

Warm Up (Do on your HW from Yesterday)

1) $4x^2 - 16$ when $x = 5$

$$4(5)^2 - 16$$

$$4(25) - 16 = 100 - 16 = \textcircled{84}$$

2) $3(x + 6) - 8$ when $x = 5$

$$3(5+6) - 8$$

$$3(11) - 8 = 33 - 8 = \textcircled{25}$$

3) $3x^3$ when $x = 4$

$$3(4)^3 = \overline{3(64)} = \textcircled{192}$$

Homework Questions?

$$4x^3 = 4 \cdot x \cdot x \cdot x$$

$$\textcircled{(4x)^3}$$

$$4x \cdot 4x \cdot 4x$$

$$3^4 = 3 \cdot 3 \cdot 3 \cdot 3$$
$$9 \cdot 9$$
$$\textcircled{81}$$

On the top of your paper (by your name) rate yourself for this section:

4 - I can summarize the concepts and explain it to others

3 - I can apply the concept to answer questions correctly

2 - I can apply the concepts but with some mistakes

1 - I need help and know how to apply the concept

0 - I can't apply the concept, even with help

Rating of 0-2 is a warning signal to me that you need help

1.3 Order of Operations

Goals: • Use the established order of operations

EQ: What does PEMDAS stand for?
(Order of Operations)

Vocabulary

Order of Operations:

P E M D A S
 () ^{x Powers} × ÷ + -

Left-to-Right Rule:

→ $\begin{matrix} \textcircled{\times \div} & \textcircled{+ -} \end{matrix}$
 whichever is FIRST

Example 1: Evaluate Without Grouping Symbols

Evaluate the expression $4x^2 + 3$ when $x = 3$.
Use the order of operations.

$$4(3)^2 + 3$$

$$4(9) + 3$$

$$36 + 3$$

$$\textcircled{39}$$

Try It

Evaluate the variable expression when $x = 5$.
Use the order of operations.

1. $x^2 - 10$

$$\begin{array}{r} 5^2 \\ 25 \\ -10 \\ \hline 15 \end{array}$$

2. $3x^2 + 9$

$$\begin{array}{r} 3(5)^2 + 9 \\ 75 + 9 \\ \hline 84 \end{array}$$

3. $43 - x^2$

$$\begin{array}{r} 43 - 25 \\ 18 \end{array}$$

4. $2x^2 + 16$

$$\begin{array}{r} 2(5)^2 + 16 \\ 50 + 16 \\ \hline 66 \end{array}$$

Example 2: Using the Left-to-Right Rule

$$a. \quad 28 - 7 - 4 = (28 - 7) - 4$$

$$= 21 - 4$$

$$= 17$$

$$b. \quad 15 + 9 \div 3 - 4 = 15 + (9 \div 3) - 4$$

$$= 15 + 3 - 4$$

$$= 18 - 4$$

$$= 14$$

****Note:** You divide first in part (b) of Example 2 because division has a higher priority than addition and subtraction.

Example 3: Expressions with Fraction Bars

Evaluate the expression. Then simplify the answer.

$$\frac{5 \cdot 3}{13 + \underline{6^2} - 4} = \frac{15}{13 + 36 - 4} = \frac{15}{49 - 4}$$

$$= \frac{15 \div 3}{49 \div 3}$$

$$= \frac{3 \div 3}{9 \div 3}$$

$$= \frac{1}{3}$$

