5 Rational Numbers

Definition

any # that can be expressed as a ratio of 2 integers

Facts/Characteristics

- denominator can NOT be zero
- can be written as a simple fraction

Examples

$5 = \frac{5}{1}$ $\quad -.1 = -\frac{1}{10}$

$1.75 = 1\frac{3}{4}$ $\quad .111\ldots = .\overline{1} = \frac{1}{9}$

$.001 = \frac{1}{1000}$

Non-Examples

$\sqrt{2}$ $\quad \sqrt{-3}$

π (Pi) $= 3.14159\ldots = \frac{?}{?}$ (Not a ratio)

7 Whole Numbers

Definition

- The #s {0, 1, 2, 3...} etc.
- Set of non-negative or positive integers

Facts/Characteristics

- No fractional or decimal parts
- No negatives

Examples

5, 49, 980

Non-Examples

-2, $.75$, $\frac{2}{3}$

Natural / Counting Numbers

Vocabulary

6 Integers

Definition

Set of whole #s & their opposites

Facts/Characteristics

include negative & positive #s & zero

Examples

$-16, -3, 0, 1, 198$

Non-Examples

$\frac{1}{2}, 1.1, -3.5$

decimals & fractions

8 Natural/Counting Numbers

Definition

Whole #s but without zero

Facts/Characteristics

you can NOT count zero

Examples

$\{1, 2, 3, 4, 5 \ldots\}$

Non-Examples

$-2, 0, .75, \frac{2}{3}$

Absolute Value

Definition

how far a # is (distance) from zero

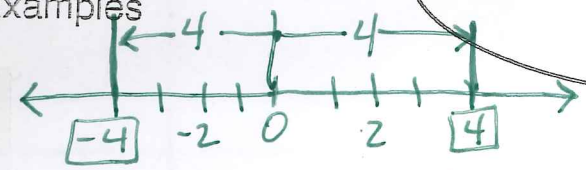
|4| is read absolute value of 4.

Facts/Characteristics

No Negatives (means to remove any neg. sign in front of a #)

"|" or "|" (bars) absolute value symbol

Examples



Both 4 & -4 are 4 away from zero, so |4| + |-4| is 4.

Non-Examples

$|-5| \neq -5$

↑ suppose to be 5

Irrational Numbers

Definition

a real # that can NOT be written as a simple fraction. (improper)

Facts/Characteristics

NOT rational

Examples

π (Pi) = 3.14159... (not ratio)

$\sqrt{2} = 1.414213...$

Non-Examples

$1.5 = \frac{3}{2}$ $.333... = \frac{1}{3}$

$7 = \frac{7}{1}$ $\sqrt{4} = 2 = \frac{2}{1}$

Vocabulary

Additive Inverse

Definition

the opposite of any #

Facts/Characteristics

- opposite
- sum of # & additive inverse is zero
- zero pairs

Examples

$-5 + 5 = 0$

$2 + (-2) = 0$

Non-Examples

$5 + 5 \neq 0$

$3 + 7 \neq 0$

Irrational Number

1 Set

Definition

- a collection of objects or #s, etc (things)
- a group of terms

Facts/Characteristics

element/member

$\{3, 6, 9, \ldots\}$ ← set brackets

3 dots mean goes on forever (infinitely)

Examples

alphabet: $\{a, b, c, \ldots, x, y, z\}$ → finite

Prime #s: $\{2, 3, 5, 7, 11 \ldots\}$ → infinite

Whole #s

Non-Examples

N/A

3 Repeating/Recurring Decimal

Definition

a decimal # in which 1 or more digits repeat infinitely.

Facts/Characteristics

- line drawn over the repeated pattern
- can write as ratio

Examples

$.333\ldots = .\overline{3} = \frac{1}{3}$

$.12833\ldots = .128\overline{3} = \frac{77}{600}$

Non-Examples

.75

.5

Terminating Decimal

Vocabulary

2 Subset

Definition

A is a subset of B if & only if every element of A is in B.

Facts/Characteristics

- pieces of a set
- a set within another set

Examples

natural #s R inside whole #s

Set: {1,2,3,4,5}

Subset: {1,2,3} or {3,4} or {1}

Non-Examples

{1,6} not a subset b/c 6 is not an element of original set.

4 Terminating Decimal

Definition

a decimal # that has digits that do NOT go on forever

Facts/Characteristics

it stops, ends, or terminates

Examples

6.75

.5

3.0375

Non-Examples

$.333... = .\overline{3} = \frac{1}{3}$

$.666... = .\overline{6} = \frac{2}{3}$