Book For
Railway Recruitment Board

Time and Work

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Q. 1
A can finish a work in 18 days and B can do the same work in 15 days. B worked for 10 days and left the job. In how many days, A alone can finish the remaining work?

[A] 5
[B] \( \frac{1}{2} \)
[C] 6
[D] 8

Answer: Option [C]

Explanation:
B’s 10 day’s work = \( \left( \frac{1}{15} \times 10 \right) = \frac{2}{3} \).

Remaining work = \( \left( 1 - \frac{2}{3} \right) = \frac{1}{3} \).

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

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

Q. 2
A and B together can do a piece of work in 30 days. A having worked for 16 days, B finishes the remaining work alone in 44 days. In how many days shall B finish the whole work alone?

[A] 30 days
[B] 40 days
[C] 60 days
[D] 70 days

Answer: Option [C]

Explanation:
Let A’s 1 day’s work = \( x \) and B’s 1 day’s work = \( y \).

Then, \( x + y = \frac{1}{30} \) and \( 16x + 44y = 1 \).

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

\[ \therefore \text{B's 1 day's work} = \frac{1}{60} \).

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

Q. 3
A is thrice as good as workman as B and therefore is able to finish a job in 60 days less than B. Working together, they can do it in:

[A] 20 days
[B] \( \frac{1}{2} \) days
Answer Option [B]

**Explanation:**
Ratio of times taken by A and B = 1 : 3.
The time difference is (3 - 1) 2 days while B take 3 days and A takes 1 day.
If difference of time is 2 days, B takes \( \left( \frac{2}{1} \times 60 \right) = 90 \) days.

So, A takes 30 days to do the work.

A's 1 day's work = \( \frac{1}{30} \)

B's 1 day's work = \( \frac{1}{90} \)

\((A + B)'s\) 1 day's work = \( \frac{1}{30} + \frac{1}{90} = \frac{2}{45} \)

\( \therefore \) A and B together can do the work in \( \frac{45}{2} = 22 \frac{1}{2} \) days.

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**Q. 4**
A and B can together finish a work 30 days. They worked together for 20 days and then B left. After another 20 days, A finished the remaining work. In how many days A alone can finish the work?

[A] 40

[B] 50

[C] 54

[D] 60

Answer Option [D]

**Explanation:**
\((A + B)'s\) 20 day's work = \( \left( \frac{1}{30} \times 20 \right) = \frac{2}{3} \).

Remaining work = \( 1 - \frac{2}{3} = \frac{1}{3} \).

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

Therefore, the whole work will be done by A in \((20 \times 3) = 60\) days.

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**Q. 5**
A can do a piece of work in 4 hours; B and C together can do it in 3 hours, while A and C together can do it in 2 hours. How long will B alone take to do it?

[A] 8 hours

[B] 10 hours

[C] 12 hours

[D] 24 hours
Answer | Option [C]
---|---
**Explanation:**
A's 1 hour's work = \( \frac{1}{4} \);

(B + C)'s 1 hour's work = \( \frac{1}{3} \);

(A + C)'s 1 hour's work = \( \frac{1}{2} \).

(A + B + C)'s 1 hour's work = \( \left( \frac{1}{4} + \frac{1}{3} \right) = \frac{7}{12} \).

B's 1 hour's work = \( \left( \frac{7}{12} - \frac{1}{2} \right) = \frac{1}{12} \).

\[ \therefore \] B alone will take 12 hours to do the work.

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**Q. 6** Ravi and Kumar are working on an assignment. Ravi takes 6 hours to type 32 pages on a computer, while Kumar takes 5 hours to type 40 pages. How much time will they take, working together on two different computers to type an assignment of 110 pages?

[A] 7 hours 30 minutes  
[B] 8 hours  
[C] 8 hours 15 minutes  
[D] 8 hours 25 minutes

Answer | Option [C]
---|---
**Explanation:**
Number of pages typed by Ravi in 1 hour = \( \frac{32}{6} = \frac{16}{3} \).

