MATH 0482

Chapter 1.1 Review of Real Numbers and Absolute Value

REAL NUMBERS

VARIABLE : LETTER USED TO REPRESENT NUMBER

SET : COLLECTION OF ELEMENTS $\{a, b, c\}$

NATURAL NUMBERS $\mathbb{N} = \{1, 2, 3, 4, 5, \ldots\}$

WHOLE NUMBERS $W = \{0, 1, 2, 3, 4, 5, \ldots\}$

INTEGERS $\mathbb{Z} = \{\ldots, -3, -2, -1, 0, 1, 2, 3, \ldots\}$

SUBSET $\subseteq$

EMPTY SET $\{\ \} = \emptyset$

RATIONAL NUMBERS $Q = \left\{ \frac{a}{b} \middle| a, b \in \mathbb{Z}, b \neq 0 \right\}$

IRRATIONAL NUMBERS

REAL NUMBERS $\mathbb{R}$ = RATIONAL AND IRRATIONAL COMBINED

EVEN INTEGERS : DIVISIBLE BY 2 $= \{\ldots, -4, -2, 0, 2, 4, \ldots\}$

ODD INTEGERS : NOT DIVISIBLE BY 2 $= \{\ldots, -3, -1, 1, 3, \ldots\}$

PRIME NUMBER : INTEGER GREATER THAN 1
DIVISIBLE BY ONLY 1 AND ITSELF
$\{2, 3, 5, 7, 11, 13, 17, 19, 23, \ldots\}$

COMPOSITE NUMBER : WRITTEN AS A PRODUCT OF PRIMES

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PRIME FACTORIZATION

FRACTION: RATIO OF TWO INTEGERS a AND b WITH $b \neq 0$

$$\frac{a}{b}$$

$$\frac{50}{100}$$

GCF: GREATEST COMMON FACTOR

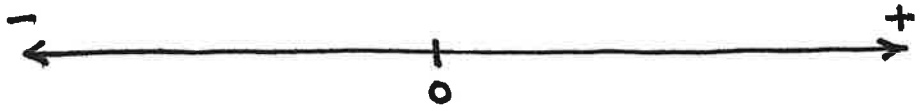
REDUCE TO LOWEST TERMS:

$$\frac{108}{72}$$

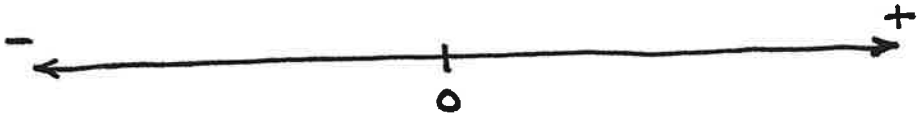
$$\frac{12}{6}$$

$0 \div a$ $\qquad\qquad$ $a \div 0$

THE NUMBER LINE



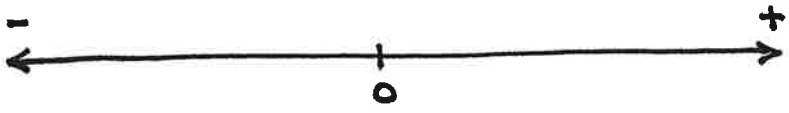
GRAPH THE FOLLOWING SET OF REAL NUMBERS $\left\{-\frac{5}{2}, 0, \frac{3}{2}, 2\right\}$.



OPPOSITE: a vs. $-a$

DOUBLE-NEGATIVE PROPERTY: $-(-a)=a$

CALCULATE $-\left(-\left(-\frac{3}{8}\right)\right)$.



$=$ $<$

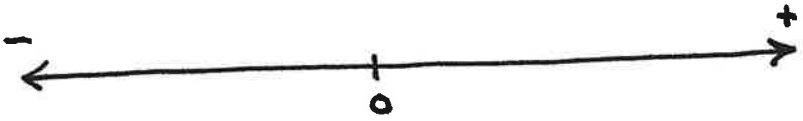
$\neq$ $>$

$\approx$ $\leq$

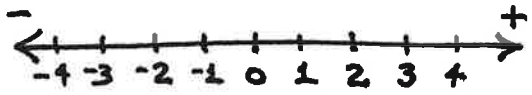
$\geq$

$-5<-1$ $-1>-5$

FILL IN THE BLANK: -2 ___ -12.

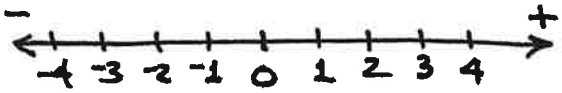


ALGEBRAIC INEQUALITY: $x \geq 2$



INTERVAL: SET:

"X IS LESS THAN 3"



INTERVAL: SET:

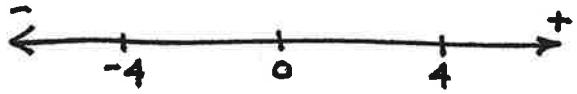
$x < -20$

INTERVAL: SET:

COMPOUND INEQUALITY: $x < 3$ OR $x \geq 6$ 

INTERSECTION: $-1 \leq x$ AND $x < 3$ 

ABSOLUTE VALUE:



$$|a| = \begin{cases} a \text{ IF } a \geq 0 \\ -a \text{ IF } a < 0 \end{cases}$$

SOLVE FOR X.

$|x| = 6$ $\qquad$ $|x| = -6$

SIMPLIFY.

$-|3|$ $\qquad$ $-|-3|$ $\qquad$ $-(-|-50|)$