# Chapter 2 Section 5
# The Order of Operations Agreement
# Part Two

Steps:

1. Do all operations inside **p**arentheses.
2. Simplify any numerical expressions containing **e**xponents.
3. Do **m**ultiplication and **d**ivision as they occur form the left to right.
4. Do **a**ddition and **s**ubtraction as they occur form the left to right.

There is a mnemonics that helps students to remember the correct order of math operations that was described in section: PEMDAS( Please Excuse My Dear Aunt Sally).

$(-3)^2 = 9$ Step 1 and 2. You will square –3. In another word you will multiply –3 twice: (-3)*(-3)= 9.

$-(3)^2 = -9$. Step 2 and 3. First you will square 3 and after you will multiply by negative 1: 3*3=9*(-1)= 9.

$-3^2 = -9$ This is the same as $-(3)^2$.

Therefore $-3^2 \neq (-3)^2$.

Exercise

1. 8-4/(-2)

   Because there are no operation inside parentheses(step1) and neither exponent(step2), you will jump to the third step; Do the division. Then do the subtraction

   8-4/(-2)= 8-(-2)= 8+2 = 10.

2. $(-3)^2$-2(8-3)+(-5)

   Perform operations inside the parentheses. ( Step 1)
   Simplify expression with exponents
   Do the multiplication and division as they occur form left to right.
   Do addition and subtractiuon as they occur for the left to right

$(-3)^2$-2(8-3)+(-5)= $(-3)^2$ –2(5)-5=
= 9-2(5)-5
= -9 –10-5= -6.

You can use the order of operations agreement rule in evaluation variable problems:

EX: Evaluate $ab-b^2$ when a=2 and b=6

Replace 2 and 6 in according to the letter stated above.
Using the order of operations agreement, you simplify the resulting numerical expression. Also, simplify the exponential expression.
Do the multiplication and the subtraction.

Solving: $2*-6 – (-6)^2$

$-12-36= -48$

More Examples:

1. Simplify $12/(-2)^2-5$

   $12/(-2)^2-5=12/4-5$

   $=3-5$

   $= -2.$

2. Simplify $(-3)^2(5-7)^2-(-9)/3$

   $(-3)^2(5-7)^2-(-9)/3= 9*(-2)^2-(-9)/3$

   $= 36-(-3)$

   $= 39.$