Number of pages typed by Kumar in 1 hour = \( \frac{40}{5} = 8. \)

Number of pages typed by both in 1 hour = \( \left( \frac{16}{3} + 8 \right) = \frac{40}{3} \).

\[ \therefore \] Time taken by both to type 110 pages = \( \left( 110 \times \frac{3}{40} \right) \) hours

= 8 \( \frac{1}{4} \) hours (or) 8 hours 15 minutes.

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

[A] 3  
[B] 5  
[C] 7  
[D] Cannot be determined  
[E] None of these
Q. 8
A can lay railway track between two given stations in 16 days and B can do the same job in 12 days. With help of C, they did the job in 4 days only. Then, C alone can do the job in:

[A] $\frac{1}{9}$ days
[B] $\frac{2}{9}$ days
[C] $\frac{3}{9}$ days
[D] 10

Answer Option [C]
Explanation:
$(A + B + C)$'s 1 day's work = $\frac{1}{4}$,

A's 1 day's work = $\frac{1}{16}$, 

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

.'. C's 1 day's work = $\frac{1}{4} \times \left(\frac{1}{16} + \frac{1}{12}\right) = \frac{1}{4} \times \frac{7}{48} = \frac{5}{48}$. 

So, C alone can do the work in $\frac{48}{5} = 9 \frac{3}{5}$ days.

Q. 9
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
Answer Option [B]

**Explanation:**
(20 x 16) women can complete the work in 1 day.
\[ \therefore 1 \text{ woman's 1 day's work} = \frac{1}{320}. \]

(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 \[ = \frac{1}{240} : \frac{1}{320} \]
\[ = \frac{1}{3} : \frac{1}{4} \]
\[ = 4 : 3 \text{ (cross multiplied)}\]

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Q. 10

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] \[\frac{5}{11}\] 

[B] \[\frac{6}{11}\] 

[C] \[\frac{5}{11}\] 

[D] \[\frac{6}{11}\]

Answer Option [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.
\[ \therefore \text{P's 1 hour's work} = \frac{1}{96} \text{ and Q's 1 hour's work} = \frac{1}{80}. \]

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

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

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

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Q. 11

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?
Q. 12  
A, B and C can do a piece of work in 20, 30 and 60 days respectively. In how many days can A do the work if he is assisted by B and C on every third day?

[A] 12 days  
[B] 15 days  
[C] 16 days  
[D] 18 days

Answer  
Option [B]

Explanation:
A's 2 day's work = \( \left( \frac{1}{20} \times 2 \right) = \frac{1}{10} \).

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

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

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

\[ \therefore \text{ Whole work will be done in (3 x 5) = 15 days.} \]
Q. 13

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

Answer  Option [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 = \(\frac{1}{12}\).

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

\((A + B)'s\) 1 day's work = \(\frac{1}{6} + \frac{1}{12}\) = \(\frac{3}{12}\) = \(\frac{1}{4}\).

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

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Q. 14

A alone can do a piece of work in 6 days and B alone in 8 days. A and B undertook to do it for Rs. 3200. With the help of C, they completed the work in 3 days. How much is to be paid to C?

[A] Rs. 375  
[B] Rs. 400  
[C] Rs. 600  
[D] Rs. 800

Answer  Option [B]

Explanation:

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

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

∴ C's share (for 3 days) = Rs. \(3 \times \frac{1}{24} \times 3200\) = Rs. 400.

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Q. 15

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 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

Answer  Option [C]

Explanation:
(A + B)'s 1 day's work = \( \frac{1}{10} \)

C's 1 day's work = \( \frac{1}{50} \)

(A + B + C)'s 1 day's work = \( \left( \frac{1}{10} + \frac{1}{50} \right) = \frac{6}{50} = \frac{3}{25} \) .... (i)

A's 1 day's work = (B + C)'s 1 day's work .... (ii)

