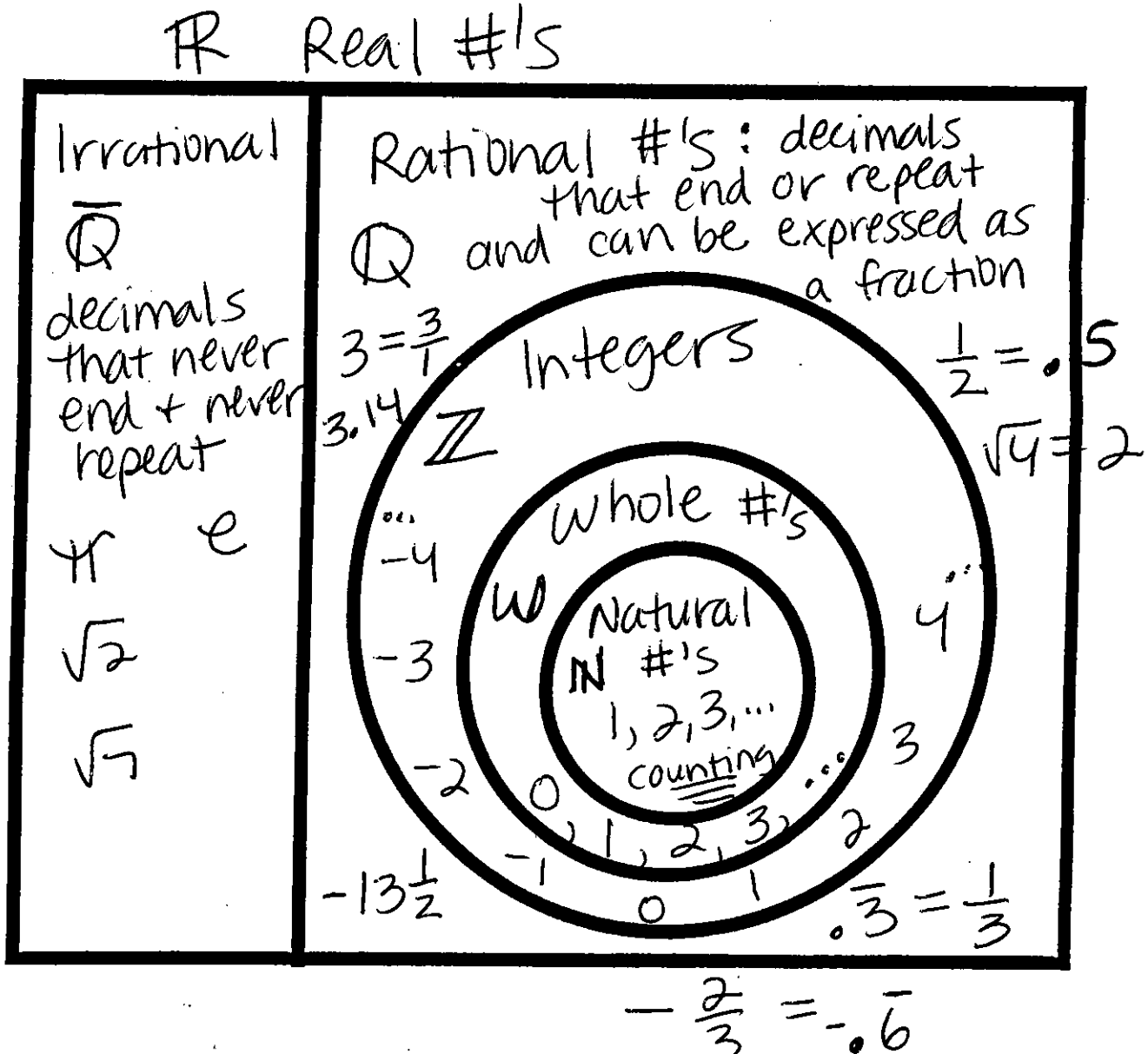
SETS OF NUMBERS



Name_____ Class_____ Date_____

Lesson 1-3

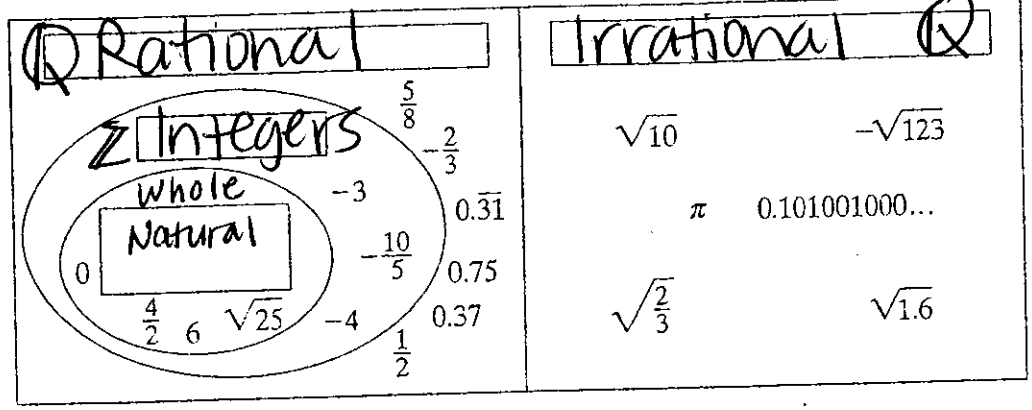
Exploring Real Numbers

Lesson Objectives
- Classify numbers
- Compare numbers

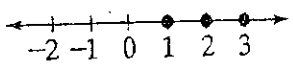
NAEP 2005 Strand: Number Properties and Operations
Topic: Number Sense
Local Standards: _____

