 30 and 60 days respectively. In how many days can A do the work if he is assisted by B and C on every third day? $12\,days$ b. $15\,days$ c. $16\,days$ d. $18\,days$

A. 12 days

B. 15 days

C. 16 days

D. 18 days

Answer: B

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24. 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 ? $5\frac{5}{11}$

b. $5\frac{6}{11}$ c. $6\frac{6}{11}$ d. $6\frac{6}{11}$

A. $5\frac{5}{11}$

B. $5\frac{6}{11}$

C. $6\frac{5}{11}$

D. $6\frac{6}{11}$

Answer: A

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25. If 'b' men can do a piece of work in 'c' days, then the number of days taken by 'd' men to do $\frac{1}{m}$th of the same piece of work be

A. $\frac{bc}{d+m}$

B. $\frac{bc}{dm}$

C. $\frac{b+c}{d+m}$

D. $\frac{b+c}{dm}$

Answer: B

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26. If 16 men or 20 women can do a piece of work in 25 days, in what time will 28 men and 15 women do it ?

A. $14\frac{2}{7}$ days

B. $33\frac{1}{3}$ days

C. $18\frac{3}{4}$ days

D. 10 days

Answer: D

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27. If one man or two women or three boys can do a piece of work in 22 days, then the same piece of work will be done by 1 man, 1 boy and 1 women in

A. 8 days

B. 12 days

C. 6 days

D. 11 days

Answer: B

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

A. 40 days

B. 35 days

C. 30 days

D. 45 days

Answer: C

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29. A man completes $\frac{5}{8}$ of a job in 10 days. At this rate, how many more days will it take him to finish the job? 5 b. 6 c. 7 d. $7\frac{1}{2}$

A. 5

B. 6

C. 7

D. $7\frac{1}{2}$

Answer: B

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30. 10 men and 15 women finish a work in 6 days. One man alone finishes that work in 100 days. In how many days will a women finish the work ?

A. 125 days

B. 150 days

C. 90 days

D. 225 days

Answer: D

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Question Bank 13 B

1. 10 identical taps fill a tank in 24 minutes. To fill the tank in 1 hour, how many taps are required to be used ?

A. 2

B. 4

C. 6

D. 8

Answer: B

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2. Two pipes can fill a tank in 20 minutes and 30 minutes respectively. If both the pipes are

opened simultaneously, then the tank will be filled in

A. 10 minutes

B. 12 minutes

C. 15 minutes

D. 25 minutes

Answer: B

3. A cistern can be filled up by one pipe in 12 hours and by another in 8 hours. Both the pipes are kept open for $2\frac{1}{2}$ hours. The part of the cistern filled up is

A. $\frac{25}{48}$

B. $\frac{5}{6}$

C. $\frac{25}{36}$

D. $\frac{12}{25}$

Answer: A

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4. A tap can fill a tank in 25 minutes and another tap can empty it in 50 minutes. If both are opened together simultaneously, then the tank will be filled in

A. 20 minutes

B. 30 minutes

C. 40 minuts

D. 50 minutes

Answer: D

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5. Tap A can fill a water tank in 12 min, tap B will fill the same tank in 10 min and tap C can empty the tank in 6 min. If all the three taps are opened together, in how many minutes will the tank be completely filled up or emptied ?

A. 15 min

B. 30 min

C. 45 min

D. 60 min

Answer: D

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6. One pipe can fill a tank three times as fast as another pipe. If together the two pipes can fill the tank in 36 minutes then the slower pipe alone will be able to fillthe tank in.

A. 81 minutes

B. 108 minutes

C. 144 minutes

D. 192 minutes

Answer: C

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7. A cistern has two pipes. One can till it with water in 8 hours and other can empty it in 5 hours. In how many hours will the cistern be

emptied if both the pipes are opened together when $\frac{3}{4}$ of the cistern is already full of water?

$3\frac{1}{3}hours$ b. $6\ hours$ c. $10\ hours$ d. $13\frac{1}{3}hours$

A. $13\frac{1}{3}$ hours

B. 10 hours

C. 6 hours

D. $3\frac{1}{3}$ hours

Answer: B

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8. 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. 12 minutes

B. 10 minutes

C. 8 minutes

D. 16 minutes

Answer: B

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9. Two pipes P and Q would fill an empty cistern in 24 minutes and 32 minutes respectively.Both the pipes being opened together,find when the first pipe must be turned off so that the empty cistern may be just filled in 16 minutes.

A. After 10 minutes

B. After 12 minutes

C. After 14 minutes

D. After 11 minutes

Answer: B

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10. There are three pipes connected with a tank. The first pipe can fill 1/2 part of the tank in 1 h, second pipe can fill 1/3 part of the tank in 1 h. Third pipe is connected to empty the

tank. After opening all the three pipes, 7/12 part of the tank can be filled in 1 h, then how long will third pipe take to empty the full tank?

