

Any number that can be expressed in the form of p/q , where p and q are integers and $q \neq 0$. It is known as rational number.

Properties of Rational Number

- **Closure:** Rational numbers are closed under addition, subtraction and multiplication.

For e.g. -

If we have two rational number p and q Then the sum, difference and product of these number will as be a rational number.

- **Commutative:** Rational number are commutative under addition and multiplication.

Commutative under addition: $p + q = q + p$

Commutative under multiplication: $p \times q = q \times p$

- **Associative:** Rational number are associative under addition and multiplication

Associative under addition: $p + (q + r) = (p + q) + r$

Associative under multiplication: $p \times (q \times r) = (p \times q) \times r$

- **Distributivity:** $p(q + r) = p \times q + p \times r.$

$$p(q - r) = p \times q - p \times r.$$

- Additive identity is 0

- Multiplicative identity for rational numbers is 1

- The additive inverse of the rational number $\frac{p}{q}$ is $-\frac{p}{q}$ and vice versa

- The reciprocal or multiplicative inverse of the rational number $\frac{p}{q}$ is $\frac{r}{s}$ if $\frac{p}{q} \times \frac{r}{s} = 1$