

## Absolute Value and Order of Operations

Absolute Value -

the number of units to zero on a number line | |

\*\*Every number and its opposite will share the same absolute value.

$$\begin{array}{l} |3| = 3 \\ |-3| = 3 \end{array} \quad \begin{array}{l} -|3| = -3 \\ -|-3| = -3 \end{array} \quad \left. \vphantom{\begin{array}{l} |3| = 3 \\ |-3| = 3 \end{array}} \right\} \begin{array}{l} \text{exceptions} \\ \text{to} \end{array}$$

\*\*Absolute value is always positive, except 0. ↙

\*\*\*You cannot have a negative absolute value.

$$\text{Ex. } |5-10| \neq -5$$

$$|3-5| = |-2| = 2$$

$$|3+5| = |8| = 8$$

$$|3| - |5| = 3 - 5 = -2$$

$$|3| + |5| = 3 + 5 = 8$$

$$|-3| - |-5| = 3 - 5 = -2$$

Order of Operations:

PEMDAS

Parentheses / Absolute Value

Exponents

M/D Mult / Div > left  
A/S Add / Subtr. > to right

$$8^2 + 4 \cdot 3 \quad 64 + 12 = \textcircled{76}$$

$$|5 - 8| + 6 \cdot -4$$

$$|-3| + 6 \cdot -4$$

$$3 + 6 \cdot -4$$

$$3 - 24 = \textcircled{-21}$$

$$\frac{(24 + 12)}{(11 - 5)} = \frac{36}{6} = 6$$

$$-18 + (2^3 - 6)$$

$$-18 + (8 - 6)$$

$$-18 + 2$$

$$\textcircled{-16}$$

$$28 - [18 \div (5-2)] + 1$$

$$28 - [18 \div 3] + 1$$

$$28 - 6 + 1$$

$$22 + 1$$

$$\textcircled{23}$$

$$6 + |-24| - \sqrt{169} + (4^2 \cdot 3)$$

$$6 + 24 - 13 + (16 \cdot 3)$$

$$6 + 24 - 13 + 48$$

$$30 - 13 + 48$$

$$17 + 48$$

$$\textcircled{65}$$

$$\sqrt{9} + 23 + |6| - 3\left(\frac{4}{6}\right)$$

$$3 + 23 + 6 - \frac{3}{1}\left(\frac{4}{6}\right)$$

$$\frac{12}{6}$$

$$3 + 23 + 6 - 2$$

$$26 + 6 - 2$$

$$32 - 2$$

$$\textcircled{30}$$

$$3|6-9| + \sqrt{36} - (5-8)$$

$$3|-3| + 6 - (-3)$$

$$3 \cdot 3 + 6 + 3$$

$$9 + 6 + 3$$

$$15 + 3$$

$$\textcircled{18}$$

$$4(2 + g) + 13^2$$

$$8 + 4g + 169$$

$$\begin{array}{l} 177 + 4g \\ \text{or} \\ 4g + 177 \end{array}$$