Chain Rule

Time Spent : 00 Hours 05 Minutes 34 Seconds

Theory **Examples**

Example Problems

Question 1. A certain number of men can finish a piece of work in 100 days. If there were 20 men less, it would take 20 days more for the work to be finished. How many men were there originally?

1) 90 2) 100 3) 120 4) 110 **Answer :** 3 **Explanation :** Originally let there be x men.
Less men, More days (Indirect Proportion)
Therefore, (x-20) : x :: 100 :120
=> (x - 20) * 120 = x * 100 => x= 120

Question 2. If 18 men or 24 women can do a piece of work in 30 days, in how many days, can the work be done by 9 men and 24 women working together?

1) 12 days 2) 15 days 3) 10 days 4) 20 days **Answer :** 4 **Explanation :** 18M = 24W ⇒ 9M = 12 W
Hence, 9M + 24W = 12W + 24W = 36 W. Since 24W can do a piece of work in 30 days, so 36W can do the same work in (24 × 30)/36 = 20 days.

Question 3. A garrison of 850 men has provisions for 30 weeks. If at the end of 10 weeks, they are re-inforced by 850 men, how long will the provisions last?

1) 10 weeks 2) 12 weeks 3) 14 weeks 4) 15 weeks **Answer :** 1 **Explanation :** 850 × 30 = 850 × 10 + 1700 × W ⇒ W = 10 weeks

Question 4. If 10 men can reap 100 hectares in 50 days, how many hectares can 40 men reap the same field in 20 days?
1) 140 hectares 2) 160 hectares 3) 180 hectares 4) 200 hectare **Answer :** 2 **Explanation :** H = 100 × (40/10) × (20/50) = 160 hectares

Question 5. If 30 men working 12 hours a day can do a piece of work in 36 days, in how many days will 15 men working 10 hours a day do the same work ?

1) 86.2 days 2) 86.8 days 3) 86.4 days 4) 86 days **Answer :** 3 **Explanation :** D=36 × (30/15) × (12/10) = 86.4days

Question 6. An M.E.S contractor undertakes a contract to renew the floor of a building within 40 days and immediately employs 27 men upon doing it. At the end of 31 days, the work is only half done. How many more men should he employ to complete the work in time?

1. 66 men 2. 36 men 3. 46 men 4. 56 men **Answer :** 1 **Explanation :** Days left are (40 – 31) = 9.
By chain rule, total no. of men required = 27 × (31/9) = 93,
therefore additional men required = 93 – 27 = 66 men

Question 7. Five men and three boys can do a piece of work in 15 days while 7 men and 8 boys can do the same work in 8 days. How long will 12 men and 8 boys take to do it?

1) 5 days 2) 7 days 3) 6 days 4) 8 days **Answer :** 3 **Explanation :**
(5M + 3B) × 15 = (7M + 8B) × 8
⇒ 75M + 45B = 56M + 64B
⇒ M = B
So 8 men can do a work in 15 days. Hence(12 + 8)
⇒ 20men can do the same work in 6 days

Question 8. A man can walk a certain distance at a uniform speed in 100 days. How long will it take him to cover twice the distance at half the normal speed?

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Distance is doubled and speed is reduced to half. ∴ time will become 2 × 2 i.e. 4 times.
Hence now it will take 100 × 4 = 400 days.

Question 9. A 100 m long 3 m high and 30 cm wide wall is built by 30 men, 20 women and 50 children working 9 hours a day in 20 days. How long a wall 1.5 m high 30 cm wide can be built by 15 men, 25 women and 35 children working 2 hour a day in 15 days (given men, women and children are equally efficient)?

1. 75 m 2. 25 m 3. 50 m 4. 100 m **Answer :** 2 **Explanation :** Earlier dimensions of the wall = 100 × 3 × 0.30.
New dimensions = L × 1.5 × 0.3.
∴ As men, women and children are given to be equally efficient, so in the first case, the total number of persons is 100 (i.e. 30 + 20 + 50) and the same in the second case is 75 (15 + 25 + 35).
Length of wall = L = (75x100) x (2x9) x (15x20) x (100 x 3 x 3 x 0.3)/(1.5 x 0.3) $\Rightarrow$ L = 25 m.

Question 10. 10 men or 4 women can do a piece of work in 68 days. Then 1 men and 3 women will do a piece of work thrice as large in:

1. 80 days 2. 100 days 3. 120 days 4. 60 days **Answer :** 3 **Explanation :** Now, 10M = 4W $\Rightarrow$ 1W = (5/2) M $\Rightarrow$ 3W = 15/2M
Total persons = 1M + 3W = 1M + 15/2M = 17/2M
Therefore, no. of days = 5 × (68/17) × 3 × 2 = 120 days.

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