

Arithmetic (Level 2)

MCQ Test, Set 01

Time: 30 minutes

Maximum marks: 25

Name: _____ Class: _____ Date: _____

1. There are 25 questions. Each has exactly one correct answer: choose A, B, C or D.
2. Each correct answer carries 1 mark. There is no negative marking.
3. The key sheet and worked solutions are at the end of this test.

1. A can finish a piece of work in 51 days. What part of the work does A finish in 9 days?
A. $\frac{14}{17}$ **B.** $\frac{17}{3}$ **C.** $\frac{1}{51}$ **D.** $\frac{3}{17}$
2. 7 men can finish a piece of work in 24 days. In how many days can 14 men finish the same work?
A. 48 days **B.** 12 days **C.** 17 days **D.** 31 days
3. A can finish a piece of work in 55 days and B can finish it in 11 days. In how many days can they finish it working together?
A. 66 days **B.** 44 days **C.** $9\frac{1}{6}$ days **D.** 33 days
4. A can do a piece of work in 21 days and B in 33 days. (A + B)'s 1 day's work is
A. $\frac{1}{27}$ **B.** $\frac{4}{231}$ **C.** $\frac{1}{54}$ **D.** $\frac{6}{77}$
5. A and B together can finish a piece of work in 40 days. A alone can do it in 120 days. In how many days can B alone do it?
A. 60 days **B.** 160 days **C.** 30 days **D.** 80 days
6. A and B can do a piece of work in 30 days; B and C in 36 days; C and A in 20 days. In how many days can A alone finish it?
A. 45 days **B.** 36 days **C.** 180 days **D.** 18 days
7. A can do a piece of work in 40 days and B can finish it in 28 days. They work together for 7 days and then B goes away. In how many days will A finish the remaining work?
A. 33 days **B.** 23 days **C.** $16\frac{1}{10}$ days **D.** $37\frac{4}{7}$ days
8. A can do a piece of work in 8 days while B alone can do it in 48 days. With the help of C they can finish it in 4 days. If they are paid ₹3120 for the whole work, what is A's share?
A. ₹1300 **B.** ₹1040 **C.** ₹1560 **D.** ₹260
9. A is thrice as good a workman as B and is therefore able to finish a piece of work in 22 days less than B. In how many days can they do it working together?
A. $8\frac{1}{4}$ days **B.** 11 days **C.** 22 days **D.** 33 days

10. A and B can do a piece of work in 30 and 33 days respectively. They began the work together, but B leaves after some days and A finishes the remaining work in 9 days. After how many days did B leave?
- A. 20 days B. 21 days C. 11 days D. $23\frac{1}{10}$ days
-
11. A can do a piece of work in 200 days and B can do it in 168 days. They work together for 18 days. Then B leaves and A alone continues the work. 2 days after that, C joins A and the work is completed in 74 days more. In how many days can C do the work alone?
- A. 175 days B. 210 days C. $93\frac{1}{3}$ days D. 101 days
-
12. A and B together can do a piece of work in 24 days. B and C together can do it in 40 days. If A is twice as good a workman as C, B alone can do it in
- A. 16 days B. 30 days C. 120 days D. 60 days
-
13. A and B working alone can finish a piece of work in 23 and 12 days respectively. If they work at it alternately for a day, B beginning, in how many days will the work be finished?
- A. 15 days B. $15\frac{2}{3}$ days C. $16\frac{2}{3}$ days D. 16 days
-
14. A certain number of men complete a piece of work in 52 days. If there were 4 men more, the work could be finished in 4 days less. How many men were there originally?
- A. 52 B. 56 C. 48 D. 44
-
15. If 3 men or 12 boys can finish a piece of work in 9 days, in how many days can 4 men and 11 boys finish it?
- A. 4 days B. 9 days C. $7\frac{1}{5}$ days D. $20\frac{1}{4}$ days
-
16. 5 men and 3 women working 3 hours a day finish a piece of work in 12 days; 8 men and 3 women working 4 hours a day do the same work in 6 days. Find the number of days in which the work is done by 6 men only, working 3 hours a day.
- A. 28 days B. 16 days C. 12 days D. 36 days
-
17. If 4 men with 5 boys can earn ₹5720 in 8 days and 8 men with 12 boys can earn ₹13500 in 9 days, in what time will 4 men with 2 boys earn ₹3660?
- A. $6\frac{7}{9}$ days B. 8 days C. 3 days D. 6 days
-
18. 20 men are employed to do a piece of work which they could finish in 15 days, but the men drop off by 4 at the end of every 6 days. In what time will the work be completed?
- A. $19\frac{1}{2}$ days B. 15 days C. 24 days D. $18\frac{3}{4}$ days
-
19. A can do half as much again as B can do in the same time. A alone can do a piece of work in 32 days. In how many days can B alone finish it?
- A. 64 days B. $21\frac{1}{3}$ days C. 16 days D. 48 days
-
20. A man can row downstream at the rate of 15 km/hr and upstream at 5 km/hr. The man's rate in still water is
- A. 7.5 km/hr B. 5 km/hr C. 20 km/hr D. 10 km/hr
-

