Assignment 1: Practice Problems to Supplement Homework 2

Question 1:
Write a function that displays the dimensions of a letter size (8.5 x 11 inches) sheet of paper in millimeters. There are 25.4 millimeters per inch. Use constants and comments in your program. Print the dimensions in millimeters using the format of the example.

- Requirements:
  - Name your function mmDimensions()
  - Your function should not accept any input values
  - Your function should not return any value
  - Your function should print the dimensions, with one digit precision, in the follow format.
    - "The dimensions of a letter-size sheet of paper in millimeters is 215.9 x 279.4"
- Test Case Example
  - Test: mmDimensions();
    - Result: The dimensions of a letter-size sheet of paper in millimeters is 215.9 x 279.4

Question 2:
Write a function that takes as input an integer between 1.000 and 999,999 and prints it with a comma separating the thousands.

- Requirements:
  - Name your function addComma()
  - Your function should take in integer argument
  - Your function should not return any value
  - Your function should print the solution
- Test Case Examples
  - Test: addComma(23456);
    - Result: 23,456
  - Test: addComma(500325);
    - Result: 500,325

Question 3:
Write a function to calculate the average of 3 doubles.

- Requirements:
  - Name your function doubleAvg()
  - Your function should take in 3 doubles as parameters
  - Your function should not return anything
  - Your function should print the average value of the 3 parameters as a double
- Test Case Examples
  - Test: doubleAvg(2,2,2);
    - Result: 2

Question 4:
Write a function to calculate the cost (in dollars) per 100 miles of driving a car, as well as the maximum distance (in miles) the car can travel with the gas in the tank.

- Requirements:
  - Name your function fuelEfficiency()
  - Your function should accept 3 arguments in this order:
    - # of gallons of gas in the tank (double)
    - Fuel efficiency in mpg (double)
    - Price of gas per gallon in dollars (double)
  - Your function should not return any value
  - Your function should print the resulting values, with two digit precision, in the following format:
    - "The cost per 100 miles is $<cost>. The maximum distance is <distance> miles."
- Test Case Examples
  - Test: fuelEfficiency(12.0, 20.0, 3.5);
    - Result: The cost per 100 miles is $17.50. The maximum distance is 240.00.

Question 5:
Write a program that reads two times in military format (0900, 1730) and prints the number of hours and minutes between the two times.

- Requirements:
  - Name your function timeBtw()
  - Your function should accept 2 parameters in this order:
    - First time (int)
    - Second time (int)
  - Your function should print the difference between the two times in the following format:
    - "8 hours 30 minutes"
- Test Case Examples
  - Test: timeBtw(900, 1730);
    - Result: 8 hours 30 minutes

Question 6:
Write a function to calculate the force on a pair of masses based on input values M_1, M_2, and r, where M_1 and M_2 are the two masses in kilograms and r is the distance in meters between the two masses.

Hint: the formula for calculating force: $F = \frac{GM_1M_2}{r^2}$, where G = 6.673×10^{-11} N(m/kg^2)

- Requirements:
  - Name your function forceCalc()
  - Your function should accept 3 input values in this order:

        - First mass in kg (double)
        - Second mass in kg (double)
        - R in meters (double)
    - Your function should not return any value
    - Your function should print the resulting force value, with two digit precision, in the following format:
        - “The force between two masses, <mass1> kg and <mass2> kg, <r> meters apart is <result> N.”
- Test Case Examples
    - Test: forceCalc(5.98e24, 70, 6.38e6);
        - Result: The force between two masses, 5.98e+24 kg and 70 kg, 6.38e+06 meters apart is 686.24 N.”