Numbers, Rational Encyclopedia Article

Numbers, Rational

The following sections of this BookRags Literature Study Guide is offprint from Gale's For Students Series: Presenting Analysis, Context, and Criticism on Commonly Studied Works: Introduction, Author Biography, Plot Summary, Characters, Themes, Style, Historical Context, Critical Overview, Criticism and Critical Essays, Media Adaptations, Topics for Further Study, Compare & Contrast, What Do I Read Next?, For Further Study, and Sources.

(c)1998-2002; (c)2002 by Gale. Gale is an imprint of The Gale Group, Inc., a division of Thomson Learning, Inc. Gale and Design and Thomson Learning are trademarks used herein under license.

The following sections, if they exist, are offprint from Beacham's Encyclopedia of Popular Fiction: "Social Concerns", "Thematic Overview", "Techniques", "Literary Precedents", "Key Questions", "Related Titles", "Adaptations", "Related Web Sites". (c)1994-2005, by Walton Beacham.

The following sections, if they exist, are offprint from Beacham's Guide to Literature for Young Adults: "About the Author", "Overview", "Setting", "Literary Qualities", "Social Sensitivity", "Topics for Discussion", "Ideas for Reports and Papers". (c)1994-2005, by Walton Beacham.

All other sections in this Literature Study Guide are owned and copyrighted by BookRags, Inc.

Contents

Numbers, Rational Encyclopedia Article.....1

Contents.....2

Numbers, Rational.....3

Numbers, Rational

A number in the form of a ratio *a*/*b*, where *a* and *b* are **integers**, and *b* is not equal to 0, is called a rational number. The rational numbers are a subset of the real numbers, and every rational number can be expressed as a fraction or as a decimal form that either terminates or repeats. Conversely, every decimal expansion that either terminates or repeats represents a rational number.

Rational numbers can be written in several different forms using equivalent fractions. For example, . There are an infinite number of ways to write 1, ¼ or by multiplying both the numerator and denominator by the same nonzero integer. Therefore, there are an infinite number of ways to write every rational number in terms of its equivalent fraction.

The following example shows how to find the ratio of integers that represents a repeating decimal.

One way to compare two rational numbers is to convert them into a decimal form. Dividing the numerator by the denominator results in the decimal equivalent. If the division has no remainder, then the decimal is called a terminating decimal. For example, ½ = 0.5, , and .

Although some decimals do not terminate, they do repeat because at some point a digit, or group of digits, repeats in a regular fashion. Examples of repeating decimals are ⅓ = 0.333…,, and . A bar written over the digits or group of digits that repeat shows that the decimal is repeating: , and .

Properties of Rational Numbers

Rational numbers satisfy the following properties.

1. Given two rational numbers *x* and *y*, there are three possibilities: *x* is equal to *y*, or *x* is less than *y*, or *x* is greater than *y*.
2. The sum of two rational numbers is another rational number.
3. The product of two rational numbers is another rational number.
4. Except for 0, the reciprocal (multiplicative inverse) of every rational number is also a rational number.

See Also

Integers; Numbers, Irrational; Numbers, Real; Numbers, Whole.

Bibliography

Amdahl, Kenn, and Jim Loats. *Algebra Unplugged.* Broomfield, CO: Clearwater Publishing Co., 1995.

Miller, Charles D., Vern E. Heeren, and E. John Hornsby, Jr. *Mathematical Ideas,* 9th ed. Boston: Addison-Wesley, 2001.