21. A man rows upstream 29 km and downstream 59 km, taking 5 hours each time. The man's speed in still water is
- A. 8.8 km/hr B. 17.6 km/hr C. 11.8 km/hr D. 3 km/hr
-
22. A man can row 8 km/hr in still water and he finds that it takes him thrice as long to row up as to row down the river. The rate of the stream is
- A. 6 km/hr B. 5 km/hr C. 2 km/hr D. 4 km/hr
-
23. A man can row 11 km/hr in still water. If the river is running at 5.5 km/hr, it takes him 1 hour to row to a place and back. The place is at a distance of
- A. 5.5 km B. 4.125 km C. 8.25 km D. 5.125 km
-
24. The current of a stream runs at the rate of 3 km/hr. A motor boat goes 10 km upstream and back again to the starting point in 2 hours 30 minutes. The speed of the motor boat in still water is
- A. 6 km/hr B. 9 km/hr C. 15 km/hr D. 12 km/hr
-
25. A man can row 6 km upstream and 84 km downstream in 7 hours, while he can row 24 km upstream and 84 km downstream in 10 hours. The speed of the man in still water is
- A. 6 km/hr B. 4 km/hr C. 10 km/hr D. 14 km/hr
-

Key sheet

1. D	2. B	3. C	4. D	5. A
6. B	7. B	8. C	9. A	10. C
11. A	12. C	13. B	14. C	15. A
16. C	17. D	18. A	19. D	20. D
21. A	22. D	23. B	24. B	25. C

Solutions

1. A can finish a piece of work in 51 days. What part of the work does A finish in 9 days?

$$\text{A's 1 day's work} = \frac{1}{51}$$

$$\text{A's 9 days' work} = 9 \times \frac{1}{51} = \frac{9}{51} = \frac{3}{17}$$

Ans: (D) $\frac{3}{17}$

2. 7 men can finish a piece of work in 24 days. In how many days can 14 men finish the same work?

$$\text{No. of men} \propto \frac{1}{\text{Time taken}}$$

$$7 \times 24 = 14 \times x$$

$$x = \frac{7 \times 24}{14} = 12 \text{ days}$$

Ans: (B) 12 days

3. A can finish a piece of work in 55 days and B can finish it in 11 days. In how many days can they finish it working together?

$$\text{A's 1 day's work} = \frac{1}{55}$$

$$\text{B's 1 day's work} = \frac{1}{11}$$

$$\therefore (\text{A} + \text{B})\text{'s 1 day's work} = \frac{1}{55} + \frac{1}{11} = \frac{1+5}{55} = \frac{6}{55}$$

$$\therefore \text{Both together can finish the work in } \frac{55}{6} \text{ days} = 9\frac{1}{6} \text{ days}$$

