## **Order of Operations** is most commonly referred to as PEMDAS, but I like to call it GEMDAS, with the G meaning grouping symbols.

***"Operations"***: adding, subtracting, multiplying, dividing, squaring, etc.

When you see something like ...7 + (6 × 52 + 3) ... what part should you calculate first?

Start at the left and go to the right? Or go from right to left? *Warning: Calculate them in the wrong order, and you will get a wrong answer!* So, long ago people agreed to follow rules when doing calculations, and they are:

1. **G** Calculate groupings first. Groupings can be in parentheses, brackets and braces which get worked from the inside out. 

2. **E** [Exponents](http://www.mathsisfun.com/exponent.html) (Powers of 10)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| yes |   | 5 × 22 | = | 5 × 4 | = | **20** |   |
| no |   | 5 × 22 | = | 102 | = | 100 | (wrong) |

3. **M/D** Calculate any and all multiplication and division, as they appear from left to right.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| yes |   | 6 × (5 + 3) | = | 6 × 8 | = | **48** |   |
| no |   | 6 × (5 + 3)  | = | 30 + 3 | = | 33 | (wrong) |
|  |  |  |  |  |  |  |  |

3. **A/S** Calculate any and all addition and subtraction, as they appear from left to right.

After you have done "G" and "E", just go from left to right doing any "M" ***and*** "D" as you find them followed by "A" ***and*** "S" as you find them from left to right. **It’s really quite simple as long as you have the steps memorized.**

Example: How do you work out **3 + 6 × 2** ? **M**ultiplication before **A**ddition: First **6 × 2 = 12**, then **3 + 12 = 15**

Example: How do you work out **(3 + 6) × 2** ? **P**arentheses first: First **(3 + 6) = 9**, then **9 × 2 = 18**

Example: How do you work out **12 / 6 × 3 / 2** ? **M**ultiplication and **D**ivision rank equally, so just go left to right:

First **12 / 6 = 2**, then **2 × 3 = 6**, then **6 / 2 = 3**

 Oh, yes, and what about **7 + (6 × 52 + 3)** ?

|  |  |
| --- | --- |
| 7 + (6 × 52 + 3) |   |
| 7 + (6 × 25 + 3) | Start inside *Parentheses*, and then use *Exponents* First |
| 7 + (150 + 3) | Then *Multiply* |
| 7 + (153) | Then *Add* |
| 7 + 153 | *Parentheses* completed, last operation is an *Add* |
| **160** | DONE ! |