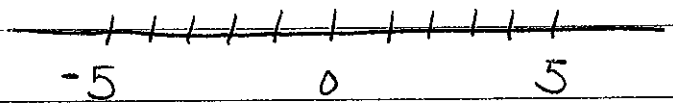
1.1 Understanding Integers

★ Vocabulary:

opposites - numbers that are the same distance from 0. Ex: 5 and -5



integers - the counting numbers, their opposites, and zero.

absolute value - a numbers distance from zero
always positive

★ How to read the numbers:

-3 = Negative three

$-(-3)$ = The opposite of negative three

$|-3|$ = The absolute value of negative three

★ Examples:

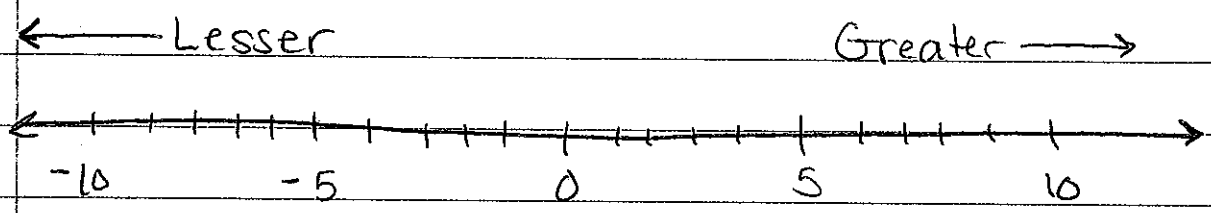
The opposite of 22 is -22

The opposite of -30 is 30

$|57| = 57$ $|-113| = 113$

1-2 Comparing + Ordering Integers

★ use a number line to help.



★ Compare

1. $7 > -12$
2. $-3 > -9$
3. $-8 < 0$
4. $|-2| > -2$
   $2 > -2$

★ Order from least to greatest

1. $-6, 5, -7 = \underline{-7, -6, 5}$
2. $8, -6, -2 = \underline{-6, -2, 8}$
3. $-21, |-15|, -12 = \underline{-21, -12, |-15|}$
4. $|3|, -3, -19, 11 = \underline{-19, -3, 3, 11}$

1.3 Absolute Value

☆Remember that the absolute value of a number is its distance from zero on a numberline.

1. How far away from 0 is $|9|$?
   9 units
2. How far away from 0 is $|-9|$?
   9 units
3. $|76| > |-36|$
   ↓ ↓
   $76 > 36$

4. $41 < |-42.3|$
   ↓ ↓
   $41 < 42.3$

5. Order from least to greatest
   $|6|, |-4|, |-3|, |-18|$
   ↓ ↓ ↓ ↓
   6 4 3 18
   $|-3|, |-4|, |6|, |18|$

1.4 Rational Numbers on a Number Line

★ rational number - any number that can be shown as the quotient of two integers

→ whole numbers, decimals, fractions, integers

★ To compare rational numbers change them all to the same form: decimal or fraction

1. $1.3 \bigcirc 1\frac{1}{5}$

   $1\frac{3}{10} \bigcirc 1\frac{1\times2}{5\times2}$ ★ common denominator

   $1\frac{3}{10} > 1\frac{2}{10}$

2. $-1.5 < -\frac{11}{12}$

3. $\frac{5}{4} \bigcirc 1.6$

   $1.25 < 1.6$

   $4\overline{)500}$ → 1.25, -4, 10, -8, 20, -20, 0

   ★ use division to change fractions to decimals Then, Compare.

4. $\frac{5}{4} > 1$ $\quad \frac{4}{4} = 1$ so $\frac{5}{4} > 1$

1.3 Comparing + Ordering Rational Numbers

★ Change all rational numbers to the same form (decimal or fraction).

1. $\frac{4}{5}, 0.9, \frac{5}{8}$

$\frac{4}{5}$: $5\overline{)4.0}$ → 0.8, -40, 0

$\frac{5}{8}$: $8\overline{)5.0}$ → 0.6, -48, 2

$0.8 \quad 0.9 \quad 0.6$

$\boxed{\frac{5}{8}, \frac{4}{5}, 0.9}$ ★ List numbers in original form

2. $0.61, \frac{2}{3}, 0.\overline{5}$

$\frac{2}{3}$: $3\overline{)2.00}$ → 0.66, -18, 20, -18, 2

$0.61 \quad 0.\overline{6} \quad 0.\overline{5}$

$\boxed{0.\overline{5}, 0.61, \frac{2}{3}}$

3. $0.7, 0.68, \frac{5}{8}$

$\frac{5}{8}$: $8\overline{)5.00}$ → 0.62, -48, 20, -16, 4

$0.7 \quad 0.68 \quad 0.62$

$\boxed{\frac{5}{8}, 0.68, 0.7}$

1.6 Problem Solving

Use Reasoning

Sanjay and Nathaniel are riding the elevator in their building. They rode up 10 floors, down 16, and up 26. If the elevator ended up on the 36th floor, on what floor did they start?

★ I know: up 10
down 16
up 26
ended on 36th floor

★ Question: Where did they start?

★ Strategy: Work backwards or use the inverse operation.

Start → +10 → −16 → +26 → 36th Floor

16th Floor ← −10 ← +16 ← −26 ← 36th Floor

$\begin{array}{r} 26 \\ -\ 10 \\ \hline 16 \end{array}$ $\begin{array}{r} 10 \\ +\ 16 \\ \hline 26 \end{array}$ $\begin{array}{r} 36 \\ -\ 26 \\ \hline 10 \end{array}$