Comparison of Rational Numbers

- While comparing **positive rational numbers** with the same denominator, the number with the greatest numerator is the largest. It is easy to compare these numbers if their denominators are the same. Eg: $\frac{28}{30} > \frac{26}{30} > \frac{21}{30}$
- A positive rational number is always greater than a negative rational number.
- While comparing **negative rational numbers** with the same denominator, compare their numerators ignoring the minus sign. The number with the greatest numerator is the smallest.
- Eg: $-\frac{5}{2} < -\frac{3}{2}; -\frac{6}{7} < -\frac{1}{7}$
- Positive rational numbers lie to the right of 0, while negative rational numbers lie to the left of 0 on the number line.

• To compare rational numbers with different denominators, convert them into equivalent rational numbers with the same denominator, which is equal to the **LCM** of their **denominators**. You can find infinite rational numbers between any two given rational numbers.

Application of Algebraic Expressions



Operations on Rational Numbers

- The denominator of the sum or difference of two rational numbers with the same denominator is the same as the common denominator of the given numbers.
- The numerator of the sum of two rational numbers with the same denominator is the sum of the numerators of the given numbers with their correct sign.
- The numerator of the difference of two rational numbers with the same denominator is the difference between the numerators of the given numbers with their correct sign.
- To add or subtract rational numbers with different denominators, we convert them into equivalent rational numbers having common denominator equal to the LCM of the denominators of the given numbers.
- Two rational numbers whose sum is zero are called additive inverse of each other.
- The numerator and denominator of the product of two rational numbers are equal to the product of their individual numerators and denominators.
- Two rational numbers whose product is 1 are called reciprocals of each other.
- A rational number and its reciprocal always have the same sign.
- To divide one rational number by a second rational number, we actually multiply the first number by the reciprocal of the second number.