Signed Numbers

The rules for combining signed numbers are described below.

I. ADDITION

First, ask, ***"do the numbers being added have the same sign?"***

If your answer is Yes, use rule 1. If your answer is No, use rule 2.

Rule 1: When adding numbers with the same sign, add the numbers and keep the sign.

Rule 2: When adding numbers with different signs, subtract the smaller number from the larger number, and keep the sign of the larger number.

Example 1: $(+3)+(+7)=+10$

Example 2: $(-5)+(-9)=-14$

Example 3: $(-4)+(+2)=-2$

Example 4: $(+28)+(-5)=+23$

Note: The previous examples can also be written as follows:

Example 1: 3 + 7 = 10

Example 2: -5 - 9 = -14

Example 3: -4 + 2 = - 2

Example 4: 28 - 5 = 23

Examples 1 and 2 used Rule 1. Examples 3 and 4 used Rule 2.

How would you do the following problem?

Example 5: $(+21)+(-14)+(-15)+(+9)$

Using Rule 1, combine all the positives:	$(+21)+(+9)=+30$
Then combine all the negatives:	$(-14)+(-15)=-29$
Next, use Rule 2 to combine the sum of the positives and the sum of the negatives	$(+30)+(-29)=+1$

II. SUBTRACTION

Every subtraction problem of signed numbers is really an addition problem that follows these two rules:

Rule 1: Change the subtraction sign to an addition sign, and change the sign of the number that was being subtracted.

Rule 2: Use the addition rules to solve the problem.

Example 1:	**Example 2:**	**Example 3:**
$(+75)-(+30)=$	$(-58)-(-33)=$	$(-39)-(+39)=$
$(+75)+(-30)=+45$	$(-58)+(+33)=-25$	$(-39)+(-39)=-78$

Note: The previous examples can also be written as follows:

Example 1:	**Example 2:**	**Example 3:**
75 - 30 = 45	- 58 + 33 = - 25	- 39 – 39 = - 78

II. MULTIPLICATION AND DIVISION

Both Multiplication and Division have the same sign rules. Ask, ***"do the numbers being multiplied or divided have the same sign?"***

If your answer is Yes, use Rule 1. If your answer is No, use Rule 2.

Rule 1: When multiplying or dividing numbers with the same signs, the answer is always positive.

Rule 2: When multiplying or dividing numbers with different signs, the answer is always negative.

Example 1: $(-3) \bullet (-5) = +15$

Example 2: $\frac{-24}{+6} = -4$

Example 3: $\frac{-33}{-3} = +11$

Example 4: $-(x+1) = -x - 1$

Example 5:

$-(x-1) = -x + 1$

Whenever there is a negative sign in front of the parenthesis, the signs of **all** the terms on the inside becomes the opposite of what they are. See example 4 and 5.