

IMPORTANT FORMULA AND EQUATIONS

1. Direct Proportion:

Two quantities are said to be directly proportional, if on the increase (or decrease) of the one, the other increases (or decreases) to the same extent.

EX.1: Cost is directly proportional to the number of articles.
(More Articles, More Cost)

EX.2: Work done is directly proportional to the number of men work (More Men ,More Work)

2. Indirect Proportion:

Two quantities are said to be indirectly proportional, if on the increase of the one, the other decreases to the same extent and vice-versa.

EX.1: The time taken by a car is covering a certain distance is inversely proportional to the speed of the car.
(More speed, Less is the time taken to cover a distance.)

EX.2: The time taken to finish a work is inversely proportional to the number of persons working at it.(More persons, Less is the time taken to finish a job)

Remarks: In solving problems by chain rule, we compare every item with the term to be found out.

KEY NOTES :

- If $p : q :: r : s$

$$\Rightarrow s = \frac{qr}{p}$$

- The method of finding the 4 th term of a proportion when three are given is known as rule of three as above .
- Three or more quantities are said to be in compound proportion if one quantity depends on the other remaining quantities.
- If p,q,r,s are four quantities & if $p : q :: r : s$ then

- 1) Componendo

$$\frac{p+q}{q} = \frac{r+s}{s}$$

- 2) Dividendo

$$\frac{p-q}{p} = \frac{r-s}{s}$$

- 3) Componendo & Dividendo

$$\frac{p+q}{p-q} = \frac{r+s}{r-s}$$

- 4) Invertendo

$$\frac{q}{p} = \frac{s}{r}$$

- 5) Alternendo

$$\frac{p}{r} = \frac{q}{s}$$

Direct proportion is indicated by arrows in the same direction , Inverse proportion is indicated by arrows in opposite direction.