

Content and Language Objective:

Students will explore the different categories used to label numbers and be able to explain the difference between the different categories.

Warm-Up

On a note card put your name and write at least three math topics that you struggle with.

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Keywords:

- **Set Braces**
- **Natural Numbers**
- **Whole Numbers**
- **Integers**
- **Rational Numbers**
- **Real Numbers**
- **Irrational Numbers**
- **Approximately Equal**

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Set Braces: are used to enclose elements of a set. { }

Natural #'s: are the counting numbers.

$$N = \{ 1, 2, 3, 4, 5 \dots \}$$

Whole #'s: are all of the natural numbers and zero.

$$W = \{ 0, 1, 2, 3, 4, 5 \dots \}$$

Integers: are natural #'s, whole #'s and negative #'s.

$$I = \{ -3, -2, -1, 0, 1, 2, 3 \}$$

Rational #'s: are numbers that can be expressed as the ratio of two integers, where the denominator is not 0. Rational #'s can be expressed in decimal form either repeating or terminating.

$$\text{Rational} = \{ \frac{8}{2}, 0.5, .\overline{6666}, \frac{1}{2} \}$$

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Irrational #'s

are numbers that cannot be expressed by fractions or a whole number.

Irrational: { π , $\sqrt{7}$, $\sqrt{2}$, $\sqrt{3}$, $\sqrt{5}$, $\sqrt{8}$ }

Real #'s:

can be represented as decimal numbers. Every fraction has a decimal form, so real numbers include rational #'s.

Real: { $\sqrt{7}$, $\frac{1}{2}$, -3 , 0 , $.75$, π }

Approximately
Equal

means that the solution is an approximation. Used in a variety of ways, such as simplifying fractions, roots, and other situations.

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Real Numbers

Rational #s
 $\sqrt{4}$, $\frac{1}{2}$, .75, .1111

Integers
-3, -2, -1, 0, 1, 2

Whole #s
0, 1, 2, 3, 4, ...

Natural #
1, 2, 3, 4, 5, ...

Irrational #s
 $\sqrt{2}$, $\sqrt{3}$, $\sqrt{5}$, $\sqrt{7}$, π

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Practice:

Classify each number as one or more of the following:
Natural Number, Whole Number, Integer, or Rational Number

1.) $\frac{6}{3}$ N, Rat, W, I

2.) -1 I, Rat

3.) 0 W, Rat, I

4.) $-\frac{11}{3}$ Rational

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Practice:

Classify each number as one or more of the following:
Natural Number, Integer, Rational Number or Irrational Number

5, -1.2 , $\frac{13}{7}$, $-\sqrt{7}$, -12 , $\sqrt{16}$

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Practice:

A student obtains the following test scores: 81, 96, 79, and 82.

- a. Find the student's average test score.**
- b. Is this average a natural, a rational or a real number?**

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