

Objectives: I can solve problems using order of operations.

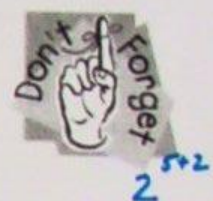
# Order of Operations

Jordan solved the problem  $5 + 4 \cdot 2$  and got the answer of 18. David solved the same problem and got 13. Can both be correct? Is there only one correct order to perform operations? Who is correct?

Don't forget the different symbols for multiplication:  
 $5 \cdot 2$   $5(2)$   $5 \times 2$   $5 \cdot 2$

$$\begin{aligned} 5 + 4 \cdot 2 \\ 9 \cdot 2 \\ 18 \end{aligned}$$

$$\begin{aligned} 5 + 4 \cdot 2 \\ 5 + 8 \\ 13 \end{aligned}$$



Let's use this acronym to help us remember the order of operations...

- P**lease      **E**xcuse      **M**y   **D**ear      **A**unt   **S**ally
- P (Level 1)      Parentheses (Grouping Symbols) Big Fraction Bar
- E (Level 2)      Exponents       $2^3 = 2 \cdot 2 \cdot 2 = 8$
- M & D (Level 3)      Multiply & Divide (left to right)
- A & S (Level 4)      Add & Subtract (left to right)



**Practice**      ~~No homework tonight~~  
 Steps must be shown so that each line of work is equal to the line above.

1. $5 \cdot 10 - 6 \cdot 2$ $50 - 12$ <b>38</b>	2. $24 + 6 \cdot 2$ $4 \cdot 2$ <b>8</b>	3. $3 + 5(7 - 5)$ $3 + 5(2)$ $3 + 10$ <b>13</b>
4. $18 - 5 \cdot 3$ $18 - 15$ <b>3</b>	5. $\frac{9 + 7 \cdot 5}{4}$ $\frac{9 + 35}{4}$ $\frac{44}{4} = \mathbf{11}$	6. $2[9(6 - 4)] + 4$ $2[9(2)] + 4$ $36 + 4$ <b>40</b>
7. $30 - 2^3$ $30 - 8$ <b>22</b>	8. $3(14 - 8)^2$ $3(6)^2$ $3 \cdot 36$ <b>108</b>	9. $10 \cdot 3^4$ $10 \cdot 81$ <b>810</b> $\sqrt[3]{3 \cdot 3 \cdot 3 \cdot 3}$ $9 \cdot 9$