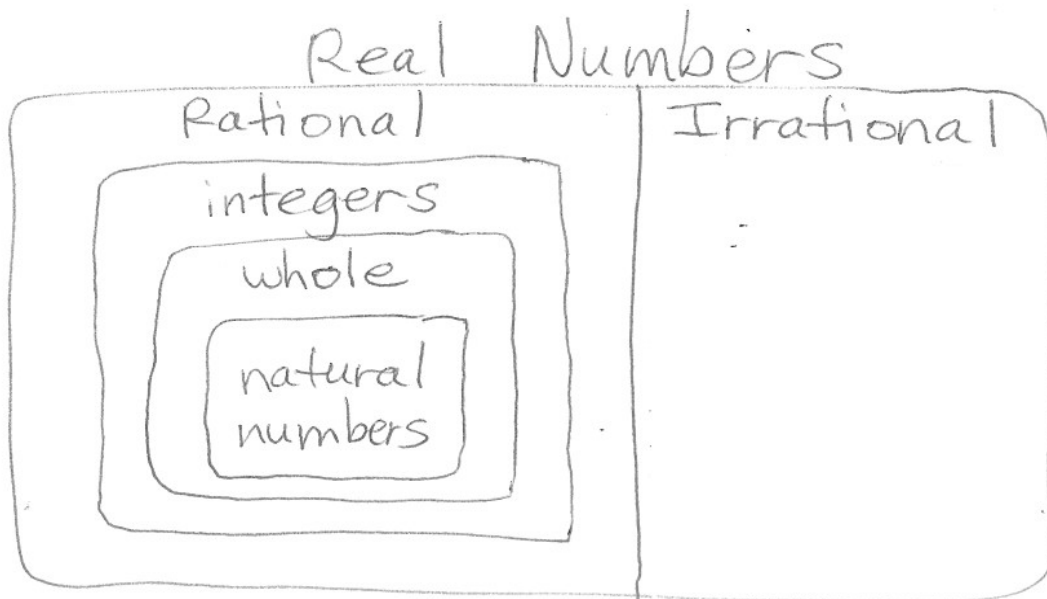


Algebra I
4.5 Notes, Part 1

Sets of Numbers

Natural Numbers (counting #'s)	$\{1, 2, 3, \dots\}$
Whole Numbers	$\{0, 1, 2, 3, \dots\}$
Integers	$\{\dots, -3, -2, -1, 0, 1, 2, 3, \dots\}$
Rational Numbers	a fraction (or quotient) of <u>integer</u> <u>integer</u> two integers (denominator $\neq 0$); decimal value ^{.0625} stops or ^{0.1} repeats (doesn't stop)
Irrational Numbers	non-terminating and non-repeating decimal ex. $\pi, \sqrt{2}$
Real Numbers	union (put together) the rational and the irrational numbers (any # on the # line)



4.5 Notes, Part 2

Properties of Real Numbers

$a + \underline{0} = a$ Additive Identity <u>0</u>	$a \cdot \underline{1} = a$ Multiplicative Identity <u>1</u>
$a + \underline{-a} = 0$ Additive Inverse <u>-a</u>	$a \cdot \underline{\frac{1}{a}} = 1$ Multiplicative Inverse <u>$\frac{1}{a}$</u> also called a <u>reciprocal</u>

$2 \cdot \frac{1}{2} = 1$
 $7 \cdot \frac{1}{7} = 1$

not commutative
 subtraction
 $3 - 4 \neq 4 - 3$
 division
 $1 \div 2 \neq 2 \div 1$
 $\frac{1}{2} \neq 2$

Commutative Property of Addition $a + b = b + a$

switch order

Example: $3 + 1 = 1 + 3$

Commutative Property of Multiplication $a \cdot b = b \cdot a$

Example: $10 \cdot 5 = 5 \cdot 10$

Associative Property of Addition $(a + b) + c = a + (b + c)$

include or move ()

Example: $(1 + 2) + 3 = 1 + (2 + 3)$

Associative Property of Multiplication $(a \cdot b) \cdot c = a \cdot (b \cdot c)$

Example: $(4 \cdot 2) \cdot 3 = 4 \cdot (2 \cdot 3)$

Reflexive Property

$a = a$
 $7 = 7$

Symmetric Property

If $a = b$ then
 $b = a$
 If $\frac{1}{2} = .5$, then
 $.5 = \frac{1}{2}$

Transitive Property

If $a = b$ and $b = c$
 then $a = c$
 If $\frac{1}{2} = .5$ and $.5 = 50\%$
 then $\frac{1}{2} = 50\%$