

VIII- Direct And Indirect (Inverse) Proportions.

Basic Points

Direct Proportion: In this proportion, if one quantity (x) increases, the other quantity (y) also increases and vice-versa, it means that if x decreases y also decreases.

It means, if we take the ratio of two quantities, it is always constant.

$$\text{OR } x \propto y \Rightarrow x = ky \Rightarrow \frac{x}{y} = k \text{ (const.)}$$

This k is called the constant of variation

Note 1. The ratio $\frac{x}{y}$ is always positive

2. If x increases, y also increases
3. If x decreases, y also decreases.

4. If x_1, x_2, x_3, \dots are values of x , and y_1, y_2, y_3, \dots are values of y then if x, y varies directly $\Rightarrow \frac{x_1}{y_1} = \frac{x_2}{y_2} = \dots$

Cont Pg-2

5. If $\frac{x}{y}$ is not constant, then x and y do not vary directly. Pg-2

one best example of daily life
if we have more petrol we can
travel more distance and vice-versa
etc.

Inverse (Indirect) Variation: In this
type of variation, one quantity is the
reciprocal of other such that the
product of two quantities is constant.
So if we have two quantities x and
 y then x is inversely proportion of y
if $xy = \text{constant}$.

So in this case if one quantity
 x increases the other quantity y decreases
and vice versa.

It is very important to note
that the product xy remains constant.
We say x varies inversely with y and
vice versa.

Cont Pg-3

Thus two quantities x and y are pg-3 said to vary inversely if there exists a relation between them such that $xy = k$, k is some constant.

So if x_1, x_2 are values of x and y_1, y_2 are values of y then $x_1 y_1 = k$ and $x_2 y_2 = k$

$$\text{OR } \frac{x_1}{x_2} = \frac{y_2}{y_1}$$

We say that x and y are inversely proportional

Example \therefore If you are travelling in a car then speed and time are inversely proportional

because as you increase the speed the time taken will be less, so this example gives the idea of inversely proportional
