

Examrace

Aptitude Logical Reasoning Time and Work 2021 Competitive Exams Part 4

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1. P alone can complete a piece of work in 6 days. Work done by Q alone in one day is equal to one-third of the work done by P alone in one day. In how many days can the work be completed if P and Q work together?

A. $4 \left(\frac{3}{4} \right)$

B. $4 \left(\frac{1}{2} \right)$

C. 4

D. 5

E. None of these

Ans: B

Explanation:

Work done by P alone in one day = $\frac{1}{6}$ th of the total work done by Q alone in one day = $\frac{1}{3}$ (of that done by P in one day) = $\frac{1}{3} \left(\frac{1}{6} \text{ of the total} \right) = \frac{1}{18}$ of the total.

Work done by P and Q, working together in one day = $\frac{1}{6} + \frac{1}{18} = \frac{4}{18} = \frac{2}{9}$ of the total

They would take $\frac{9}{2}$ days = $4 \left(\frac{1}{2} \right)$ days to complete the work working together.

2. A and B can do a work in 18 day, B and C in 30 days, A and C in $22 \left(\frac{1}{2} \right)$ days. In how many days can A, B and C individually do the work?

A. 30,45,60

B. 60,45,90

C. 45,60,90

D. 60,90,120

E. None of these

Ans: E

Explanation:

$$(A + B + C)'s \text{ two days work} = \frac{1}{18} + \frac{1}{30} + \frac{2}{45}$$

$$= \frac{5 + 3 + 4}{90} = \frac{2}{15}$$

$$(A + B + C)'s \text{ one day work} = \frac{2}{15} \times \frac{1}{2} = \frac{1}{15}$$

$$A's \text{ one day's work} = \frac{1}{15} - \frac{1}{30} = \frac{1}{30}$$

$$B's \text{ one day's work} = \frac{1}{15} - \frac{2}{45} = \frac{1}{45}$$

$$C's \text{ one day's work} = \frac{1}{15} - \frac{1}{18} = \frac{1}{90}$$

So, A, B and C can individually do the work in 30,45 and 90 days.

3. A can do a piece of work in 21 days and B in 28 days. Together they started the work and B left after 4 days. In how many days can A alone do the remaining work?

A. 12

B. 10

C. 16

D. 14

E. None of these

Ans: D

Explanation:

Let A worked for x days.

$$\frac{x}{21} + \frac{4}{28} = 1 \Rightarrow \frac{x}{21} = \frac{6}{7} \Rightarrow x = 18$$

A worked for 18 days. So, A can complete the remaining work in $18 - 4 = 14$ days.

4. Varma can read a book in k minutes. What part of the book can he read in 8 minutes? ($k > 8$)

A. $8 + k$

B. $\frac{8}{k}$

C. $\frac{k}{8}$

D. $\frac{k-8}{k}$

E. None of these.

Ans: B

Explanation:

Part of the book he can read in 1 minute = $\frac{1}{k}$

Part of the book he can read in 8 minutes = $\frac{8}{k}$

5. Avinash is twice as fast as Bharat, and Bharat is one-third as fast as Chandra. If together they can complete a piece of work in 30 days, in how many days can Avinash, Bharat and Chandra do the work respectively?

A. 60,180, 240

B. 90,180, 120

C. 180,90, 60

D. 90,60, 180

E. None of these

Ans: E

Explanation:

Let Chandra do the work in $2x$ days.Bharat can do it in $6x$ days and Avinash can do it in $3x$ days.

$$\frac{1}{2x} + \frac{1}{6x} + \frac{1}{3x} = \frac{1}{30} \Rightarrow \frac{3+1+2}{6x} = \frac{1}{30} \Rightarrow x = 30$$

So, the time taken to complete the work by Avinash, Bharat, Chandra is 90,180, 60 days respectively.

6. A is twice as fast as B. If B alone can do a piece of work in 30 days, in what time can A and B together complete the work?

A. 10

B. 12

C. 15

D. 8

E. None of these

Ans: A

Explanation:

A can do the work in $\frac{30}{2}$ i.e., 15 days.

$$\text{A and B's one day's work} = \frac{1}{15} + \frac{1}{30} = \frac{2+1}{30} = \frac{1}{10}$$

So A and B together can do the work in 10 days.

7. A can do a piece of work in 10 days and B can do the same work in 12 days. A and B worked together for 2 days. How many more days are required to complete the remaining work if they work together?