From (i) and (ii), we get: 2 x (A's 1 day's work) = \( \frac{3}{25} \)

\[ \Rightarrow A's \ 1 \ day's \ work = \frac{3}{50} . \]

\[ \therefore B's \ 1 \ day's \ work = \left( \frac{\frac{1}{10} - \frac{3}{50}}{2} \right) = \frac{2}{50} = \frac{1}{25} . \]

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

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Q. 16

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

Answer Option [B]

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

Then, \( \left( \frac{1}{x} + \frac{2}{x} + \frac{3}{x} \right) = \frac{1}{2} \)

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

\[ \Rightarrow x = 12. \]

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

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Q. 17

4 men and 6 women can complete a work in 8 days, while 3 men and 7 women can complete it in 10 days. In how many days will 10 women complete it?

[A] 35  
[B] 40  
[C] 45  
[D] 50

Answer Option [B]

Explanation:
Let 1 man's 1 day's work = \( x \) and 1 woman's 1 day's work = \( y \).
Then, \( 4x + 6y = \frac{1}{8} \) and \( 3x + 7y = \frac{1}{10} \).
Solving the two equations, we get: \( x = \frac{11}{400}, y = \frac{1}{400} \)

\[ \therefore 1 \text{ woman's 1 day's work} = \frac{1}{400}. \]

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

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

Q. 18

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

[A] 5 days

[B] 6 days

[C] 10 days

[D] \( \frac{10}{11} \) days

Answer [C]

Explanation:

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

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

Remaining work = \( 1 - \frac{7}{12} = \frac{5}{12}. \)

Now, \( \frac{1}{24} \) work is done by A in 1 day.

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

Q. 19

A can do a work in 15 days and B in 20 days. If they work on it together for 4 days, then the fraction of the work that is left is:

[A] \( \frac{1}{4} \)

[B] \( \frac{1}{10} \)

[C] \( \frac{7}{15} \)

[D] \( \frac{8}{10} \)
Answer Option [D]

Explanation:

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

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

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

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

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Q. 20

A machine P can print one lakh books in 8 hours, machine Q can print the same number of books in 10 hours while machine R can print them in 12 hours. All the machines are started at 9 A.M. while machine P is closed at 11 A.M. and the remaining two machines complete work. Approximately at what time will the work (to print one lakh books) be finished?

[A] 11:30 A.M.
[B] 12 noon
[C] 12:30 P.M.
[D] 1:00 P.M.

Answer Option [D]

Explanation:

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

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

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 $\left(\frac{60}{11} \times \frac{23}{60}\right) = \frac{23}{11}$ hours $\approx$ 2 hours.

So, the work will be finished approximately 2 hours after 11 A.M., i.e., around 1 P.M.

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A is 30% more efficient than B. How much time will they, working together, take to complete a job which A alone could
Q. 21  
have done in 23 days?

[A] 11 days
[B] 13 days
[C] $\frac{20}{17}$ days

[D] None of these

Answer  Option [B]

Explanation:  
Ratio of times taken by A and B = 100 : 130 = 10 : 13.  
Suppose B takes $x$ days to do the work.  
Then, $10 : 13 :: 23 : x$  
\[ x = \frac{23 \times 13}{10} = \frac{299}{10}. \]  

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

\[(A + B)'s\ 1\ day's\ work = \left( \frac{1}{23} + \frac{10}{299} \right) = \frac{23}{299} = \frac{1}{13}.\]  

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

Q. 22  
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

Answer  Option [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 = $\left( 1 - \frac{1}{3} \right) = \frac{2}{3}$.  

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

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

Hence, the total time taken = (10 + 2) = 12 days.
Q. 23  X can do a piece of work in 40 days. He works at it for 8 days and then Y finished it in 16 days. How long will they together take to complete the work?

[A] 13/3 days
[B] 15 days
[C] 20 days
[D] 26 days

Answer  Option [A]

Explanation:
Work done by X in 8 days = \( \frac{1}{40} \times 8 \) = \( \frac{1}{5} \).

Remaining work = \( 1 - \frac{1}{5} \) = \( \frac{4}{5} \).

