

# Signed Number Operations

## Addition:

Adding two numbers having the **same sign**:

Sum the number and keep the sign

$$+ 5 + (+2) = +7$$

$$- 5 + (-2) = -7$$

Adding two numbers having **different signs**:

Find the difference between the two numbers and take the sign of the largest number.

$$+ 5 + (-2) = +3$$

$$- 5 + (+2) = -3$$

## Subtraction:

Change the sign of the second number and do the rules of addition:

$$+ 5 - (-2) = +5 + 2 = 7$$

$$- 5 - (-2) = -5 + 2 = -3$$

$$5 - 2 = 5 - (+2) = 5 + (-2) = 3$$

$$- 5 - 2 = -5 - (+2) = -5 + (-2) = -7$$

## Multiplication and Division:

**Like** signs result in a positive number:

$$(+)(+) = +$$

$$(+)\div(+)=+$$

$$(-)(-) = +$$

$$(-)\div(-)=+$$

$$(+5)(+2) = +10$$

$$\frac{+14}{+7} = +2$$

$$\frac{-14}{-7} = +2$$

$$(-5)(-2) = +10$$

**Unlike** signs result in a negative number:

$$(+)(-) = -$$

$$(-)(+) = -$$

$$(-)(+) = -$$

$$(+)(-) = -$$

$$(+5)(-2) = -10$$

$$\frac{+14}{-7} = -2$$

$$\frac{-14}{+7} = -2$$

$$(-5)(+2) = -10$$

## Subtraction of Signed Numbers

Notice that the subtraction of a **whole number** is the same as the addition of the opposite number.

<u>Subtraction</u>		<u>Addition of the Opposite</u>
$8 - 4$	=	$8 + (-4) = 4$
$22 - 17$	=	$22 + (-17) = 5$

Subtraction of **signed numbers** can also be written as the addition of the opposite number.

<u>Subtraction</u>		<u>Addition of the Opposite</u>
$7 - (-3)$	=	$7 + 3 = 10$
$(-6) - 2$	=	$(-6) + (-2) = -8$
$(-19) - (-14)$	=	$(-19) + 14 = -5$

To subtract signed numbers, rewrite the subtraction as the addition of the opposite. Then add.

First Number	-	second number	=	first number	+	the opposite of the second number	=	
5	-	2	=	5	+	(-2)	=	3
-5	-	(-2)	=	(-5)	+	2	=	-3
5	-	(-2)	=	5	+	2	=	7
-5	-	2	=	(-5)	+	(-2)	=	-7

When subtraction occurs several times in a problem, rewrite each subtraction as the addition of the opposite. Then proceed as in the addition of signed numbers.

Subtract:  $-4 - (-2) - 3 - (-4) - 5$

$-4 - (-2) - 3 - (-4) - 5$

$-4 + 2 + (-3) + 4 + (-5)$

$(-2) + (-3) + 4 + (-5)$

$(-5) + 4 + (-5)$

$(-1) + (-5)$

Each subtraction has been changed to addition. Each number being subtracted has been changed to its opposite.