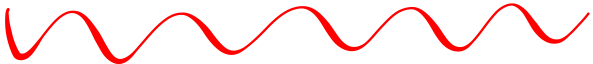


What makes a number rational?

Rational



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

(Integers: Positive and negative whole numbers)

Examples of rational numbers:

Whole Numbers

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

$$26 = \frac{26}{1} = \frac{52}{2}$$

$$10 = \frac{10}{1}$$

$$-5 = -\frac{5}{1} = \frac{5}{-1}$$

perfect square

$$\sqrt{36} = 6 = \frac{6}{1}$$

Terminating Decimals

$$1.25 = \frac{5}{4} = \frac{125}{100}$$

$$56.7 = \frac{567}{10}$$

$$1.5 = \frac{3}{2} = \frac{15}{10}$$

$$0.25 = \frac{1}{4}$$

$$2.7 = \frac{27}{10}$$

$$2.3 = \frac{23}{10}$$

$$375.3 = \frac{3753}{10}$$

$$0.9 = \frac{9}{10}$$

$$12.2 = \frac{61}{5} = \frac{122}{10}$$

$$0.032 = \frac{32}{1000}$$

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

 π $\sqrt{17}$ $\sqrt{21}$ $4.7894\dots$ $\sqrt{11}$ $\sqrt{2}$ $\sqrt[3]{15}$ $\sqrt{15}$

Rational or not?

$$\frac{2}{7}$$

Y

$$3\pi$$

N

$$\sqrt{20}$$

N

$$\sqrt{20 + 5}$$

Y

$$\frac{5}{1}$$

$$-\sqrt{144}$$

Y

$$-\frac{12}{1}$$

$$-5.65$$

Y

$$-\frac{565}{100}$$