



1.4 Subsets of Real Numbers

Need To Know



- Subsets of the Real Numbers
- Comparisons Symbols
- Absolute Value



Number Sets

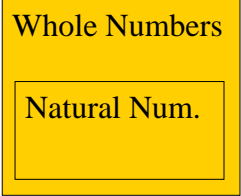
Natural Numbers
(Counting Numbers)
are the numbers =
{1, 2, 3, 4, 5, ...}

Natural Num.

Number Sets

Whole Numbers are the numbers = $\{0, 1, 2, 3, 4, \dots\}$

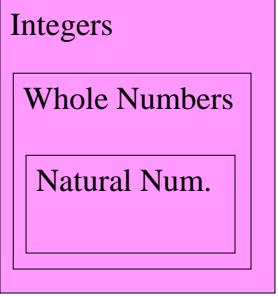
Whole Numbers = $\{0\} + \text{Natural Numb.}$



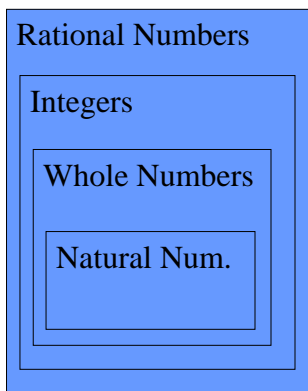
Number Sets

Integers are the numbers = $\{\dots -3, -2, -1, 0, 1, 2, 3, \dots\}$

Integers = Negative Natural Numbers + Whole Numbers



Number Sets

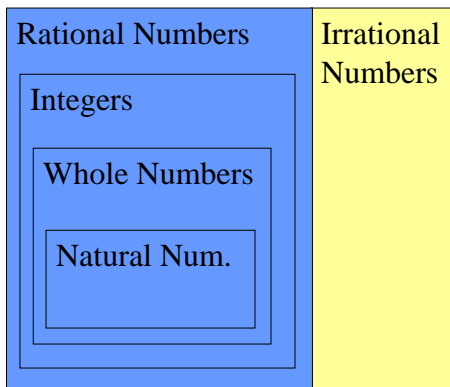


Rational Numbers
are the numbers of the form a/b where b is not zero.

Rational Numbers is the set of all fractions

Number Sets

REAL NUMBERS



Irrational Numbers
are the numbers that can not be written as fractions.

Real Numbers
are the collection of all Rational and Irrational Numbers.



Check for Understanding

$\{-5, -0.25, 0, 1, \pi, \frac{2}{7}, \sqrt{2}, 0.333, 5\}$ Categorize and list the numbers from the set to each set below.

Natural Numbers

Rational Numbers

Whole Numbers

Irrational Numbers

Integers

Real Numbers



Comparison Symbols

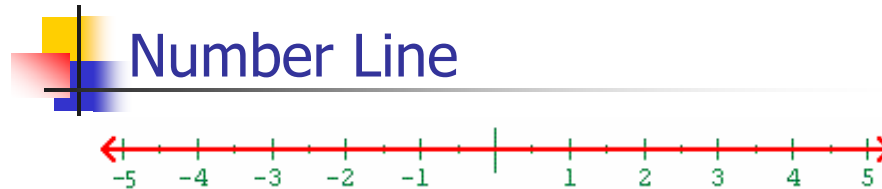
True or False

$$4 \leq -4$$

$$-4 \leq 3$$

$$-4 \leq -4$$

$a = b$	a is equal to b
$a \neq b$	a is not equal to b
$a < b$	a is less than b
$a \leq b$	a is less than OR equal to b
$a > b$	a is greater than b
$a \geq b$	a is greater than OR equal to b



Key Vocabulary

Positive Numbers – Numbers to the right of zero.

Negative Numbers – Numbers to the left of zero.

Opposite of a number is on the other side of zero.

Points on the number line correspond to real numbers.

All of the points represent all of the Real Numbers.

Absolute Value – The distance of a number from zero
(written as $|x|$)

Inequality Comparisons

If a number is further on the number line, it is than ($<$).

If a number is further on the number line, it is than ($>$).

Examples: Fill in the blank with $<$ or $>$.

$$-7 \underline{\quad} 3 \qquad -\frac{1}{4} \underline{\quad} -\frac{3}{4} \qquad |-8| \underline{\quad} |-5|$$

end