A. $2\left(\frac{2}{11}\right)$ days

B. $3\left(\frac{3}{11}\right)$ days

C. $3\left(\frac{5}{11}\right)$ days

D. $6\left(\frac{3}{11}\right)$ days

E. None of these

Ans: C

Explanation:

A can do $\frac{1}{10}$ of the work in a day.

B can do $\frac{1}{12}$ of the work in a 1 day.

Both of them together can do $\left(\frac{1}{10} + \frac{1}{12}\right)$ part of work in 1 day

$$= \frac{6+5}{60} = \frac{11}{60}$$

They take $\frac{60}{11}$ days to complete the work together.

Given that they already worked for 2 days.

The number of days required to complete remaining work $\Rightarrow \frac{60}{11} - 2 = \frac{38}{11} = 3 \left(\frac{5}{11} \right)$

days.

8.50 men can complete a work in 65 days. Five days after started the work, 20 men left the group. In how many days can the remaining work be completed?

- A. 60 days
- B. 80 days
- C. 75 days
- D. Cannot be determined
- E. None of these

Ans: E

Explanation:

After 5 days, the following situation prevails.

50 men can complete the work in 60 days.

30 men can complete the work in? days.

$$M_1 D_1 = M_2 D_2$$

$$\Rightarrow 50 \times 60 = 30 \times D_2$$

$$\Rightarrow D_2 = \frac{50 \times 60}{30} = 100 \text{ days.}$$

9. Two persons A and B can complete a piece of work in 30 days and 45 days respectively. If they work together, what part of the work will be completed in 3 days?

- A. $\frac{1}{3}$
- B. $\frac{1}{4}$
- C. $\frac{1}{6}$
- D. $\frac{1}{18}$

E. None of these.

Ans: C

Explanation:

$$A's \text{ one day's work} = \frac{1}{30}$$

$$B's \text{ one day's work} = \frac{1}{45}$$

$$(A + B)'s \text{ one day's work} = \frac{1}{30} + \frac{1}{45} = \frac{1}{18}$$

$$\text{The part of the work completed in 3 days} = 3 \left(\frac{1}{18} \right) = \frac{1}{6}$$

10. Twenty four men can do a work in 35 days. How many men are required to complete the work in 21 days?

- A. 38
- B. 40
- C. 36
- D. 42
- E. None of these.

Ans: B

Explanation:

$$\text{We have } M_1 D_1 = M_2 D_2$$

$$\text{So, } 24 \times 35 = M_2 \times 21 \Rightarrow M_2 = 40 .$$

11. A certain number of men can do a work in 65 days working 6 hours a day. If the number of men are decreased by one-fourth, then for how many hours per day should they work in order to complete the work in 40 days?

- A. 14
- B. 13
- C. 15
- D. 16
- E. None of these

Ans: B

Explanation:

Let the number of men initially be x.

$$\text{we have } M_1 D_1 H_1 = M_2 D_2 H_2$$

$$\text{So, } x \times 65 \times 6 = \frac{3x}{4} \times 40 \times h_2$$

$$\Rightarrow h_2 = \frac{65 \times 6 \times 4}{3 \times 40} = 13$$

12. Thirty men can do a work in 24 days. In how many days can 20 men can do the work, given that the time spent per day is increased by one-third of the previous time?

- A. 30
- B. 28
- C. 24
- D. 33
- E. None of these

Ans: E

Explanation:

Let the number of hours working per day initially be x .

we have $M_1 D_1 H_1 = M_2 D_2 H_2$

$$30 \times 24 \times x = 20 \times d_2 \times \frac{4x}{3} \Rightarrow d_2 = \frac{30 \times 24 \times 3}{24 \times 4} = 27 \text{ days.}$$

13. Sixty men can stitch 200 shirts in 30 days working 8 hours a day. In how many days can 45 men stitch 300 shirts working 6 hours a day?

- A. 60
- B. 90
- C. 70
- D. 80
- E. None of these

Ans: D

Explanation:

We have $\frac{M_1 D_1 H_1}{W_1} = \frac{M_2 D_2 H_2}{W_2}$ (Variation rule)

$$\frac{60 \times 30 \times 8}{200} = \frac{(45 \times D_2 \times 6)}{300}$$

$$D_2 = \frac{(60 \times 30 \times 8 \times 300)}{(200 \times 45 \times 6)} \Rightarrow D_2 = 80 .$$

14. If 12 men or 20 women can do a piece of work in 54 days, then in how many days can 9 men and 12 women together do the work?

