


What makes a number rational?

Rational

A red wavy line underlining the word "Rational".

A number is **rational** if it can be written as the **ratio** of two integers.

(Integers: Positive and negative whole numbers)

$$\text{Ratio} = \frac{a}{b} \begin{array}{l} \nearrow \\ \searrow \end{array} \text{both integers}$$

Examples of rational numbers:

Whole Numbers

$$-25 = \frac{-25}{1}$$

$$35 = \frac{35}{1} = \frac{350}{10} = \frac{70}{2}$$

$$4 = \frac{4}{1} = \frac{8}{2}$$

$$-15 = \frac{-15}{1}$$

Terminating Decimals

Decimal has
an end

$$1.5 = \frac{15}{10}$$

$$37.2 = \frac{372}{10}$$

$$2.25 = \frac{225}{100}$$

$$0.75 = \frac{3}{4}$$

$$6.5 = \frac{13}{2} = \frac{65}{10}$$

$$-1.2 = -\frac{12}{10}$$

$$0.5 = \frac{5}{10} = \frac{1}{2}$$

Repeating Decimals

$$\overline{.44} = \frac{4}{9} \quad \overline{.66} = \frac{2}{3} \quad \overline{.81} = \frac{9}{11}$$

$$\overline{.36} = \frac{4}{11} \quad \overline{.125} = \frac{125}{999}$$

Irrational Numbers

Not

$$\sqrt{2}$$

$$\pi$$

$$\sqrt{17}$$

$$\sqrt{26}$$

Square Root of any number
that is not a perfect
square.

$$\sqrt{4} = 2 = \frac{2}{1}$$

perfect square

Rational