Python Extra Programs

1. **Create a Python Program that does the following:**

- Have the user enter **three user inputs in the main** part of the program. All three should be **float** data type.
    - Straight hours worked by an employee, i.e. normal pay
    - Overtime hours worked by an employee
    - Hourly rate of employee
- In the main part of the program, call a function named **calcPay** and pass these three variables into it.
    - In this function calculate the employees **gross pay**
    - **Pass/return** this gross pay back the main part of the program
- In the main part of the program, call a second function named **calcDeductions** and pass gross pay into it.
    - In the function, create two **constants**
        - TAX and set it equal to .13
        - FICA and set it equal to .07
    - Calculate **net pay** by multiplying gross pay by TAX by FICA
    - **Pass/return** this net pay back the main part of the program
- Display the final output **as shown** in the sample run below.

Sample run:

```
Enter number of straight hours worked:      40
Enter number of overtime hours worked:      5
Enter hourly rate:                          15
                                            ----------
Your gross pay is:                          $1,500.00
Your net pay is:                            $1,200.00
```

2. Write a Python program that asks the user to input a sentence in the main part of the program. Then, pass this sentence to a user-defined function that will determine and output how many lower-case letters are in the sentence, how many upper-case letters are in the sentence, how many spaces are in the sentence and how many words are in the sentence.

   Please type in a sentence: Today is Thursday
   Number of lowercase letters in sentence is: 13
   Number of uppercase letters in sentence is: 2
   Number of spaces in sentence is: 2
   Number of words in sentence is: 3

3. Create a Python program that calculates and displays a Michigan Mega Millions easy pick lottery ticket. In the main, call the user-defined function that will calculates and display a Michigan Mega Millions easy pick lottery ticket. You may need to use a Python list, which we have not yet covered.

   Sample output:

   White balls: [2, 11, 34, 52, 19] Gold ball: [2]

4. Create a Python program that calculate the monthly payment on a home mortgage loan. Code the program with the following specifications:

   a. Ask for three user inputs in the main part of the program
      - Amount of loan, e.g. 100000, 250000, etc.
      - Interest rate, e.g. .04, .0375, etc.
      - Number of years of the loan, e.g. 30, 25, etc.
   b. Pass these three user inputs to a user defined function that will
      - Calculate the monthly payment to the mortgage loan
      a. Return this payment amount back to the main part of the program
   c. Lastly, display the final output in the main part of the program (see sample run below)

   Sample run:

   What is the price of the house? 100000
   What is the loan interest rate (.04 for 4%)? .04
   How many years will it take you to pay off the loan? 30
   Your monthly payment will be: $477.42

5. Create a program with the following logic:

    - Create and call a function to prompt the user to enter a float number
    - Return that number back to the main part of the program and then pass it into a second function that calculates, prints and returns the square of it.
    - Cerate a third function that receives the squared number and then calculates, prints, and results the area of circle based on it.

    Sample run:

    Enter a number: 2
    2.0 squared = 4.0
    The area of a circle with a radius of 4.0 is 12.57