Ans: (C) $9\frac{1}{6}$ days

4. A can do a piece of work in 21 days and B in 33 days. (A + B)'s 1 day's work is

$$(\text{A} + \text{B})\text{'s 1 day's work} = \frac{1}{21} + \frac{1}{33} = \frac{11+7}{231} = \frac{18}{231} = \frac{6}{77}$$

Ans: (D) $\frac{6}{77}$

5. A and B together can finish a piece of work in 40 days. A alone can do it in 120 days. In how many days can B alone do it?

$$(\text{A} + \text{B})\text{'s 1 day's work} = \frac{1}{40}$$

$$\text{A's 1 day's work} = \frac{1}{120}$$

$$\Rightarrow \text{B's 1 day's work} = \frac{1}{40} - \frac{1}{120} = \frac{3-1}{120} = \frac{2}{120} = \frac{1}{60}$$

$\therefore$ B alone can finish the work in 60 days.

Ans: (A) 60 days

6. A and B can do a piece of work in 30 days; B and C in 36 days; C and A in 20 days. In how many days can A alone finish it?

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

$$(\text{B} + \text{C})\text{'s 1 day's work} = \frac{1}{36}$$

$$(\text{C} + \text{A})\text{'s 1 day's work} = \frac{1}{20}$$

$$\text{Adding, } 2(\text{A} + \text{B} + \text{C})\text{'s 1 day's work} = \frac{1}{30} + \frac{1}{36} + \frac{1}{20} = \frac{6+5+9}{180} = \frac{20}{180} = \frac{1}{9}$$

$$\Rightarrow (\text{A} + \text{B} + \text{C})\text{'s 1 day's work} = \frac{1}{18}$$

$\therefore$ A, B, C together can finish the work in 18 days.

$$\text{A's 1 day's work} = \frac{1}{18} - \frac{1}{36} = \frac{1}{36}, \text{ so A alone takes 36 days}$$

Ans: (B) 36 days

7. A can do a piece of work in 40 days and B can finish it in 28 days. They work together for 7 days and then B goes away. In how many days will A finish the remaining work?

$$\text{A's 1 day's work} = \frac{1}{40}$$

$$\text{B's 1 day's work} = \frac{1}{28}$$

$$(\text{A} + \text{B})\text{'s 1 day's work} = \frac{1}{40} + \frac{1}{28} = \frac{7+10}{280} = \frac{17}{280}$$

$$(\text{A} + \text{B})\text{'s 7 days' work} = 7 \times \frac{17}{280} = \frac{17}{40}$$

$$\text{Remaining work} = 1 - \frac{17}{40} = \frac{23}{40}$$

$$\text{This work is done by A in } \frac{23}{40} \times 40 = 23 \text{ days}$$

Ans: (B) 23 days

8. A can do a piece of work in 8 days while B alone can do it in 48 days. With the help of C they can finish it in 4 days. If they are paid ₹3120 for the whole work, what is A's share?

$$\text{A's 1 day's work} = \frac{1}{8}$$

$$\text{B's 1 day's work} = \frac{1}{48}$$

$$(\text{A} + \text{B})\text{'s 1 day's work} = \frac{1}{8} + \frac{1}{48} = \frac{6+1}{48} = \frac{7}{48}$$

$$\text{Given } (\text{A} + \text{B} + \text{C})\text{'s 1 day's work} = \frac{1}{4}$$

$$\text{C's 1 day's work} = \frac{1}{4} - \frac{7}{48} = \frac{12-7}{48} = \frac{5}{48}$$

$$\text{Consider } \frac{1}{8} : \frac{1}{48} : \frac{5}{48} = \frac{6}{48} : \frac{1}{48} : \frac{5}{48} = 6 : 1 : 5$$

∴ ₹3120 must be divided in the ratio 6 : 1 : 5 (6 + 1 + 5 = 12)

$$\text{A's share} = 3120 \times \frac{6}{12} = 1560, \text{ i.e. ₹1560}$$

Ans: (C) ₹1560

9. A is thrice as good a workman as B and is therefore able to finish a piece of work in 22 days less than B. In how many days can they do it working together?

