

Rational vs. Irrational Numbers

Big Idea--Rational means, to make sense, or in math to be predictable.

Rational Numbers

Numbers that can be written as a ratio.

*Fractions: $\frac{1}{3}$

*Decimals that terminate (end): 8.3

*Decimals that repeat (they are predictable): $0.714285\overline{714285}$

Irrational Numbers

Numbers that cannot be written as a ratio, fraction, or "predictable" decimal.

*When written as a decimal, irrational numbers are only approximations.

*Square roots (radicals) of non-perfect squares are irrational.

* π is probably the famous irrational number. It cannot be written as a fraction or predictable decimal, and is used often in calculations so it gets a special symbol to represent it.

Examples:

Determine if $0.8181\overline{81}$ is rational or irrational.

Rational
• repeating decimal
• predictable pattern

Determine if $\sqrt{33}$ is rational or irrational.

Irrational
• Square root of non square number