A. 3 hours

B. 4 hours

C. 5 hours

D. 6 hours

Answer: B

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11. A pump can fill a tank in 2 hours. Due to a leak in the tank it takes $2\frac{1}{3}$ hours to fill the tank. The leak can empty the full tank in

A. $2\frac{1}{3}$ hours

B. 7 hours

C. 8 hours

D. 14 hours

Answer: D

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12. A pipe can fill a tank in x hours and another pipe can empty it in $(y > x)$ hours. If both the pipes are open, in how many hours will the tank be filled? $(x - y)hours$ b. $(y - x)\ hours$ c. $\frac{xy}{x - y}hours$ d. $\frac{xy}{y - x}hours$

A. $(x - y)$ hours

B. $(y - x)$ hours

C. $\frac{xy}{(x - y)}$ hours

D. $\frac{xy}{(y - x)}$ hours

Answer: C

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13. A tank can be filled by a tap in 20 minutes and by another tap in 60 minutes. Both the taps are kept open for 10 minutes and then the first tap is shut off. After this, the tank will be completely filled in

A. 10 minutes

B. 12 minutes

C. 15 minutes

D. 20 minutes

Answer: D

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14. A water tank is $\frac{2}{5}$th full. Pipe A can fill the tank in 10 minutes and pipe B can empty it in 6 minutes. If both the pipes are open, how long will it take to empty or fill the tank completely ?

A. 6 minutes to empty

B. 6 minutes to fill

C. 9 minutes to empty

D. 9 minutes to fill

Answer: A

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15. Pipes A and B can fill a tank in 5 and 6 hours, respectively.

Pipe C can empty it in 12 hours. The tank is half

full. All the

three pipes are in operation simultaneously. After how much

time, the tank will be full?

A. $3\frac{9}{17}$ hours

B. 11 hours

C. $2\frac{8}{11}$ hours

D. $1\frac{13}{17}$ hours.

Answer: D

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Self Assessment Sheet 13

1. A alone can complete a piece of work in 6 days and B alone can complete the same piece of work in 12 days. In how many days can A and B together complete the same piece of work ?

A. 5 days

B. 4 days

C. 3 days

D. 2 days

Answer: B

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2. Kamal can do a work n 15 days. Bimal is 50% more efficient than Kamal. The number of days, Bimal will take to do the same piece of work is $7\frac{1}{2}$ b. 10 c. 14 d. 12

A. 10

B. $10\frac{1}{2}$

C. 12

D. 14

Answer: A

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3. A man and a boy can do a piece of work in 24 days. If the man works alone for the last 6 days, it is completed in 26 days. How long would the boy take to do it alone? a. 20 days b. $24\ days$ c. $36\ days$ d. $72\ days$

A. 72 days

B. 20 days

C. 26 days

D. 36 days

Answer: D

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4. A and B together can do a piece of work in 6 days. A alone can do it in 10 days. What time will B require to do it alone ?

A. 20 days

B. 15 days

C. 25 days

D. 30 days

Answer: B

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5. A' can do a piece of work in 4 days and B in 12 days. In how many days can A and B together complete the same piece of work ?

A. 7 days

B. 3 days

C. 2 days

D. 4 days

Answer: B

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6. Two men undertake to do a piece of work for Rs. 1400. The first man alone can do this work in 7 days while the second man alone can do

this work in 8 days. If they working together complete this work in 3 days with the help of a boy, how should the money be divided?

$Rs.600,\ Rs.550,\ Rs.250$ b.

$Rs.600,\ Rs.525,\ Rs.275$ c.

$Rs.600,\ Rs.500,\ Rs.300$ d.

$Rs.500,\ Rs.525,\ Rs.375$

A. Rs. 600, Rs. 500 Rs. 300

B. Rs. 600, Rs. 550, Rs. 250

C. Rs. 4600, Rs. 525, Rs. 275

D. Rs. 500, Rs. 525, Rs. 375

Answer: C

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7. A and B can do a piece of work in 8 days, B and C can do the same work in 12 days and A and C complete it in 8 days. In how many days A, B and C can complete the whole work, working together?

A. 8

B. 10

C. 12

D. 16

Answer: A

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8. Two taps can fill a tub in 5 minutes and 7 minutes respectively. A pipe can empty it in 3 minutes. If all the three are kept open simultaneously, when will the tub be full ?

A. 60 min

B. 85 min

C. 90 min

D. 105 min

Answer: D

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9. A man completes $\frac{4}{9}$ of a job in 12 days. At this rate, how many more days will it take him to finish the job ?

A. 15

B. 10

C. 9

D. $7\frac{1}{2}$

Answer: A

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10. Three workers, working all days can do a work in 10 days, but one of them having other

employment can work only half time. In how many days the work can be finished.

A. 15 days

B. 16 days

C. 12 days

D. 12.5 days

Answer: C

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11. A tap fills a tank in 12 hours and the other empties it in 24 hours. If both are opened simultaneously, then the tank will be filled in :

A. 42 hours

B. 20 hours

C. 24 hours

D. 22 hours

Answer: C

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12. If 15 pumps of equal capacity can fill a tank in 7 days, then how many extra pumps will be required to fill the tank in 5 days ?

A. 6

B. 7

C. 14

D. 21

Answer: A

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13. A tap can fill a tank in 6 hours. After half the tank is filled, three more similar taps are opened. What is the total time taken to fill the tank completely? $3\ hrs.15\ m \in$ b. $3\ hrs\ 45\ m \in$ c. $4\ hrs$ d. $4\ hrs\ 15\ m \in$

A. 3 h 15 min

B. 3 h 45 min

C. 4 h

D. 4 h 15 min

Answer: B

Watch Video Solution

14. If three taps are opened together, a tank is filled in 12 hours. One of the taps can fill it in 10 hours and another in 15 hours. How does the third tap work ?

A. empties in 12 hours

B. empties in 14 hours

C. fills in 12 hours

D. fills in 14 hours

Answer: A

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15. A can do a work in 18 days, B in 9 days and C in 6 days. A and B start working together and after 2 days C joins them. What is the total number of days taken to finish the work ?

A. 4.33

B. 4.5

C. 4.66

D. None

Answer: D