Suppose B finishes the work in x days

⇒ A is able to finish it in $(x - 22)$ days

Time taken by A = $\frac{1}{3}$ (Time taken by B)

$$\therefore x - 22 = \frac{1}{3}x$$

$$\Rightarrow 3x - 66 = x \Rightarrow 2x = 66 \Rightarrow x = 33$$

∴ Time taken by B = 33 days, time taken by A = 11 days

$$\text{A's 1 day's work} = \frac{1}{11}, \text{ B's 1 day's work} = \frac{1}{33}$$

$$(\text{A} + \text{B})\text{'s 1 day's work} = \frac{1}{11} + \frac{1}{33} = \frac{3+1}{33} = \frac{4}{33}$$

A and B together can finish the work in $8\frac{1}{4}$ days

Ans: (A) $8\frac{1}{4}$ days

10. A and B can do a piece of work in 30 and 33 days respectively. They began the work together, but B leaves after some days and A finishes the remaining work in 9 days. After how many days did B leave?

$$\begin{aligned} \text{A's 1 day's work} &= \frac{1}{30}, \text{ B's 1 day's work} = \frac{1}{33} \\ (\text{A} + \text{B})\text{'s 1 day's work} &= \frac{1}{30} + \frac{1}{33} = \frac{11+10}{330} = \frac{21}{330} = \frac{7}{110} \\ \text{A's 9 days' work} &= 9 \times \frac{1}{30} = \frac{3}{10} \\ \text{Remaining work} &= 1 - \frac{3}{10} = \frac{7}{10} \\ (\text{A} + \text{B})\text{'s } x \text{ days' work} &= \frac{7}{10} \Rightarrow \frac{7}{110} \times x = \frac{7}{10} \\ x &= 11, \text{ so B left after 11 days} \end{aligned}$$

Ans: (C) 11 days

11. A can do a piece of work in 200 days and B can do it in 168 days. They work together for 18 days. Then B leaves and A alone continues the work. 2 days after that, C joins A and the work is completed in 74 days more. In how many days can C do the work alone?

$$\begin{aligned} \text{A's 1 day's work} &= \frac{1}{200}, \text{ B's 1 day's work} = \frac{1}{168} \\ (\text{A} + \text{B})\text{'s 1 day's work} &= \frac{1}{200} + \frac{1}{168} = \frac{21+25}{4200} = \frac{46}{4200} = \frac{23}{2100} \\ (\text{A} + \text{B})\text{'s 18 days' work} &= 18 \times \frac{23}{2100} = \frac{69}{350} \\ \text{A's 2 days' work} &= \frac{2}{200} = \frac{1}{100} \\ (\text{A} + \text{C})\text{'s 74 days' work} &= 1 - \left(\frac{69}{350} + \frac{1}{100} \right) = \frac{111}{140} \\ \Rightarrow (\text{A} + \text{C})\text{'s 1 day's work} &= \frac{111}{140} \div 74 = \frac{3}{280} \\ \text{C's 1 day's work} &= \frac{3}{280} - \frac{1}{200} = \frac{15-7}{1400} = \frac{8}{1400} = \frac{1}{175} \\ \text{C can finish the work in 175 days} \end{aligned}$$