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

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

\( \therefore \) X's 1 day's work = \( \frac{1}{40} \), Y's 1 day's work = \( \frac{1}{20} \).

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

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

Q. 24  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

Answer  Option [A]

Explanation:
Let 1 man's 1 day's work = \( x \) and 1 boy's 1 day's work = \( y \).

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

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

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

\( \therefore \) 15 men and 20 boys can do the work in 4 days.
Q. 25  
A and B can do a job together in 7 days. A is \( \frac{3}{2} \) times as efficient as B. The same job can be done by A alone in:

[A] \( \frac{1}{9} \) days  
[B] 11 days  
[C] \( \frac{1}{12} \) days  
[D] \( \frac{1}{16} \) days

Answer  Option [B]  
**Explanation:**  
(A's 1 day's work) : (B's 1 day's work) = \( \frac{7}{4} : 1 = 7 : 4 \).

Let A's and B's 1 day's work be \( 7x \) and \( 4x \) respectively.

Then, \( 7x + 4x = \frac{11x}{7} \Rightarrow 11x = \frac{7}{7} \Rightarrow x = \frac{1}{7} \).

\( \therefore \) A's 1 day's work = \( \left( \frac{1}{77} \times 7 \right) = \frac{1}{11} \).
Q. 27  Sakshi can do a piece of work in 20 days. Tanya is 25% more efficient than Sakshi. The number of days taken by Tanya to do the same piece of work is:

[A] 15
[B] 16
[C] 18
[D] 25

Answer  Option [B]

Explanation:  
Ratio of times taken by Sakshi and Tanya = 125 : 100 = 5 : 4.  
Suppose Tanya takes \( x \) days to do the work.  
\[
5 : 4 :: 20 : x  
\]  
\[
\Rightarrow x = \left( \frac{4 \times 20}{5} \right) \text{ days.}  
\]  
\[
\Rightarrow x = 16 \text{ days.}  
\]  
Hence, Tanya takes 16 days to complete the work.

Q. 28  A, B and C can complete a piece of work in 24, 6 and 12 days respectively. Working together, they will complete the same work in:

[A] \( \frac{1}{24} \) day
[B] \( \frac{7}{24} \) day
[C] \( \frac{3}{7} \) days
[D] 4 days

Answer  Option [C]

Explanation:  
Formula: If A can do a piece of work in \( n \) days, then A's 1 day's work = \( \frac{1}{n} \).

\[
(A + B + C)'s \ 1 \ day's \ work = \left( \frac{1}{24} + \frac{1}{6} + \frac{1}{12} \right) = \frac{7}{24} .  
\]  
So, all the three together will complete the job in \( \left( \frac{24}{7} \right) \) days = 3 \( \frac{3}{7} \) days.

Q. 29  A and B can do a work in 8 days, B and C can do the same work in 12 days. A, B and C together can finish it in 6 days. A and C together will do it in :

[A] 4 days
[B] 6 days
[C] 8 days
[D] 12 days
(A + B + C)’s 1 day’s work = \( \frac{1}{6} \);

(A + B)’s 1 day’s work = \( \frac{1}{8} \);

(B + C)’s 1 day’s work = \( \frac{1}{12} \).

\[ \therefore (A + C)’s \text{ 1 day’s work} = \left( 2 \times \frac{1}{6} \right) + \left( \frac{1}{8} + \frac{1}{12} \right) = \left( \frac{1}{3} - \frac{5}{24} \right) = \frac{3}{24} = \frac{1}{8} \cdot \]

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

Q. 30  

A does 80% of a work in 20 days. He then calls in B and they together finish the remaining work in 3 days. How long B alone would take to do the whole work?

[A] 23 days  
[B] 37 days  
[C] 37\( \frac{1}{2} \)  
[D] 40 days

Answer: Option [C]

Explanation:

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

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

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

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

\[ \therefore B’s \text{ 1 day’s work} = \left( \frac{1}{15} - \frac{1}{25} \right) = \frac{4}{150} = \frac{2}{75} \cdot \]

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