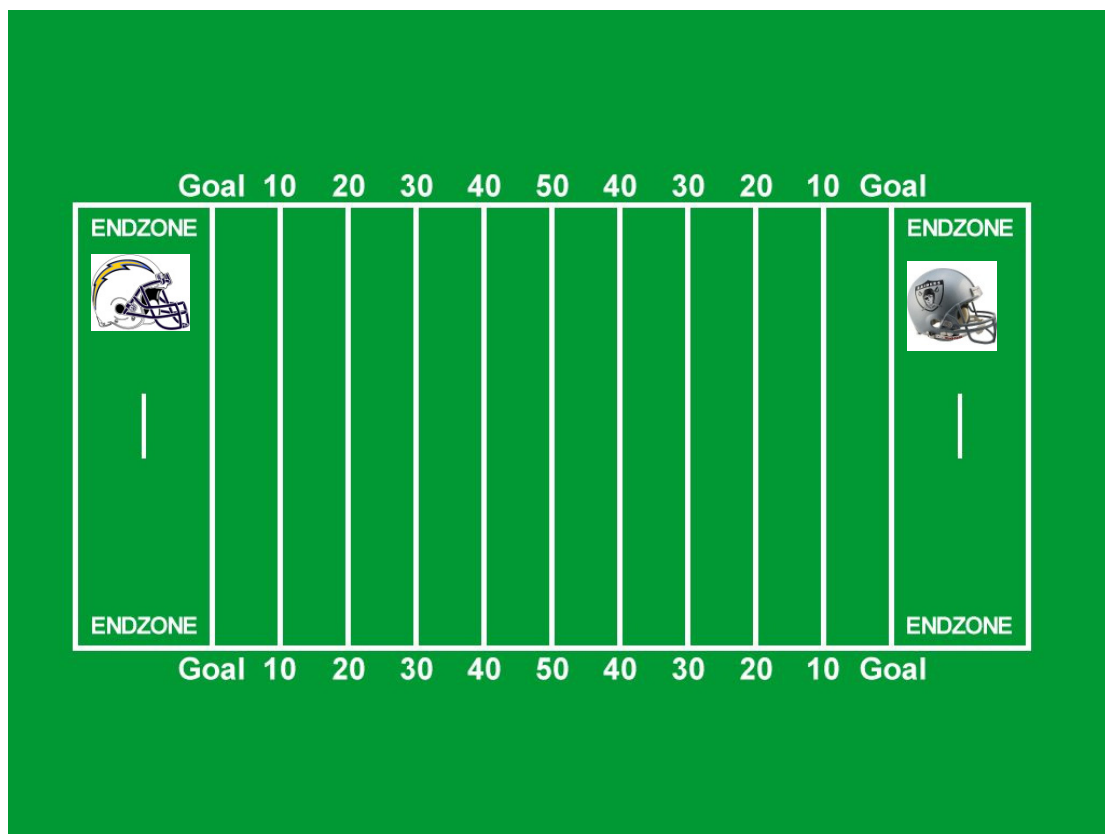When you are done with your 1.5 homework you should be able to...

- π Add numbers with a number line
- π Find sums using identity and inverse properties
- π Add numbers without a number line
- π Use addition rules to simplify algebraic expressions
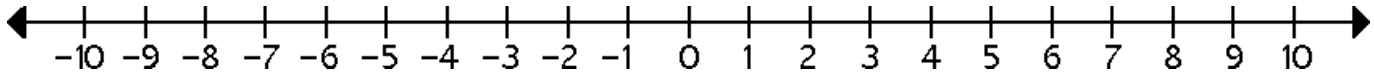- π Solve applied problems using a series of addition

WARM-UP:

It is a Sunday during the fall semester. You are watching the Chargers/Raider game. The Chargers are currently on their own 30 yard line. During the first down that the Chargers have possession of the ball, the Chargers complete a pass for a gain of ten yards. On the second down, the Raiders sack the Chargers' quarterback, causing a loss of 10 yards.

a. Use the image of the football field shown below to model the gain and loss of yardage.

b. How would you use signed numbers to represent the ten yard gain?

c. How would you use signed numbers to represent the ten yard loss?

d. What is the net yardage gained?

e. How can we use the number line below to model 10 + (-10)?

