Algebra IA

Lesson 2.2
Add Real Numbers

Warm-Up
Write the following numbers in order from greatest to least.

(a) $-\frac{2}{3}, -0.6, 0.4, -1, \frac{1}{3}$

$0.4, \frac{1}{3}, -0.6, -\frac{2}{3}, -1$

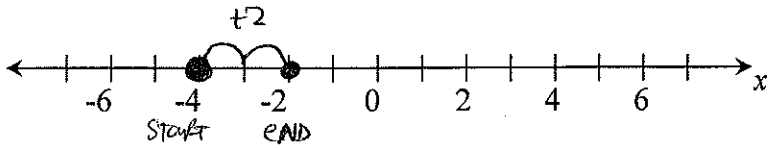
(b) $-4.99, 5, \frac{16}{3}, -5.1, 5.25$

$\frac{16}{3}, 5.25, 5, -4.99, -5.1$

Example 1. Add Two Integers Using a Number Line
Use the number line provided to find the sum.

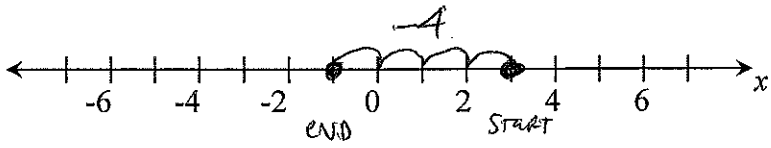
(a) $-4+2$

-2



(b) $3+(-4)$

-1



Rules of Addition

Same Sign (both positive or both negative):
If the signs are the same for two numbers, add their absolute values and the sum will have the same sign as the numbers added.

Different Sign (one negative and one positive):
If the signs are different for the two numbers, subtract the smaller absolute value from the larger and the sum will have the same sign as the number with the larger absolute value

Example 2. Add real numbers
Find the sum using the Rules of Addition for signs.

(a) $-8.4+(-0.7)$

$|-8.4|+|-0.7|$

$8.4 + 0.7$

9.1

BOTH NEGATIVE SO

-9.1

(b) $-12.6+7.3$

STARTED NEGATIVE

$|-12.6| = 12.6$ ← LARGER

$|7.3| = 7.3$

$12.6 - 7.3 = 5.3$

SO

-5.3

(c) $10+(-16.2)$

STARTED NEGATIVE

$|10| = 10$

$|-16.2| = 16.2$ LARGER

$16.2 - 10.0 = 6.2$

SO

-6.2

Properties of Addition		Example
Commutative Property	$a+b=b+a$	$6+(-5)=-5+6$
Associative Property	$(a+b)+c=a+(b+c)$	$(-2+5)+1=-2+(5+1)$
Identity Property	$a+0=0+a=a$	$8+0=8$
Inverse Property	$a+(-a)=-a+a=0$	$-4+4=0$

Example 3. Identify Properties of Addition
Identify the property being illustrated.

(a) $-11.9+11.9=0$
INVERSE PROPERTY

(b) $-8+(-x)=-x+(-8)$
COMMUTATIVE PROPERTY

(c) $-2+0=-2$
IDENTITY PROPERTY

(d) $x+(2+5)=(x+2)+5$
ASSOCIATIVE PROPERTY

Example 4. Finding Solutions and the Properties
Solve the equation using mental math.

$-8+x+(-2)=-10$
ALREADY ADD TO -10 [IDENTITY PROPERTY]
SO $x=0$

Additive Identity - ZERO

Additive Inverse - THE OPPOSITE OF WHATEVER NUMBER YOU START WITH

Assignment: Page 77-78 (4 – 46) even

Review:

Find the sum.

1. $\frac{2}{4}+\frac{3}{8}$
2. $\frac{2}{5}+\frac{1}{4}$
3. $\frac{5}{8}+\frac{1}{3}$

Find the difference

4. $\frac{8}{9}-\frac{2}{3}$
5. $\frac{7}{8}-\frac{1}{4}$
6. $\frac{5}{6}-\frac{1}{9}$