Sheet #1

1 Write a program that prompts for and reads the user's city and country (separately). Then print a string composed of the first two letters of the user's country, followed by a comma and then followed by user's city, followed by a random number in the range 1 to 100 which represents the pin code of the city. Similar patterns of representation are sometimes used to store user's address when a new account is registered.

2 Write a program that prints the square of the product. Prompt for and read three integer values and print the square of the product of all the three integers.

3 Write a program that creates and prints a random phone number of the form XXX–XXX–XXXX. Include the dashes in the output. Do not let the first three digits contain an 8 or 9 (but don't be more restrictive than that), and make sure that the second set of three digits is not greater than 655. Hint: Think through the easiest way to construct the phone number. Each digit does not have to be determined separately.

4 Write a program that reads an integer value and prints the value e raised to the power of that number. For example, if the number is 2, the program would print 7.389056 (where, e = 2.71828).

5 Write a program that reads the (x, y) coordinates for two points which form a straight line. Compute the slope of the line using the following formula:

$$Slope\ (m) = \frac{y_2 - y_1}{x_2 - x_1}$$

6 Write a program that reads the radius of a sphere and prints its volume and surface area. Use the following formulas. Print the output to four decimal places. r represents the radius.

$$\text{Volume} = \frac{4}{3}\pi r^3$$
$$\text{Surface Area} = 4\pi r^2$$

7 Write a program that reads the two sides and the height of a trapezoid from the user. Compute the area of the trapezoid using the formula given below, in which h represents the vertical height of the trapezoid and a and b represent the two sides of a trapezoid. Print the area to two decimal places.

$$Area = \frac{(a+b)}{2} \times h$$

8 Write a program that generates two random integers in the range 1 to 20, inclusive, and displays the sine and cosine of the sum of those two integers.

9 Write a program that generates a random integer base (b), height (h) and a side (a) for a parallelogram in the range 10 to 30, inclusive, and then computes the area and perimeter of the parallelogram.

$$Area = base \times height$$

$$Perimeter = 2(a + b)$$