

# ALGEBRA 1

## Chapter 1, Section 3

### Order of Operations

#### VOCABULARY:

- PEMDAS –

#### GOALS:

- To have a clear understanding of the order of operations.
- Use the rules of PEMDAS to evaluate expressions.

#### RULES FOR ORDER OF OPERATIONS:

1. First do operations that occur within grouping symbols.
2. Then evaluate powers.
3. Then do multiplications and divisions from left to right.
4. Finally, do additions and subtractions from left to right.

1. Evaluating with or without grouping symbols – when using symbols such as parentheses ( ) or brackets [ ] can change the answer to a problem if used in the correct order.

Examples: Evaluate the following expressions when  $x = 3$ .

a. $3x^2 + 1$	b. $10 \div 2 + x - 4$
c. $10 \div (2 + x) - 4$	d. $10 \div [(2 + x) - 4]$

2. Using the left to right rule-

Examples: Solve the following expressions.

a. $32 - 16 + 2$	b. $48 \div 3 \cdot 2$
c. $12 + 6 \div 3 - 2$	d. $16 + 4 \div 2 - 3$

3. Using a fraction bar-

Examples: Simplify the following expressions.

a. $\frac{24 \cdot 3}{5 + 3^2 - 2}$	b. $\frac{8 + 16 \cdot 2}{10 + 2^2 - 4}$
-------------------------------------	--

4. Using a calculator to simplify by order of operations-

Examples: Simplify the following expressions.

a. When you enter the equation below in a calculator does it display 4.8 or 3.2? $11 - 4.8 \div 1.6 - 3.2$
b. For which of the following expressions will your calculator display 8? $10.5 - 4.2 \div 1.4 + 3.5 = \quad (10.5 - 4.2) \div 1.4 + 3.5 = \quad (10.5 - 4.2) \div (1.4 + 3.5) =$