1. Write a program that displays the following table on console:

a	a^2	a^3
1	1	1
2	4	8
3	9	27
4	16	64

2. Write a program that displays the result of:

$$\frac{9.5\ x\ 4.5 - 2.5\ x\ 3}{45.5 - 3.5}$$

3. π can be computed using the following formula:

$$\pi = 4\ x\ (1 - \frac{1}{3} + \frac{1}{5} - \frac{1}{7} + \frac{1}{9} - \frac{1}{11} + \cdots)$$

Write a program that displays the result of ;
$4\ x\ (1 - \frac{1}{3} + \frac{1}{5} - \frac{1}{7} + \frac{1}{9} - \frac{1}{11})$ and $4\ x\ (1 - \frac{1}{3} + \frac{1}{5} - \frac{1}{7} + \frac{1}{9} - \frac{1}{11} + \frac{1}{13})$

4. Write a program that displays the area and perimeter of a circle that has a radius of 5.5 using the π you have calculated in question 3

5. You can use Cramer's rule to solve the following 2x2 system of linear equation:

$$ax + by = e$$
$$cx + dy = f$$

$$x = \frac{ed - bf}{ad - bc}$$

$$y = \frac{af - ec}{ad - bc}$$

Write a program that solves the following equation and display the value for x and y. Then calculate *e* and *f* by using the *x* and *y*.

$$3.4x + 50.2y = 44.5$$
$$2.1x + .55y = 5.9$$

6. Write a program that reads a Celsius degree in a **double** value from the console, then convert it to Fahrenheit and display the result. The formula for the conversion is as follows:

$$Fahrenheit = \frac{9}{5} * celcius + 32$$

7. Write a program that reads in the radius and length of a cylinder and computes the area and volume using the following formulas:

$$area = radius * radius * \pi$$
$$volume = area * length$$

8. Write a program that reads an integer between **0** and **1000** and adds all the digits in the integer. For example, if an integer is 932, the sum of all its digits is 14. *(Hint: use **%** operator to extract digits and use **/** operator to remove the extracted digit.)*

9. Write a program that prompts the user to enter the minutes (e.g. 1 billion) and display the number of years and days for the minutes.

10. Suppose you save $100 each month into a saving account with the annual interest rate 5%. Thus, the monthly interest rate is 0.05/12. After the first month the value in the account becomes

    100 * (1 + 0.05/12) = 100,417

    After the second month, the value in the account becomes

    (100 + 100.417) * (1 + 0.05/12) = 201,252
    And so on.

    Write a program that prompts the user to enter a monthly saving amount and displays the account value after the sixth month

11. Body Mass Index (BMI) is measure of health on weight. It can be calculated by taking your weight in kilograms and dividing by the square of your height int meters.
    Write a program that prompts the user to enter a weight in **pounds** and height in **inche**s and displays the BMI. One pound is 0.45359237 kilograms, and one inch is 0.0254 meters

12. Write a program that prompts the user to enter two points **(x1, y1)** and **(x2, y2)** and displays their distance between them. *(Hint: you can use Math.pow(a, 0.5) to compute $\sqrt{a}$)*

13. Write a program that prompts the user to enter three points **(x1, y1), (x2, y2), (x3, y3)** of a triangle and display its area. The formula for computing the area of a triangle is

$$s = \frac{side1 + side2 + side3}{2}$$

$$area = \sqrt{s(s - side1)(s - side2)(s - side3)}$$