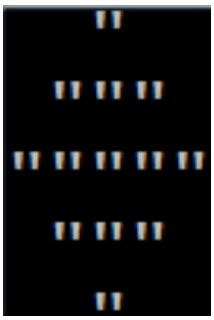
Objective:

- To get a review of print statement.
- To get a review of arithmetic operators and data types.
- To get an initial/quick review of taking input from keyboard.

1. Write a program that prints *Bjarne* (creator of C++) on the console in the following manner:

```
BBBBBB     JJJJJ     AAAAA     RRRRR     N     N     EEEEE
B     B       J     A   A     R   R     NN    N     E
BBBBBB        J     AAAAA     RRRRR     N N   N     EEE
B     B   J   J     A   A     R R       N  N  N     E
BBBBBB     JJJJ     A   A     R   R     N   NN     EEEEE
```

2. Write a program that produces the following output:



3. A customer in a store is purchasing five items. The prices of the five items are:

Price of item 1 = $12.95
Price of item 2 = $24.95
Price of item 3 = $6.95
Price of item 4 = $14.95
Price of item 5 = $3.95

Write a program that holds the prices of the five items in five variables. Display each items price, the subtotal of the sale, the amount of sales tax, and the total. Assume the sales tax is 6%.

4. Write code to declare variables as described below but give them meaningful names and data types.

a. A variable to store the student quiz marks.

b. A variable to store the student test marks.

c. A variable to store the number of student in class.

d. A variable to store the number of miles traveled.

e. A variable to store the average speed of car.

5. Write a program that calculates the squares and cubes of the integers from 0 to 5 and uses tabs to print the following neatly formatted table of values:

```
integer  square  cube
0        0       0
1        1       1
2        4       8
3        9       27
4        16      64
5        25      125
```

6. Give meaningful names and appropriate data types for the following variables.
   a. A variable to store the discounted price of an item.
   b. A variable to store the number of juice bottles.
   c. A variable to store the number of miles traveled.
   d. A variable to store the highest test score.

7. Convert the following pseudo-code to C++ code. Be sure to declare the appropriate variables.
   Store 20 in the *speed* variable.
   Store 10 in the *time* variable.
   Multiply *speed* by time and store the result in the *distance* variable.
   Display the contents of the *distance* variable.

8. Convert the following pseudo-code to C++ code. Be sure to define the appropriate variables.
   Store 172.5 in the *force* variable.
   Store 27.5 in the *area* variable.
   Divide area by *force* and store the result in the *pressure* variable.
   Display the contents of the *pressure* variable.

9. To get the average of a series of values, you add the values up and then divide the sum by the number of values. Write a program that stores the following values in five different variables: 28, 32, 37, 24, and 33. The program should first calculate the sum of these five variables and store the result in a separate variable named sum. Then, the program should divide the sum variable by 5 to get the average. Display the average on the screen.

10. Write a program that stores ant five-digit integer in a variable, separates the integer into its individual digits and prints the digits separated from one another by three spaces each.

11. Suppose an employee gets paid every two weeks and earns $1700.00 each pay period. In a year the employee gets paid 26 times. Write a program that declares the following variables:

payAmount	This variable will hold the amount of pay the employee earns each pay period. Initialize the variable with 1700.0.
payPeriods	This variable will hold the number of pay periods in a year. Initialize the variable with 26.
annualPay	This variable will hold the employee's total annual pay, which will be calculated.

The program should calculate the employee's total annual pay by multiplying the employee's pay amount by the number of pay periods in a year, and store the result in the annualPay variable. Display the total annual pay on the screen.

12. One metric ton is approximately 2205 pounds. Write a program that creates a variable, which stores any amount of rice, in pounds, in a bag. The program outputs the number of bags needed to store one metric ton of rice.

13. One acre of land is equivalent to 43,560 square feet. Write a program that calculates the number of acres in a tract of land with 389,767 square feet. You are not allowed to declare any variable or constant.

14. Write a program that computes the tax and tip on a restaurant bill for a customer with a $44.50 meal charge. The tax should be 6.75 percent of the meal cost. The tip should be 15 percent of the total after adding the tax. Display the meal cost, tax amount, tip amount, and total bill on the screen.

15. Newton's law states that the force, F, between two bodies of masses M1 and M2 is given by:

$$F = k ((M_1M_2)/d^2)$$

In which k is the gravitational constant and d is the distance between the bodies. The value of k is approximately 6.67×10^{-8} dyn. cm^2/g^2. Write a program that stores the masses of bodies in variables and the distance between the bodies. The program then output the force between the bodies.

16. Write a program that stores the radius of a circle in a variable and prints the circle's diameter, circumference and area. Use the constant value 3.14159 for 'pi'. Do all calculations in output statements.

17. A soft drink company recently surveyed 12,467 of its customers and found that approximately 14 percent of those surveyed purchase one or more energy drinks per week. Of those customers who purchase energy drinks, approximately 64 percent of them prefer citrus flavored energy drinks. Write a program that displays the following:

- The approximate number of customers in the survey who purchase one or more energy drinks per week
- The approximate number of customers in the survey who prefer citrus flavored energy drinks

18. Write a C++ program that stores the elapsed time for an event in a variable. The program then outputs the elapsed time in hours, minutes, and seconds. (For example, if the elapsed time is 9630 seconds, then the output is 2:40:30)

19. As mathematical historians have told the story, the German mathematician Carl Friedrich Gauss (1777-1855) began to show his mathematical talent at a very early age. When he was in elementary school, Gauss was asked by his teacher to compute the sum of the numbers between 1 and 100. Gauss is said to have given the answer instantly: 5050. Write a program that computes the answer to the question Gauss's teacher posed: Make the program more generic by asking user about the starting and ending number of the range and display the sum of the numbers in range.

Sum from 100 to 200 = 15150
Sum from 1 to 100 = 5050

20. Assume that the following variables are defined:

```
int age;
double pay;
char section;
```

Write a single cin statement that will read input into each of these variables.