Ans: (A) 175 days

12. A and B together can do a piece of work in 24 days. B and C together can do it in 40 days. If A is twice as good a workman as C, B alone can do it in

$$\begin{aligned} (\text{A} + \text{B})\text{'s 1 day's work} &= \frac{1}{24}, (\text{B} + \text{C})\text{'s 1 day's work} = \frac{1}{40} \\ \text{A's 1 day's work} &= \text{C's 2 days' work} \\ \text{C's 2 days' work} + \text{B's 1 day's work} &= \frac{1}{24} \\ \Rightarrow \text{C's 1 day's work} + (\text{B} + \text{C})\text{'s 1 day's work} &= \frac{1}{24} \\ \Rightarrow \text{C's 1 day's work} + \frac{1}{40} &= \frac{1}{24} \\ \text{C's 1 day's work} &= \frac{1}{24} - \frac{1}{40} = \frac{5-3}{120} = \frac{2}{120} = \frac{1}{60} \\ \text{B's 1 day's work} &= \frac{1}{40} - \frac{1}{60} = \frac{3-2}{120} = \frac{1}{120} \\ \therefore \text{B alone can finish the work in 120 days} \end{aligned}$$

Ans: (C) 120 days

13. A and B working alone can finish a piece of work in 23 and 12 days respectively. If they work at it alternately for a day, B beginning, in how many days will the work be finished?

$$\text{A's 1 day's work} = \frac{1}{23}, \text{ B's 1 day's work} = \frac{1}{12}$$

$$\text{Work done in the first 2 days} = \frac{1}{12} + \frac{1}{23} = \frac{23+12}{276} = \frac{35}{276}$$

$$\text{Work done in the first 14 days} = 7 \times \frac{35}{276} = \frac{245}{276}$$

$$\text{On day 15 it is B's turn: work done in the first 15 days} = \frac{245}{276} + \frac{1}{12} = \frac{67}{69}$$

$$\text{Remaining work} = 1 - \frac{67}{69} = \frac{2}{69}$$

$$\text{A does it in } \frac{2}{69} \div \frac{1}{23} = \frac{2}{3} \text{ day}$$

$$\therefore \text{Total no. of days} = 15 + \frac{2}{3} = 15\frac{2}{3} \text{ days}$$

Ans: (B) $15\frac{2}{3}$ days

14. A certain number of men complete a piece of work in 52 days. If there were 4 men more, the work could be finished in 4 days less. How many men were there originally?

Let the original number of men be x

$$\text{No. of men} \propto \frac{1}{\text{No. of days}}$$

$$x \times 52 = (x + 4) \times 48$$

$$52x = 48x + 192$$

$$4x = 192 \Rightarrow x = 48$$

Ans: (C) 48

15. If 3 men or 12 boys can finish a piece of work in 9 days, in how many days can 4 men and 11 boys finish it?

$$3 \text{ men} = 12 \text{ boys}$$

$$4 \text{ men} = \frac{12}{3} \times 4 = 16 \text{ boys}$$

$$4 \text{ men} + 11 \text{ boys} = 16 \text{ boys} + 11 \text{ boys} = 27 \text{ boys}$$

$$\text{No. of boys} \propto \frac{1}{\text{No. of days}}$$

$$12 \times 9 = 27 \times x \Rightarrow x = 4 \text{ days}$$

Ans: (A) 4 days

16. 5 men and 3 women working 3 hours a day finish a piece of work in 12 days; 8 men and 3 women working 4 hours a day do the same work in 6 days. Find the number of days in which the work is done by 6 men only, working 3 hours a day.

Let 1 man do m and 1 woman do w units of work in 1 hour.

$$\text{Case (i): } (5m + 3w) \times 3 \times 12 = 180m + 108w$$

$$\text{Case (ii): } (8m + 3w) \times 4 \times 6 = 192m + 72w$$

$$\text{Same work: } 180m + 108w = 192m + 72w$$

$$\Rightarrow 36w = 12m \Rightarrow 3w = m$$

$$\text{So } 3 \text{ women} = 1 \text{ man, and } 5m + 3w = 6 \text{ men}$$

6 men working 3 hours a day for 12 days do the same work as 6 men working 3 hours a day for x days

$$6 \times 3 \times 12 = 6 \times 3 \times x \Rightarrow x = 12 \text{ days}$$

Ans: (C) 12 days

17. If 4 men with 5 boys can earn ₹5720 in 8 days and 8 men with 12 boys can earn ₹13500 in 9 days, in what time will 4 men with 2 boys earn ₹3660?

