## Signed Numbers

The rules for combining signed numbers are described below.

## I. <u>ADDITION</u>

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

If your answer is <u>Yes</u>, 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:	Example 2:	Example 3:	Example 4:
(+3)+(+7)=+10	(-5)+(-9)=-14	(-4)+(+2)=-2	(+28)+(-5)=+23

**<u>Note</u>**: The previous examples can also be written as follows:

Example 1:	Example 2:	Example 3:	Example 4:
3 + 7 = 10	-5 - 9 = -14	-4 + 2 = - 2	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. <u>SUBTRACTION</u>

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: $(+75) - (+30) =$	Example 2: $(-58) - (-33) =$	<b>Example 3:</b> $(-39) - (+39) =$
(+75)+(-30)=+45	(-58)+(+33)=-25	(-39)+(-39)=-78

**<u>Note:</u>** 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. <u>MULTIPLICATION AND DIVISION</u>

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 <u>Yes</u>, use Rule 1.

If your answer is <u>No</u>, 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.

