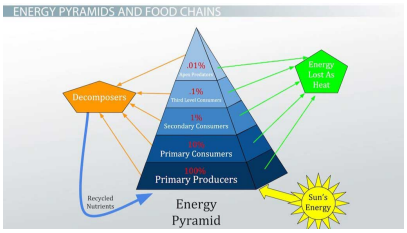
Chain Rule

Time Spent : 00 Hours 04 Minutes 55 Seconds

Theory | Examples

Introduction

- Direct Proportion: Any two quantities are said to be directly proportional if on the increase of one quantity, the other quantity increases and vice-versa.
- Example: Cost is directly proportional to number of objects
- Cost ∝ Number of objects
- Number of objects increases (↑) Cost (↑)
- Example: Work done is directly proportional to number of working men
- Work done ∝ Number of working men
- Number of men increase (↑) Work done (↑)
- Indirect Proportion: Any two quantities are said to be indirectly proportional if, on the increase of one quantity, the other quantity decreases and vice-versa.
- Example: If the speed of a car is increased, then the time required to cover the distance decreases.
- Speed of car (↑) Time required decreases (↓)
- Example: Time taken to finish work increases, if the number of men decreases.
- Time (↑) Number of men (↓)
- Tips and Tricks
- In this chapter generally different types of numerical related to time and work, time and speed, cost and number of articles, men and work, etc. are asked.



Let's Solve Some Examples

Example : 1

39 persons can repair a road in 12 days, working 5 hours a day. In how many days will 30 persons, working 6 hours a day, complete the work?

Very simple : Persons and no of days are indirect proportional to each other Which means if persons increased then the number of days will reduce to do a job and vice versa

39 persons 12 days(5 hour a day) So, 39 persons are working 60 hours each Our question is 30 person ? days (6 hour a day)

39(13 * 3)=60(10 * 6)

30(=10 * 3)=78(13 * 6)

So 30 persons are working 78 hours each

30 person can finish that work in 13 days (78/6=13, 6 hours a day)

Example : 2

3 pumps, working 8 hours a day, can empty a tank in 2 days. How many hours a day must 4 pumps work to empty the tank in 1 day?

Given that : Number of pipes and Number of days are indirect proportional to each other Which means if no of pipes are increased to fill/empty a tank then the number of days required to fill/empty the tank will reduce

3 pumps working 2 days (8 hour a day) So 3 pumps working 16 hour to empty Our question is 4 pumps working 1 day (? hour a day)

3(1 * 3)=16(4 * 4)

4(1 * 4)=12(4 * 3)

4 pumps can empty the tank in 1 day by working(12 hour a day)

Example : 3

If a quarter kg of potato costs 60 paise, how many paise will 200 gm cost?
Given that : Kilogram and cost are direct proportional to each other this means if the number of kgs of purchase is increased and then cost for that purchase also will increase

Quarter kg =250 gm
250 g = 60 paise
200 g=? paise
250(5 * 50)= 60(5 * 12)
200(4 * 50)=48(4 * 12)
200 g potato is 48 paisa

Example : 4

36 men can complete a piece of work in 18 days. In how many days will 27 men complete the same work?
Given that : Persons and no of days are indirect proportional to each other which means if persons increased then the number of days will reduce to do a job and vice versa

36 men in 18 days
27 men in ? days
36(9 * 4)=18(6 * 3)
27(9 * 3)=24(6 * 4)
27 men can finish it in 24 days

Example : 5

4 mat-weavers can weave 4 mats in 4 days. At the same rate, how many mats would be woven by 8 mat-weavers in 8 days?
Given that : 4 weavers 4 mats in 4 days
8 weavers ? mats in 8 days

1 weaver 1 mat in 4 days
1 weaver 2 mats in 8 days 8 weaver (8*2) 16 mats in 8 days

Example : 6

In a dairy farm, 40 cows eat 40 bags of husk in 40 days. In how many days one cow will eat one bag of husk?
Very simple : 40 cows eat 40 bags of husk in 40 days

1 cow 1 bag of husk in 40 days

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