f. Based on the information above, we can conclude that a number and its

_____ sum to _____.

IDENTITY AND INVERSE PROPERTIES OF ADDITION

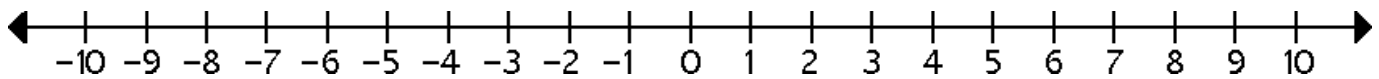| PROPERTY	MEANING	EXAMPLES
IDENTITY PROPERTY OF ADDITION		
INVERSE PROPERTY OF ADDITION		

ADDING INTEGERS

NUMBER LINE MODELS

POSITIVE/NEGATIVE CHIP MODEL

Example 1: Illustrate $4+2$ using

   a. A number line

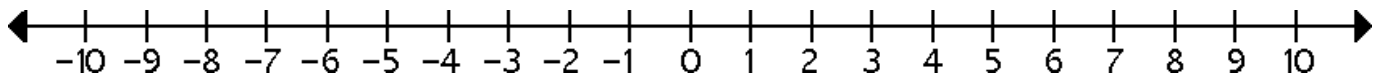   b. The positive/negative chip method

c. So the "rule" for a positive plus a positive is...
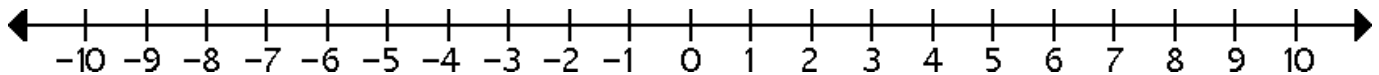
Example 2: Illustrate $-2+(-3)$ using

  a. A number line

```
←—+——+——+——+——+——+——+——+——+——+——+——+——+——+——+——+——+——+——+——+——→
  -10 -9 -8 -7 -6 -5 -4 -3 -2 -1  0  1  2  3  4  5  6  7  8  9  10
```

  b. The positive/negative chip method

  c. So the "rule" for a negative plus a negative is...

Example 3: Illustrate $-10+6$ using

  a. A number line
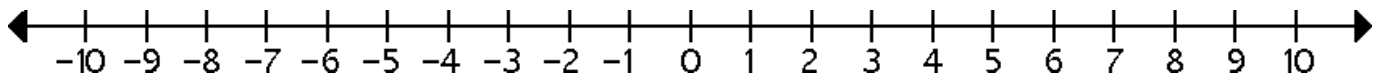
```
←—+——+——+——+——+——+——+——+——+——+——+——+——+——+——+——+——+——+——+——+——→
  -10 -9 -8 -7 -6 -5 -4 -3 -2 -1  0  1  2  3  4  5  6  7  8  9  10
```

  b. The positive/negative chip method

c. So the "rule" for a negative plus a positive is…

Example 4: Illustrate $1+(-7)$ using

  a. A number line

```
◄──┼──┼──┼──┼──┼──┼──┼──┼──┼──┼──┼──┼──┼──┼──┼──┼──┼──┼──┼──┼──►
   −10 −9 −8 −7 −6 −5 −4 −3 −2 −1  0  1  2  3  4  5  6  7  8  9  10
```

  b. The positive/negative chip method

  c. So the "rule" for a negative plus a negative is…

SIMPLIFYING ALGEBRAIC EXPRESSIONS

Example 5: Simplify.

  a. $-9x+(-4x)$

  b. $-6y+22y-5$

APPLICATIONS

Example 6:

In a magic square, all the rows, all the columns and the 2 diagonals must add to the same number.

1. Complete the magic square, using only the positive integers 1 to 9:

	1	
4	9	2

2. Complete the magic square, using only the integers:

-10, -8, -6, -4, 0, 2, 4, 6

	-2	

Example 7: In high school, an elementary algebra class meets five hours a week for nine months. At MiraCosta College, an elementary algebra class meets five hours a week for 4 months. The class at MiraCosta College has how many fewer in-class hours?

MIXED PRACTICE

1. Fill in the blank.

   a. 5 is the _____ of -5.

b. On a number line, the greater number is to the _____ of the lesser number.

c. A number's distance from zero on a number line is the number's _____

_____.

d. Numbers less than zero are called _____ numbers.

e. When using an inequality symbol, the "arrow" points towards the

_____ number.

2. Add.

a. $-18+(-26)+100+34$

c. $12^2 - 24 \div 6$

b. $-18+2(51-6)+100(-15+670)$

d. $\dfrac{30+(-8)}{2(176-175)}$