Direct and Inverse Variations Ex 10.1 Q1

Answer :

When two variables are connected to each other in such a way that if we increase the value of one variable, the value of other variable also increases and vice – versa. Similarly, if we decrease the value of one variable, the value of other variable also decreases and vice – versa.
Therefore, if the ratio between two variables remains constant, it is said to be in direct variation.

Direct and Inverse Variations Ex 10.1 Q2

Answer :

(i) The number of articles is directly related to the price. Therefore, they will vary directly with each other.
(ii) The number of articles is directly related to the weight of the articles. Therefore, they will vary directly with each other.
(iii) Speed is constant. Therefore, distance and time does not vary directly.
(iv) The number of hours is directly related to the wages. Therefore, it is a direct variation.
(v) Distance is constant. Therefore, speed and time does not vary directly.
(vi) If the area of a land is large, its cost will also be high. Thus, it is a direct variation.

Thus, the respective values in (i), (ii), (iv) and (vi) vary directly with each other.

Direct and Inverse Variations Ex 10.1 Q3

Answer :

If x and y vary directly, the ratio of the corresponding values of x and y remains constant.

(i)

$\frac{x}{y} = \frac{7}{21} = \frac{1}{3}$

$\frac{x}{y} = \frac{9}{27} = \frac{1}{3}$

$\frac{x}{y} = \frac{13}{39} = \frac{1}{3}$

$\frac{x}{y} = \frac{21}{63} = \frac{1}{3}$

$\frac{x}{y} = \frac{25}{75} = \frac{1}{3}$

In all the cases, the ratio is the same. Therefore, x and y vary directly.

(ii)

$\frac{x}{y} = \frac{10}{5} = 2$

$\frac{x}{y} = \frac{20}{10} = 2$

$\frac{x}{y} = \frac{30}{15} = 2$

$\frac{x}{y} = \frac{40}{20} = 2$

$\frac{x}{y} = \frac{46}{23} = 2$

In all the cases, the ratio is the same. Therefore, x and y vary directly.

(iii)

$\frac{x}{y} = \frac{2}{6} = \frac{1}{3}$

$\frac{x}{y} = \frac{3}{9} = \frac{1}{3}$

$\frac{x}{y} = \frac{4}{12} = \frac{1}{3}$

$\frac{x}{y} = \frac{5}{17} = \frac{5}{17}$

$\frac{x}{y} = \frac{6}{20} = \frac{3}{10}$

In all the cases, the ratio is not the same. Therefore, x and y do not vary directly.

(iv)

$\frac{x}{y} = \frac{1^2}{1^3} = 1$

$\frac{x}{y} = \frac{2^2}{2^3} = \frac{1}{2}$

$\frac{x}{y} = \frac{3^2}{3^3} = \frac{1}{3}$

$\frac{x}{y} = \frac{4^2}{4^3} = \frac{1}{4}$

$\frac{x}{y} = \frac{5^2}{5^3} = \frac{1}{5}$

In all the cases, the ratio is not the same. Therefore, x and y do not vary directly.

Thus, in (i) *and* (ii), x *and* y vary directly.

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