The Role Of Zero (0) And One (1)

Zero (0):

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Zero (0) is a rational number, and the sum of any rational number with zero (0) results in the same rational number.

Thus, $\left(\frac{a}{b} + 0\right) = \left(0 + \frac{a}{b}\right) = \frac{a}{b}$, for every rational number $\frac{a}{b}$.

0 is called the additive identity for rationals.

Example:

(i) Consider the rational number $\frac{3}{5}$. Then, we have $(\frac{3}{5} + 0) = (0 + \frac{3}{5}) = \frac{3}{5}$. $(\frac{3}{5} + 0) = (\frac{3}{5} + \frac{0}{5}) = (\frac{3+0}{5}) = \frac{3}{5}$. and similarly, $(0 + \frac{3}{5}) = (\frac{0}{5} + \frac{3}{5}) = (0 + \frac{3}{5}) = \frac{3}{5}$. Therefore, $(\frac{3}{5} + 0) = (0 + \frac{3}{5}) = \frac{3}{5}$.

One (1):

One (1) is a rational number and the product of any rational number with one (1) result in the same rational number.

For any rational number $\frac{a}{b}$, we have $(\frac{a}{b} \times 1) = (1 \times \frac{a}{b}) = \frac{a}{b}$.

1 is called the multiplicative identity for rationals.

Example:

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(*i*) Consider the rational number $\frac{3}{4}$. Then, we have $(\frac{3}{4} \times 1) = (1 \times \frac{3}{4}) = \frac{3}{4}$. $(\frac{3}{4} \times 1) = (\frac{3}{4} \times \frac{1}{4}) = (\frac{3 \times 1}{4}) = \frac{3}{4}$. Therefore, $(\frac{3}{4} \times 1) = (1 \times \frac{3}{4}) = \frac{3}{4}$.