



Class: 6
Subject: Mathematics
Topic: Ratio (E.X-2.1)
Date-13/06/2020
Day-15

Ratio: In mathematics, a ratio indicates how many times one number contains another.

For example, if there are eight oranges and six lemons in a bowl of fruit, then the ratio of oranges to lemons is eight to six (that is, 8:6, which is equivalent to the ratio 4:3).

Similarly, the ratio of lemons to oranges is 6:8 (or 3:4) and the ratio of oranges to the total amount of fruit is 8:14 (or 4:7)

We will discuss here about the different types of ratios:

Compounded ratio: For two or more ratios, if we take antecedent as product of antecedents of the ratios and consequent as product of consequents of the ratios, then the ratio thus formed is called mixed or compound ratio. As, compound ratio of $m:n$ and $p:q$ is $mp:nq$.

In other words,

When two or more ratios are multiplying term wise; the ratio thus obtained is called compound ratio.

For example:

The compounded ratio of the two ratios $a:b$ and $c:d$ is the ratio $ac:bd$, and that of $a:b, c:d$.

6. Reciprocal ratio: The reciprocal ratio of the ratio $m : n$ ($m \neq 0, n \neq 0$) is the ratio $\frac{1}{m} : \frac{1}{n}$.

For any ratio $x : y$, where $x, y \neq 0$, its reciprocal ratio = $\frac{1}{x} : \frac{1}{y} = y : x$

Similarly, we can say if the antecedent and consequent of a ratio be interchanged, the changed ratio is called the inverse ratio of the previous ratio.

For example:

Reciprocal ratio of $7 : 13 = \frac{1}{7} : \frac{1}{13} = 13 : 7$.

$5 : 7$ is the inverse ratio of $7 : 5$

Ratio of equalities: For a ratio, if the antecedent and consequent are equal, the ratio is called ratio of equality.

For example: $5 : 5$ is the ratio of equalities.

Ratio of inequalities: For a ratio, if the antecedent and consequent are unequal, the ratio is called ratio of inequality.

For example: $5 : 7$ is the ratio of inequalities.

Ratio of lesser inequalities: For a ratio, if antecedent is less than the consequent, the ratio is called the ratio of lesser inequality.

For example: $7 : 9$ is a ratio of lesser inequalities.

Ratio of greater inequalities: For a ratio, if antecedent is greater than the consequent, the ratio is called the ratio of greater inequality.

For example: $13 : 10$ is a ratio of greater inequalities.

1. In a bag of red and green sweets, the ratio of red sweets to green sweets is 3:4. If the bag contains 120 green sweets, how many red sweets are there?

Solution

Let x = red sweets

$$\frac{\text{red}}{\text{green}} = \frac{3}{4} = \frac{x}{120}$$

Or, $3 \times 120 = 4 \times x$ [**Cross Multiply**]

$$\text{or, } 360 = 4x$$

$$x = \frac{360}{4} = 90$$

Answer: There are 90 red sweets.

2. The angles of a triangle are in the ratio 1:3:8. Find the measures of the three angles of this triangle.

Solution

If the ratio of the three angles is 1:3:8,

Let the three angles are x , $3x$ and $8x$.

Also, the sum of the three interior angles of a triangle is equal to 180° .

According to the Question

$$x + 3x + 8x = 180^\circ$$

$$\text{or, } 12x = 180^\circ$$

$$\text{therefore } x = 15^\circ$$

The measures of the three angles are

$$x = 15^\circ$$

$$3x = 3 \times 15^\circ = 45^\circ$$

$$8x = 8 \times 15^\circ = 120^\circ$$

Note: Solve word problem from text book