

Order of Operations

Remember: To evaluate expressions involving more than one operation, mathematicians have agreed on a set of rules called **Order of Operations**.

You might be familiar with Please Excuse My Dear Aunt Sally...but let me introduce you to GEMS:

1. Grouping Symbols [], (), $\frac{\quad}{\quad}$ fraction bar
2. Exponents
3. Multiplication and Division
4. Subtraction and Addition

Examples:

Evaluate the expression

$$\begin{aligned} 1) & 8(17 - 2.3) \\ &= 8(14.7) \\ &= \boxed{117.6} \end{aligned}$$

$$\begin{aligned} 2) & 5 \cdot [36 - (13 + 9)] \\ &= 5 \cdot [36 - 22] \\ &= 5 \cdot [14] \\ &= \boxed{70} \end{aligned}$$

$$3) 0.5[y - (x - 2)] \text{ when } x = 4, y = 2$$

$$\begin{aligned} &= 0.5[2 - (4 - 2)] \\ &= 0.5[2 - 2] \\ &= 0.5[0] \\ &= \boxed{0} \end{aligned}$$

$$4) 2(x - y)^2 \text{ when } x = 5, y = 2$$

$$\begin{aligned} &= 2(5 - 2)^2 \\ &= 2(3)^2 \\ &= 2(9) \\ &= \boxed{18} \end{aligned}$$

Practice Problems:

$$= \boxed{0}$$

$$1) \underline{11 \cdot 7 - 9 \cdot 5}$$

$$= 77 - 45$$

$$= \boxed{32}$$

$$2) \frac{36-12}{2+6} = \frac{24}{8} = \boxed{3}$$

$$3) 84 \div [(18 - 16) \cdot 3]$$

$$= 84 \div [2 \cdot 3]$$

$$= 84 \div 6 = \boxed{14}$$

$$4) 5(21 - 3^2)$$

$$= 5(21 - 9)$$

$$= 5(12) = \boxed{60}$$

$$5) 48 \div 6 + 2$$

$$= 8 + 2$$

$$= \boxed{10}$$

$$6) (3 \cdot 2 + 1)^2 + 56 \div 8$$

$$= 7^2 + 56 \div 8$$

$$= 49 + 56 \div 8$$

$$= 49 + 7$$

$$= \boxed{56}$$

Evaluate when $x = 3, y = 4, \text{ and } z = 5.$

$$1) 0.25(y + x)$$

$$= .25(4 + 3)$$

$$= .25(7)$$

$$= \boxed{1.75}$$

$$2) x + \frac{24.4}{y}$$

$$= 3 + \frac{24.4}{4}$$

$$= 3 + 6.1$$

$$= \boxed{9.1}$$

$$3) 7z - x^2$$

$$= 7 \cdot 5 - 3^2$$

$$= 7 \cdot 5 - 9$$

$$= 35 - 9$$

$$= \boxed{26}$$

$$4) x + 2[z - (y - 1)]$$

$$= 3 + 2[5 - (4 - 1)]$$

$$= 3 + 2[5 - 3]$$

$$= 3 + 2[2]$$

$$= 3 + 4 = \boxed{7}$$

Assignment: Leaf Worksheet (All) *Show work on separate paper*

Modified Assignment: Leaf Worksheet (Every Other Problem)