Let 1 man earn ₹ x and 1 boy earn ₹ y in 1 day.

$$(4x + 5y) \times 8 = 5720 \Rightarrow 4x + 5y = 715 \quad \dots (1)$$

$$(8x + 12y) \times 9 = 13500 \Rightarrow 8x + 12y = 1500 \quad \dots (2)$$

$$(1) \times 2 \Rightarrow 8x + 10y = 1430$$

$$(2) - (1) \times 2 \Rightarrow 2y = 70 \Rightarrow y = 35$$

$$\text{From (1): } 4x = 715 - 175 = 540 \Rightarrow x = 135$$

$$(4x + 2y)n = 3660$$

$$\Rightarrow (540 + 70)n = 3660 \Rightarrow 610n = 3660$$

$$\Rightarrow n = 6 \text{ days}$$

Ans: (D) 6 days

18. 20 men are employed to do a piece of work which they could finish in 15 days, but the men drop off by 4 at the end of every 6 days. In what time will the work be completed?

$$\text{Work done by 20 men in 6 days} = 6 \times \frac{1}{15} = \frac{2}{5}$$

$$\text{So 1 man's work in 6 days} = \frac{2}{5} \div 20 = \frac{1}{50}$$

$$\text{Remaining work} = \frac{3}{5}, \text{ remaining men} = 16; \text{ work done by 16 men in 6 days} = 16 \times \frac{1}{50} = \frac{8}{25}$$

$$\text{Remaining work} = \frac{7}{25}, \text{ remaining men} = 12; \text{ work done by 12 men in 6 days} = 12 \times \frac{1}{50} = \frac{6}{25}$$

$$\text{Remaining work} = \frac{1}{25}, \text{ remaining men} = 8; \text{ work done by 8 men in 6 days} = \frac{4}{25}$$

$$\frac{1}{25} \text{ work is done by 8 men in } \frac{1}{25} \div \frac{4}{25} \times 6 = 1\frac{1}{2} \text{ days}$$

$$\text{Total time} = 6 + 6 + 6 + 1\frac{1}{2} = 19\frac{1}{2} \text{ days}$$

Ans: (A) $19\frac{1}{2}$ days

19. A can do half as much again as B can do in the same time. A alone can do a piece of work in 32 days. In how many days can B alone finish it?

$$\text{If B does } x, \text{ A does } \frac{x}{2} + x = \frac{3x}{2} \text{ in the same time}$$

$$\text{Ratio of working of A and B} = \frac{3}{2} : 1 = 3 : 2$$

$$\text{Ratio of time taken for the same work} = 2 : 3$$

$$\text{Time taken by A} = 2k = 32 \Rightarrow k = 16$$

$$\text{Time taken by B} = 3k = 48 \text{ days}$$

Ans: (D) 48 days

20. A man can row downstream at the rate of 15 km/hr and upstream at 5 km/hr. The man's rate in still water is

$$\text{Given } x + y = 15 \text{ and } x - y = 5$$

$$\text{Adding, } 2x = 20 \Rightarrow x = 10 \text{ km/hr}$$

Ans: (D) 10 km/hr

21. A man rows upstream 29 km and downstream 59 km, taking 5 hours each time. The man's speed in still water is

$$\text{Speed downstream: } x + y = \frac{59}{5} \text{ km/hr}$$

$$\text{Speed upstream: } x - y = \frac{29}{5} \text{ km/hr}$$

$$\text{Adding, } 2x = \frac{59}{5} + \frac{29}{5} = \frac{88}{5}$$

$$x = \frac{88}{10} = 8.8 \text{ km/hr}$$

Ans: (A) 8.8 km/hr

22. A man can row 8 km/hr in still water and he finds that it takes him thrice as long to row up as to row down the river. The rate of the stream is

