

## 4. Order of Operations

This is the term to burn into your brain: PEMDAS This will help you to remember the order in which you can combine numbers.

P: Parenthesis

E: Exponents

M: Multiplication

D: Division

A: Addition

S: Subtraction

Multiplication/division are equal in order. Just work left to right.  
Addition/subtraction are also equal. Again, left to right.

Here's an example:  $4+5\cdot6$  We have an addition and multiplication step. Many would want to work left to right and add first, but that will get you the wrong answer. The proper steps are:

$$4+5\cdot6$$

$$4+30$$

$$34$$

Now, let's throw in some parenthesis.  $100\div(10-5)$  Some would again go left to right especially since the first operation is division, but that would get another wrong answer. Always work within the parenthesis first.

$$100\div(10-5)$$

$$100\div5$$

$$20$$

These types of problems get complicated quickly.

$$\frac{5+4(8-10)}{1-2(-1)}$$

Always work within parenthesis first

$$\frac{5+4(-2)}{1+2}$$

Be careful of your signs

$$\frac{5-8}{3}$$

$$\frac{-3}{3}$$

$$-1$$

Sometimes the problems are in this form:

Let  $a=4$ ,  $b=2$ ,  $c=-1$

$$\frac{bc-ab}{c(a-c)}$$

$$\frac{2(-1)-4(2)}{-1[4-(-1)]}$$

$$\frac{-2-8}{-1[4-(-1)]}$$

$$\frac{-2-8}{-1(4+1)}$$

Always work slowly and write down every step

$$\frac{-2-8}{-1(4+1)}$$

$$\frac{-10}{-1(5)}$$

$$\frac{-10}{-5}$$

$$\frac{-10}{-5}$$

$$2$$

Go ahead and tackle the practice problems.