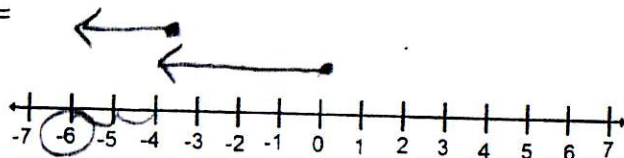We can <u>add integers</u> using a number line.
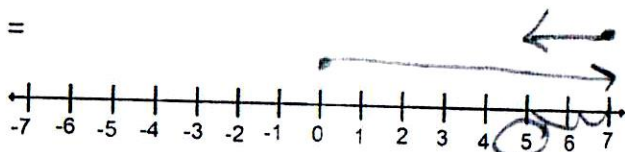
*Start at 0
*Draw first number's arrow to left if negative & to right if postive
*Draw second number's arrow above 1st one
*Record where you last arrow ends

1) $-4 + -2 =$

2) $7 + -2 =$

3) $-6 + 3 =$
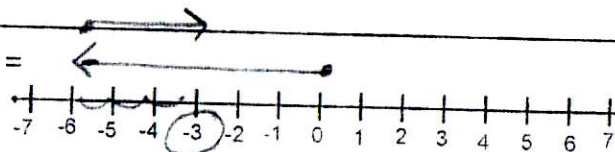
4) What's the addition problem?

$$\boxed{-6} + \boxed{} = \boxed{-3}$$
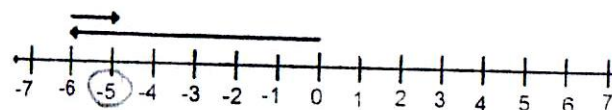
zero pairs

On a number line, <u>opposites</u> are the same distance from 0 but in different directions from 0. Numbers that are opposites have a sum of 0. An integer and its opposite are also called <u>additive inverses</u>.
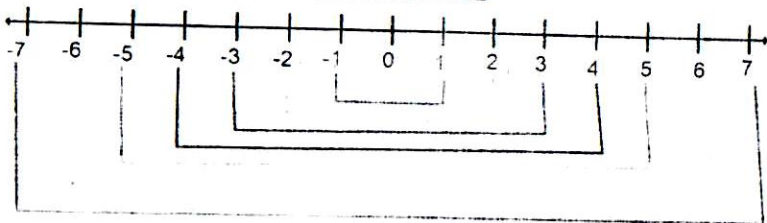
$-6 + 6 =$ ⃝ $-5 + 5 =$ ⃝ $2 + -2 =$ ⃝ $1 + -1 =$ ⃝

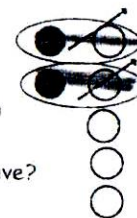<u>Addition of Integers Modeled with Counters</u>:

Let ● = -1   and   ◯ = +1

<u>Example</u>: $-1 + -2 = -3$
Draw one negative counter
Then draw 2 negative counters in another column
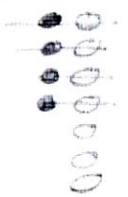How many negative counters are there altogether?

<u>Example</u>: $-2 + 5 = 3$
Draw two negative counters
Then draw five positive counters in another column
Look for zero pairs and show they can be removed
How many and what kind of counters do you now have?

Model these problems with counters:

1) -4 + 7 = 3

2) -5 + -3 = -8

What addition problems are modeled by these counters?

3)

$3 + -1 = 2$

4)

$2 + -3 = -1$

Addition of Integers Rules
Think....

Do I have **same** signs or **different** signs???

| Same Signs | OR | Different Signs |

Same Signs
*Add absolute values of numbers
*Attach same sign

Examples:
-7 + -2 = -9
8 + 4 = 12

Different Signs
*Subtract absolute values
Larger absolute value - smaller absolute value
*Attach sign of number with greatest absolute value

Examples:
-7 + 2 = -5
8 + -2 = 6
3 + -9 = -6

$-\frac{7}{2}$

5

Addition of More than Two Integers
Think....   opposites zero pairs

*Are there any additive inverses?
-2 + 6 + 7 + -6 = ?
-2 + 6 + 7 + -6
-2 + 7 = 5

Cross out 6 and -6 since 6 +-6 = 0
Different signs, subtract absolute values, answer positive since 7 is the largest absolute value

* -3 + 8 + -5 + 3 + -2 = ?

(-3 + -5 + -2) + (8 + 3)

Since it is all addition, we can change the order (commutative property) and grouping (associative property)
So, Add the negative #'s, Add the positive #'s, then use the addition rule on those two #'s

(-10) + (11) = 1

---

1) $-4 + 11 = 7$

2) $-10 + 2 = -8$

3) $-3 + 3 = 0$

4) $9 + -1 = 8$

5) $-6 + -1 = -7$