Let the rate of the stream be y km/hr

Same distance, thrice the time, so speed down = $3 \times$ speed up

$$\text{Given } 3(8 - y) = 8 + y$$

$$\Rightarrow 24 - 3y = 8 + y \Rightarrow 4y = 16$$

$$\Rightarrow y = 4 \text{ km/hr}$$

Ans: (D) 4 km/hr

23. A man can row 11 km/hr in still water. If the river is running at 5.5 km/hr, it takes him 1 hour to row to a place and back. The place is at a distance of

Let the required distance be d km

$$\text{Speed downstream} = 11 + 5.5 = 16.5 \text{ km/hr}$$

$$\text{Speed upstream} = 11 - 5.5 = 5.5 \text{ km/hr}$$

$$\text{Time} = \frac{\text{Distance}}{\text{Speed}}, \text{ so } \frac{d}{16.5} + \frac{d}{5.5} = 1$$

$$\Rightarrow d \left(\frac{2}{33} + \frac{2}{11} \right) = 1$$

$$\Rightarrow d \times \frac{8}{33} = 1$$

$$\Rightarrow d = 4.125 \text{ km}$$

Ans: (B) 4.125 km

24. The current of a stream runs at the rate of 3 km/hr. A motor boat goes 10 km upstream and back again to the starting point in 2 hours 30 minutes. The speed of the motor boat in still water is

Let the speed of the boat in still water be x km/hr

$$\text{Speed upstream} = (x - 3) \text{ km/hr, speed downstream} = (x + 3) \text{ km/hr}$$

$$\text{Total time} = 150 \text{ min} = \frac{150}{60} \text{ hr} = \frac{5}{2} \text{ hr}$$

$$\frac{10}{x-3} + \frac{10}{x+3} = \frac{5}{2}$$

$$\Rightarrow 10 \left(\frac{(x+3)+(x-3)}{(x-3)(x+3)} \right) = \frac{5}{2}$$

$$\Rightarrow \frac{20x}{x^2-9} = \frac{5}{2}$$

$$\Rightarrow 40x = 5x^2 - 45$$

$$\Rightarrow x^2 - 8x - 9 = 0$$

$$\Rightarrow (x - 9)(x + 1) = 0$$

$$\Rightarrow x = 9 \text{ (or) } x = -1 \text{ (rejected, a speed cannot be negative)}$$

$\therefore$ Speed of the boat in still water = 9 km/hr

Ans: (B) 9 km/hr

25. A man can row 6 km upstream and 84 km downstream in 7 hours, while he can row 24 km upstream and 84 km downstream in 10 hours. The speed of the man in still water is

Let the speed of the man in still water be x km/hr and the rate of the current y km/hr.

Speed upstream = $(x - y)$ km/hr, speed downstream = $(x + y)$ km/hr. Put $p = \frac{1}{x-y}$, $q = \frac{1}{x+y}$

$$\frac{6}{x-y} + \frac{84}{x+y} = 7 \Rightarrow 6p + 84q = 7 \quad \dots (1)$$

$$\frac{24}{x-y} + \frac{84}{x+y} = 10 \Rightarrow 24p + 84q = 10 \quad \dots (2)$$

$$(1) \times 4 \Rightarrow 24p + 336q = 28$$

$$(1) \times 4 - (2) \Rightarrow 252q = 18 \Rightarrow q = \frac{1}{14}$$

$$\text{From (1): } 6p + 6 = 7 \Rightarrow 6p = 1 \Rightarrow p = \frac{1}{6}$$

So $x - y = 6$ and $x + y = 14$

Adding, $2x = 20 \Rightarrow x = 10$; then $y = 14 - 10 = 4$

Ans: (C) 10 km/hr