- A. 35
- B. 38
- C. 40
- D. 32
- E. None of these.

Ans: C

Explanation:

Given that $12m = 20w \Rightarrow 3m = 5w$

9 men + 12 women = 15 women + 12 women = 27 women

20 women can do the work in 54 days. So, 27 women can do it in $\frac{20 \times 54}{27} = 40$ days.

15. Five men and nine women can do a piece of work in 10 days. Six men and twelve women can do the same work in 8 days. In how many days can three men and three women do the work?

- A. 24
- B. 18
- C. 20
- D. 22
- E. None of these.

Ans: C

Explanation:

$$(5m + 9w)10 = (6m + 12w)8$$

$$\Rightarrow 50m + 90w = 48w + 96w \Rightarrow 2m = 6w \Rightarrow 1m = 3w$$

$$5m + 9w = 5m + 3m = 8m$$

8 men can do the work in 10 days.

$$3m + 3w = 3m + 1w = 4m$$

So, 4 men can do the work in $\frac{10 \times 8}{4} = 20$ days.

16. Two men can complete a piece of work in four days. Two women can complete the same work in eight days. Four boys can complete the same work in five days. If four men,

eight women and 20 boys work together in how many days can the work be completed?

- A. $\frac{1}{2}$ day
- B. $1 \left(\frac{1}{2}\right)$ days
- C. 1 day
- D. 2 days
- E. None of these

Ans: A

Explanation:

Two men take four days to complete the work four men would take $\frac{2 \times 4}{4} = 2$ days to complete it.

Similarly four women would take two days to complete it and 20 children would take one day to complete it.

All the three groups working together will complete $\frac{1}{2} + \frac{1}{2} + \frac{1}{1}$ work in a day
 = 2 times the unit work in a day.

They will take $\frac{1}{2}$ a day to complete it working together.

17.77. Twelve men and six women together can complete a piece of work in four days. The work done by a women in one day is half the work done by a man in one day. If 12 men and six women started working and after two days, six men left and six women joined, then in hoe many more days will the work be completed?

- A. $1 \left(\frac{1}{2}\right)$
- B. 1
- C. 2
- D. $2 \left(\frac{1}{2}\right)$
- E. None of these

Ans: D

Explanation:

Work done by a women in one day = $\frac{1}{2}$ (work done by a man/day)

One women's capacity = $\frac{1}{2}$ (one man's capacity)

One man = 2 women.

12 men = 24 women.

12 men + 6 women = 30 women

30 women can complete the work in four days. In the first 2 days they can complete $\frac{1}{2}$ of the work. Remaining part of the work = $\frac{1}{2}$. If 6 men leave and 6 new women join, then new work force = 30 women - 12 women + 6 women = 24 women.

Time taken by them to complete the remaining work = $\frac{1}{2}$ (Time taken by 24 women to complete the work) = $\frac{1}{2} \times \frac{30 \times 4}{24} = 2 \left(\frac{1}{2} \right)$ days.

18. Eight men, ten women and six boys together can complete a piece of work in eight days. In how many days can 20 women complete the same work if 20 men can complete it in 12 days?

A. 9

B. 7.5

C. 6

D. Cannot be determined

E. None of these

Ans: D

Explanation:

Let the number of units which can be completed by each man, each women and each boy be m/day, w/day and b/day respectively.

$$\text{Work} = 8(8m + 10w + 6b)\text{units} = 12(20m)$$

$$10w + 6b = 22m$$

b is unknown.

We cannot find the relation between m and w.

We cannot answer the question.

19. A, B and C can do a work in 7,14 and 21 days respectively. They completed the work and got ₹ 242. What is the share of C?

- A. ₹ 55
- B. ₹ 44
- C. ₹ 66
- D. ₹ 77
- E. None of these

Ans: B

Explanation:

The ratio of their working rates = $\frac{1}{7} : \frac{1}{14} : \frac{1}{21} = 6 : 3 : 2$.

Since, they work together, the share of C

$$= \frac{2}{11} \times 242 = ₹ 44$$

20. X men can do a work in 120 days. If there were 20 men less, the work would have taken 60 days more. What is the value of X?

- A. 60
- B. 40
- C. 50
- D. 70
- E. None of these

Ans: A

Explanation:

We have $M_1 D_1 = M_2 D_2$

$$120X = (X - 20)180$$

$$\Rightarrow 2X = (X - 20)3 \Rightarrow 2X = 3X - 60$$

$$\Rightarrow X = 60$$