Absolute value of a rational number

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The absolute value of a rational number is its numerical value without considering its sign. It tells us how far the number is from zero on the number line.

Symbol: The absolute value of a number x is written as |x|.

Important Point:

- If a number is positive or zero, its absolute value remains the same.
- If a number is negative, its absolute value becomes positive.

Properties of Absolute Value:

- i. $|a| \ge 0$ (Absolute value is never negative.)
- ii. |a| = |-a| (Positive or negative, absolute value is the same.)
- iii. |0| = 0
- iv. |a b| = |b a|
- v. $|a \times b| = |a| \times |b|$

Example 1: Find the absolute value of $\frac{-3}{4}$

Solution:
$$\left|\frac{-3}{4}\right| = \frac{3}{4}\left|\frac{-3}{4}\right| = \frac{3}{4}$$

The number is negative, so we remove the minus sign.

Example 2: Find the absolute value of $\frac{5}{7}$

Solution: $|\frac{5}{7}| = \frac{5}{7}|\frac{5}{7}| = \frac{5}{7}$

The number is already positive, so it stays the same.