

IRRATIONAL NUMBERS REFERENCE CHART

Definition: An **Irrational Number** is a real number that *cannot* be expressed as a simple fraction (a/b). Their decimal expansions are non-terminating and non-repeating.

Category	Characteristic	Common Examples
Non-Perfect Roots	Square roots of numbers that are not perfect squares.	$\sqrt{2}$, $\sqrt{3}$, $\sqrt{5}$, $\sqrt{11}$
Mathematical Constants	Specific symbols representing infinite decimals.	π (Pi), e (Euler's)
Non-Repeating Decimals	Decimals with no predictable pattern or end.	0.1010010001...
Cube Roots	Cube roots of numbers that are not perfect cubes.	$\sqrt[3]{2}$, $\sqrt[3]{4}$, $\sqrt[3]{7}$

Is it Irrational?

- Does it go on forever?
- Is there **no** repeating pattern?
- Can it **not** be written as a fraction?

Common Pitfalls

- $\sqrt[4]{2} = 2$ (Rational)
- $22/7$ (Rational approx of π)
- $0.333...$ (Rational fraction $1/3$)

