

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Notes

Algebra Section 1.2

Pages 8-13

**Goal:** "I will be able to evaluate expressions using Order of Operations."

### Order of Operations

- Simplify what is inside the parentheses.
- Raise to Power
- Multiplication or Division, whatever comes first left to right
- Addition or Subtraction, whatever comes first left to right

Example 1:       $12 - (7 - 4)^2 + 5 \cdot 2$   
P                     $12 - 3^2 + 5 \cdot 2$   
E                     $12 - 9 + 5 \cdot 2$   
MD                  $12 - 9 + 10$   
AS                  $3 + 10$   
AS                 13

Example 2:       $\frac{3(12-5)}{1+3^2}$       Clear the numerator and denominator before dividing

$$\frac{3 \cdot 7}{1+3^2}$$
$$\frac{3 \cdot 7}{1+9}$$
$$\frac{21}{1+9}$$
$$\frac{21}{10} = 2 \frac{1}{10}$$

Try These:

(a)  $5(3 + 4)$   
 $5 \cdot 7$   
 $35$

(b)  $(6+1)^2$   
 $7^2$   
 $49$

$$\begin{aligned}
 \text{(c)} \quad & 5 + 2(4) + 3^2 \\
 & 5 + 2(4) + 9 \\
 & 5 + 8 + 9 \\
 & 13 + 9 \\
 & 22
 \end{aligned}$$

$$\begin{aligned}
 \text{(d)} \quad & (5 + 1) + 3^2 - (2 + 2) \\
 & 6 + 3^2 - (2 + 2) \\
 & 6 + 3^2 - 4 \\
 & 6 + 9 - 4 \\
 & 15 - 4 \\
 & 11
 \end{aligned}$$

$$\text{(e)} \quad \frac{5+3}{10-8}$$

$$\begin{aligned}
 & \frac{8}{2} \\
 & 4
 \end{aligned}$$

$$\text{(f)} \quad \frac{2(3+4)}{(9-8)^2}$$

$$\begin{aligned}
 & \frac{2 \cdot 7}{1^2} \\
 & \frac{14}{1} \\
 & 14
 \end{aligned}$$

Evaluate each expressions for  $n=4$ .

$$\begin{aligned}
 \text{(a)} \quad & 3n - 5 \\
 & 3 \cdot 4 - 5 \\
 & 12 - 5 \\
 & 7
 \end{aligned}$$

$$\begin{aligned}
 \text{(b)} \quad & (2n - 3) + 3 \\
 & (2 \cdot 4 - 3) + 3 \\
 & (8 - 3) + 3 \\
 & 5 + 3 \\
 & 8
 \end{aligned}$$

Challenge:

$$(c) \quad (2n + 3)^2 - 7$$

$$(2 \cdot 4 + 3)^2 - 7$$

$$(8 + 3)^2 - 7$$

$$11^2 - 7$$

$$121 - 7$$

$$114$$

$$(d) \quad \frac{(10-2n)^3}{5n-3^2}$$

$$\frac{(10-2 \cdot 4)^3}{5 \cdot 4 - 3^2}$$

$$\frac{(10-8)^3}{5 \cdot 4 - 9}$$

$$\frac{2^3}{20-9}$$

$$\frac{8}{11}$$