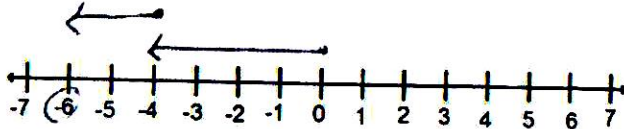


**Math 7 Notes**  
(Subtraction of Integers)  
Section 3-3

Subtract integers using a number line:

$$-4 - 2 = (-6)$$



Subtraction of Integers Modeled with Counters:

Let ● = -1 and ○ = +1

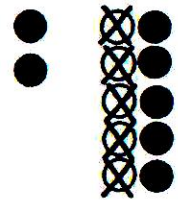
Example:  $-3 - (-1)$

Draw three negative counters  
Ask yourself: Do I have one negative I can take away?  
Yes. Take away (cross out) one negative counter.  
How many are left? 2 negatives



Example:  $-2 - 5$

Draw two negative counters  
Ask yourself: Do I have five positives I can take away? No.  
To get negatives without changing the problem, add five zero pairs  
Now take away (cross out) five positives.  
How many are left? 7 negatives



Write the number sentence modeled by these problem:

1) | 2) | 3) ○ = +1  
● = -1

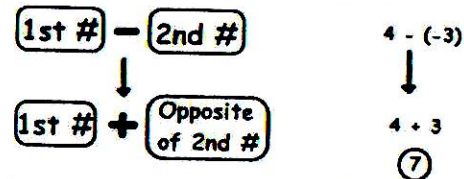
$-4 - 1 = (-5)$      $-2 - 5 = (-7)$      $-1 + 4 = 3$

Model these problems with counters:

4)  $2 - (-3) = 5$     5)  $-1 - 4 = -5$     6)  $-3 - -2 = -1$

**RULE: To SUBTRACT two integers ...**

- Rewrite the problem on the next line as a related addition problem.
- \* Keep the 1st # the same. (Don't touch the leader!)  $-5 - 8$
  - \* Change the subtraction sign to an addition sign.  $-5 +$
  - \* Write the opposite (additive inverse) of the 2nd #.  $-5 + (-8)$
  - \* Use the addition rules.  $-13$



|                                 |                                  |                                   |
|---------------------------------|----------------------------------|-----------------------------------|
| $-5 - 2$<br>$-5 + -2$<br>$(-7)$ | $4 - 7$<br>$4 + -7$<br>$(-3)$    | $-3 - (-9)$<br>$-3 + 9$<br>$(6)$  |
| $-9 - -4$<br>$-9 + 4$<br>$(-5)$ | $-6 - 8$<br>$-6 + -8$<br>$(-14)$ | $10 - (-2)$<br>$10 + 2$<br>$(12)$ |
| $6 - (-1)$<br>$6 + 1$<br>$(7)$  | $-8 - 2$<br>$-8 + -2$<br>$(-10)$ | $14 - 20$<br>$14 + -20$<br>$(-8)$ |

To evaluate an algebraic expression for a specific variable:

\*Rewrite the problem substituting the number for the variable

\*Follow the order of operations

Evaluate if  $a = -5$        $b = 2$

1)  $a + b$

2)  $6 + (a - b)$

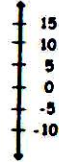
3)  $-a - b$

To find the difference between two numbers, subtract:

Larger # - Smaller #

OR

$|\text{smaller#} - \text{larger#}|$



**Example:** Find the difference between the maximum and minimum temperatures for Monday.

| Monday      |       | Higher Temp - Lower Temp | OR | $ \text{smaller#} - \text{larger#} $ |
|-------------|-------|--------------------------|----|--------------------------------------|
| 6AM         | 10° F | 15 - -5                  |    | $ -5 - 15 $                          |
| 12 Noon     | 15° F |                          |    | $ -5 + -15 $                         |
| 6PM         | 5° F  | 15 + 5                   |    | $ -20 $                              |
| 12 Midnight | -5° F | 20                       |    | 20                                   |