OPERATION OF SIGNED NUMBERS

Numbers have a sign and a numeric value. For example, 5 has sign positive, "+", and numeric value "5" while -7 has sign negative, "-", and numeric value "7".

**Basic Rules:**

**Multiplication/Division:**

- positive x positive = positive  
  
  Examples:
  
  (+5) x (+3) = +15  
  (+8)/(+2) = +4

- negative x negative = positive  
  
  Examples:
  
  (-5) x (-3) = +15  
  (-8)/(-2) = +4

- positive x negative = negative  
  
  Examples:
  
  (+5) x (-3) = -15  
  (+8)/(-2) = -4

- negative x positive = negative  
  
  Examples:
  
  (-5) x (+3) = -15  
  (-8)/(+2) = -4

**Note:**

- any number multiplied by **ZERO** is **ZERO**  
  
  Examples:
  
  0 x (-6) = 0  
  0 x (6) = 0

- any number divided by **ZERO** is undefined  
  
  Examples:
  
  7 ÷ 0 = undefined

- **ZERO** divided by any number (≠ 0) is **ZERO**  
  
  Examples:
  
  0 ÷ 7 = 0

- **ZERO** divided by **ZERO** is undefined.  
  
  Examples:
  
  0 ÷ 0 = undefined

**Addition/Subtraction**

- positive + positive = add, positive  
  
  Example:
  
  (+4) + (+3) = +7

- negative + negative = add, negative  
  
  Example:
  
  (-3) + (-2) = -5

- positive + negative = subtract, take sign of larger number  
  
  Example:
  
  (+4) + (-3) = +1

- negative + positive = subtract, take sign of larger number  
  
  Example:
  
  (-8) + (+2) = -6

**Note:** Any addition/subtraction problem whether it involves "+" or "-" signs can be converted to an addition problem using the previous multiplication division rules with +1 and -1.

\[ a + b = (+a) + (+b) \]
\[ a - (-b) = a + b = (+a) + (+b) \]
\[ -a - b = (-a) + (-b) \]
\[ -(-a) + b = a + b = (+a) + (+b) \]
\[ -a + b = (-a) + (+b) \]
\[ -(-a) - b = a + b = (+a) + (-b) \]
\[ a - b = (+a) + (-b) \]
\[ -(-a) - b = a - b = (+a) + (-b) \]
\[ -a - (-b) = -a + b = (-a) + (+b) \]