Aptitude - Time and Work

For more notes visit

https://rtpnotes.vercel.app

Reference Playlist

https://youtube.com/playlist?list=PL8p2I9GklV454LdGfDOw0KkNazKuA-6B2&feature=shared

Question 1

A can do a piece of work in 12 hours and B alone can do it in 15 hours. In how much time will they finish the whole work, working together?

- Given
  - A -> 12 hours
  - B -> 15 hours
- How much work is done in one hour?

    - A in 1 hour -> 1/12
    - B in 1 hour -> 1/15
- Work done by A and B in 1 hour
    - A&B -> 1/12 + 1/15 = 3/20
- Time taken by A and B to finish the work
    - A&B -> 20/3

Question 2

A and B can do a piece of work in 12 days and B alone can do it in 30 days. In how much time will A finish the whole work?

- GIven
    - A&B -> 12 days
    - B -> 30 days
    - A -> ?
- Work done in a day
    - A&B in one day-> 1/12
    - B in one day -> 1/30
    - A in 1 day -> 1/12 - 1/30 = 3/60 = 1/20
- A completes the work in 20 days

Question 3

A and B can do a piece of work in 18 days and B and C can do it in 24 days, C and A can do it in 36 days, In how much time will A&B&C finish the whole work? Also find the time taken for A to do the work alone

- Given
    - A&B -> 18 days
    - B&C -> 24 days
    - C&A -> 36 days

    - A&B&C -> ?
    - A -> ?
- Work done in a day
    - A&B -> 1/18
    - B&C -> 1/24
    - C&A -> 1/36
    - A&B&C -> ?
        - A+B+B+C+C+A = 2(A+B+C) -> 1/18 + 1/24 + 1/36 = 9/72 = 1/8
        - A&B&C -> (1/8) / 2 -> 1/16
        - **A,B,C does the work in 16 days**
    - A -> ?
        - A,B,C in a day -> 1/16
        - B and C in 1 day -> 1/24
        - A -> 1/24 - 1/16 = 1/48
        - **A does the work in 48 days**

Question 4

A and B can do a piece of work in 45 & 40 days respectively, They began the work together but A leaves after some days and B finished the remaining work in 23 days. After how many days did A leave?

- Work done in 1 day
    - A -> 1/45
    - B -> 1/40
    - A&B -> 1/40 + 1/45 = 17/360
- Work A&B did together
    - 23 days B did the work alone
        - So subtracting it from the total work, so we can get how much work
    - Total work is 1, so subbing Work done by B which is 23 x (1/40)
    - Work done by A&B = 1 - 23 x (1/40) = 17/40
- Days taken for A to do the work and leave
    - Work done in one day by A&B x Days taken = Work done by A&B

    - 17/360 x X = 17/40
    - X = 9
- **A left in 9 days**

Question 5

If 4 men or 7 boys can finish a piece of work in 20 days, in how many days can 6 men and 11 boys finish it

- Work done In 1 day
    - 4 men = 1/20
    - 1 Man = (1/20) / 4 = 1/80
    - 6 boys = 1/20
    - 1 boy = (1/20) / 6 = 1/120
- Work done 6 men and 11 boys
    - (1/80 x 6) + (1/120 x 11) = 40/240 = 1/6
- Time taken for 6 men and 11 boys to finish the work
    - 6 days

Question 6

If Roger can do a piece of work in 8 days and Antony can do the same work in 5 days, in how many days will both of them do it together?

- Work done by Roger in a day - 1/8
- Work done by Anthony in a day = 1/5
- Work done by Roger and anthony in a day = 1/8 + 1/5 = 13/40
- **Time taken for Roger and anthony to do the work together = 40/13 days**

Question 7

To complete a piece of work, A takes 50% more time than B. If together they take 18 days to complete the work, how much time shall B take to do it alone?

- Work done by A&B in a day
  - A&B -> 1/18
- Since A takes 50% more time than B
  - Let A = 1.5 B
  - Work done by A + Work done by B = Work done by A&B
  - Subbing Value of A
  - 1/1.5B + 1/B = 1/18
- After solving for B, we will get: B -> 30
- **Time taken for B to do the work alone = 30 days**

Question 8

A takes 3 days to complete a work while B takes 2 days. Both of them finish a work and earn Rs. 150. What is A's share of money? (Hint - money should be divided.. in the ratio of how much work a person does in 1 day)

- Time taken
  - Time taken for A to complete a work -> 3 days
  - Time taken for B to complete a work -> 2 days
- Work done
  - Work done by A in one day = 1/3
  - Work done by B in one day = 1/2
  - Work done by A and B in one day = 1/3 + 1/2 = 5/6
- How many days did A&B work together
  - 5/6 x X = 150
  - X = 180 days
- So we know that A and B worked 180 days each.
- A's share of money
  - Work done in one day x Number of days worked
  - 1/3 x 180 = 60

- **A's Share of money = Rs 60**

Question 9

An exam was conducted and the following was analyzed. 4 men were able to check some exam papers in 8 days working 5 hours regularly. What is the total number of hours taken by 2 men in 20 days to check double the number of exam papers?

1. **Calculate the total amount of work done by 4 men in the initial scenario:**
    1. 4 men work for 8 days, 5 hours each day.
    2. Total work done in hours = Number of men × Number of days × Hours per day.
    3. Total work = 4 × 8 × 5 = 160 man-hours
    4. This 160 man-hours represents the amount of work required to check a certain number of exam papers.
2. Determine the amount of work needed to check double the number of exam papers:
    1. If the amount of work to check the initial set of exam papers is 160 man-hours, then to check double the number of exam papers, the total work would be
    2. Total work for double papers=2×160=320 man-hours
3. Calculate the total number of hours 2 men will take to do 320 man-hours of work over 20 days:
    1. Let x be the number of hours per day that 2 men need to work to complete 320 man-hours in 20 days
    2. Total work done in hours = Number of men × Number of days × Hours per day
    3. Total work done in hours = 320 = 2 x 20 x x
    4. Solving for x we will get
    5. x=8
4. **Each of the 2 men needs to work 8 hours per day for 20 days** to check double the number of exam papers.
5. **Answer: 8 hours per day**