Vocabulary and Key Concepts

Real Numbers

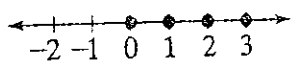


Natural numbers are _____ 1, 2, 3, ...



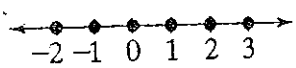
_____

Whole numbers are _____ 0, 1, 2, 3, ...



_____

Integers are _____ ... −2, −1, 0, 1, 2, ...



_____

Rational numbers are _____

_____

_____

Irrational numbers are _____

_____

_____

$0.101001000...$ π $\sqrt{10}$

Decimal representations of each of these are nonrepeating and nonterminating.

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Real numbers are _____

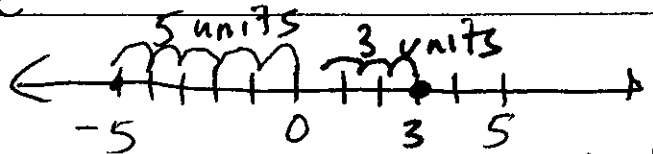
A counterexample is ary example that proves a statement false

An inequality is a math sentence that compares the value of 2 #'s (ex) $5 > 1$ (ex) $2 < 3$, (ex) $\frac{1}{2} < \frac{3}{4}$

Opposites are 2 #'s the same distance away from zero on a # line (ex) 5 and -5

Absolute value is the distance a # is away from zero on a # line

Examples $-|-3| = -3$ $|-5| = 5$ $-|2| = -2$ $|3| = 3$



1 Classifying Numbers Name the set(s) of numbers to which each number belongs.

a. -13 $\mathbb{R}, \mathbb{Z}, \mathbb{Q}$

b. 3.28 $\mathbb{Q}, \mathbb{R}$

2 Using Counterexamples Determine whether the statement is true or false. If it is false, give a counterexample.

All negative numbers are integers. decimal, such a $-.5$.

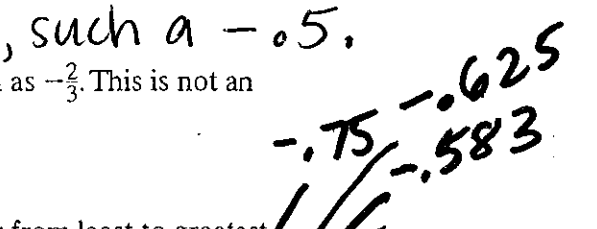
A negative number can be a Fraction, such as $-\frac{2}{3}$. This is not an integer. The statement is false.

3 Ordering Fractions Write $-\frac{3}{4}$, $-\frac{7}{12}$, and $-\frac{5}{8}$ in order from least to greatest.

$-\frac{3}{4} =$ $-.75$

$-\frac{7}{12} =$ $-.583$ Write each fraction as a decimal.

$-\frac{5}{8} =$ $-.625$



k closest to zero (negative)

$-.75 < -.625 < -.583$ Order the decimals from least to greatest.

From least to greatest, the fractions are $-\frac{3}{4}$, $-\frac{5}{8}$, and $-\frac{7}{12}$

4 Finding Absolute Value Find each absolute value.

a. $|-2.5|$ -2.5 is 2.5 units from 0 on a number line. $|-2.5| =$ 2.5

b. $|7|$ 7 is 7 units from 0 on a number line. $|7| =$ 7

$-|7| = -7$

Name_____ Class_____ Date _____

Quick Check

1. Name the set(s) of numbers to which each number belongs.

a. -12

b. $\frac{5}{12}$

c. -4.67

d. 6

2. Is each statement true or false? If it is false, give a counterexample.

a. All whole numbers are integers.

true

b. No fractions are whole numbers.

true

3. Write $\frac{1}{12}$, $-\frac{2}{3}$, and $-\frac{5}{8}$ in order from least to greatest.

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$-\frac{2}{3} = -.66\overline{6}$

$-\frac{5}{8} = -.625$

$-.6$ $-.625$

$-.7$ $-.6$

$-\frac{2}{3}, -\frac{5}{8}, \frac{1}{12}$

4. Find each absolute value.

a. $|5|$ 5

b. $|-4|$ 4

c. $|-3.7|$ 3.7

d. $\left|\frac{5}{7}\right|$ $\frac{5}{7}$

p. 20-21 Textbook
Examples (11-18, 19, 21, 23-27)