Name:_____ **Partners:** _____

Python Activity 3: Arithmetic Operations and Assignment Statements

Learning Objectives
Students will be able to:
Content:
- Explain each Python arithmetic operator
- Explain the meaning and use of an **assignment statement**
- Review **string literals** and print statements
- Explain the use of "+" and "*" with strings and numbers
- Use the **int()** and **float()** functions to convert string input to numbers for computation
- Incorporate numeric formatting into print statements
- Recognize the four main operations of a computer within a simple Python program

Process:
- Create *Python* code that performs mathematical and string operations
- Create *Python* code that uses assignment statements
- Create *Python* code that formats numeric output

Prior Knowledge
- Material covered in previous Activities

Critical Thinking Questions

1. Execute the print statements in the Python program. What is the output for each statement?

_____	`print(16 + 3)`
_____	`print(16 - 3)`
_____	`print(16 * 3)`
_____	`print(16 ** 3)`
_____	`print(16 / 3)`
_____	`print(16 // 3)`
_____	`print(16 % 3)`

2. State the arithmetic operation each symbol represents:
   a. + _____
   b. - _____
   c. * _____
   d. ** _____
   e. / _____
   f. // _____
   g. % _____

FYI: An **assignment statement** is a line of code that uses a "=" sign. The statement stores the result of an operation performed on the right-hand side of the sign into the variable memory location on the lefthand side.

3. Enter and execute the following two lines of Python code:

```
age = 15
print("Your age is", age)
```

   a. What does the ***assignment statement***: `age = 15` do?

   _____

   b. What happens if you replace the comma (,) in the print statement with a plus sign (+) and execute the code again? _____

4. What is stored in memory after each assignment statement is executed?

Assignment Statement		Computer Memory	
answer = 6 ** 2 + 3 * 4 // 2		**answer**	
final = answer % 4		**final**	

5. Test the following program to see what happens if you try to use the "+" with strings instead of numbers.

```
schoolName = "Williams"
typeOfSchool = "College"
fullName = schoolName + typeOfSchool
```

   a. The third line of code contains an assignment statement. What is stored in the variable **`fullName`** when the line is executed? _____

   b. How can you fix the output so that the words are separated? _____

FYI: The "+" ***concatenates*** the two strings stored in the variables into one string. "+" can only be used when both operators are strings.

   c. What is the output of the following code? Why? _____

   _____

```
addressNumber = 47
streetName = "Lab Campus Dr"
streetAddress = addressNumber + streetName
print(streetAddress)
print(fullName)
```

6. Before entering the following code into the Python interpreter, try to figure out what **you think** the statement should print. Then execute it. What does it do? Is this what you thought it would do?

```
myWord = "Hello!" * 10
print(myWord)
```

   What you think it does: _____

   What it really does: _____

7. Let's take a look at a program that subtracts two numbers.

```
firstNumber = "17"
secondNumber = "15"
difference = firstNumber - secondNumber
print("Difference = ", difference)
```

a. What output do you expect? _____

b. Execute the code. What is the actual output? _____

c. Revise the program in the following manner:

- Between lines 2 and 3 add the following lines of code:

```
num1 = int(firstNumber)
num2 = int(secondNumber)
```

- Next, replace the statement:

```
difference = firstNumber - secondNumber
```

with the statement:

```
difference = num1 - num2
```

- Execute the program again. What output did you get? _____

d. Explain the purpose of the function **`int()`**.

_____

Application Questions: Use the Python Interpreter to check your work

1. Write the line of Python code that calculates and prints the answer to the following arithmetic expressions:

a. 8 to the 4th power _____

b. The sum of 5 and 6 multiplied by the quotient of 34 and 7 using floating point arithmetic

_____

2. Write an assignment statement that stores the remainder obtained from dividing 87 and 8 in the variable *leftover*

_____

3. Assume:

```
courseLabel = "CSCI"
courseNumber = "134"
```

Write a line of Python code that concatenates the label with the number and stores the result in the variable *courseName*. Be sure that there is a space between the course label and the course number when they are concatenated.

_____

4. Create a program the outputs the total cost of a lunch order. The number of hamburgers, fries, and drinks should each be stored in a variable and the program should print the total cost of the order. The hamburgers cost 2.00, fries cost 1.50, and drinks cost 1.00. Be creative and professional in displaying the output.