Computer Science 1	Lab 04A 1-Day Minor Python Assignment
Arithmetic with Variables	**100 Point Version Only**

Assignment Purpose:

The purpose of this program is to gain understanding of how to write complicated mathematical expressions in Python using variables.

You will be given a series of mathematical expressions. You need to translate each expression into a Python program statement to compute its result, and then display it. You should notice that the expressions are grouped in pairs. In the first six examples the results for each pair match because they are demonstrating the *Distributive Property*. In later examples the results do not match because of the rule of *PEMDAS*.

Lab 04A Student Version	Do not copy this file, which is provided.

```
 1 # Lab04Ast.py
 2 # "Arithmetic with Variables"
 3 # This is the student, starting version of Lab 04A.
 4
 5
 6 print()
 7 print("*********************************************")
 8 print("Lab 04A, Arithmetic with Variables")
 9 print("100 Point Version")
10 print("By: JOHN SMITH") # Substitute your own name here.
11 print("*********************************************")
12 print("\n")
13
14 r = 10
15 x = 5
16 y = 77.77
17 z = 1.21
18 PI = 3.14159
19
20 a1 = 2 * (x + 1)
21 print("a1 = ",a1)
22 a2 = 2*x + 2*1
23 print("a2 = ",a2)
24 print()
25
```

These are the mathematical expressions that you need to translate into Python:

$a_1 = 2(x + 1)$	$a_2 = 2x + 2(1)$
$b_1 = 3(r + x)$	$b_2 = 3r + 3x$
$c_1 = r\ (x + y)$	$c_2 = rx + ry$
$d_1 = 5(y - 7.77)$	$d_2 = 5y - 5(7.77)$
$e_1 = z(y - r)$	$e_2 = zy - zr$
$f_1 = r(x + y + z)$	$f_2 = rx + ry + rz$
$g_1 = r + xy + z$	$g_2 = (r + x)(y + z)$
$h_1 = r - xy - z$	$h_2 = (r - x)(y - z)$
$j_1 = r \bullet \frac{x}{y} \bullet z$	$j_2 = \frac{rx}{yz}$
$k_1 = r - \frac{x}{y} - z$	$k_2 = \frac{r - x}{y - z}$
$m_1 = ½$	$m_2 = 3 \div 7$
$n_1 = \frac{2(r + x)}{5}$	$n_2 = 2r + \frac{x}{5}$
$p_1 = 2\pi r$	$p_2 = \pi r^2$

100 Point Version Output

Remember: MAKE SURE YOUR PROGRAM DOES ALL OF THE CALCULATIONS!
ALSO: Do not be surprised if some answers seem like they are off by 0.00000001
That is normal when you work with real numbers. Note that variables **i**, **l**, and **o** are not used. These letters are easily confused with the numbers **1** and **0** and should not be used as variables.

```
 ----jGRASP exec: python Lab04Av100.py

**********************************************
Lab 04A, Arithmetic with Variables
100 Point Version
By: JOHN SMITH
**********************************************


a1 =  12
a2 =  12

b1 =  45
b2 =  45

c1 =  827.6999999999999
c2 =  827.6999999999999

d1 =  350.0
d2 =  350.0

e1 =  82.0017
e2 =  82.0017

f1 =  839.8
f2 =  839.8

g1 =  400.05999999999995
g2 =  1184.6999999999998

h1 =  -380.05999999999995
```

```
h2 =  382.8

j1 =  0.7779349363507779
j2 =  0.5313400289261512

k1 =  8.725707856499934
k2 =  0.06530825496342738

m1 =  0.5
m2 =  0.42857142857142855

n1 =  6.0
n2 =  21.0

p1 =  62.8318
p2 =  314.159


 ----jGRASP: operation complete.
```