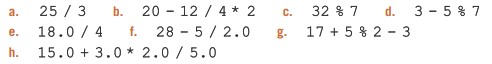
# Problem 1: Evaluate the expressions

Evaluate the following expressions in handwritten form and attach the pictures of all expressions with answers. Also use compiler and attach outputs to match and verify with your handwritten answers.



# Problem 2: Evaluate the expressions

Evaluate the following expressions in handwritten form and attach the pictures of all expressions with answers.

Also use compiler and attach outputs to match and verify with your handwritten answers. If x = 5, y = 6, z = 4, and w = 3.5, evaluate each of the following statements, if possible. If it is not possible, state the reason.



**Problem 3:**

A box of cookies can hold 24 cookies, and a container can hold 75 boxes of cookies. Write a program that prompts the user to enter the total number of cookies, the number of cookies in a box, and the number of cookie boxes in a container. The program then outputs the number of boxes and the number of containers to ship the cookies. Note that each box must contain the specified number of cookies, and each container must contain the specified number of boxes. If the last box of cookies contains less than the number of specified cookies, you can discard it and output the number of leftover cookies. Similarly, if the last container contains less than the number of specified boxes, you can discard it and output the number of leftover boxes

**Problem 4:**

What is the output of the following program segment?

**Part 1:**

int count = 0; while (count++ < 10) cout << "This loop can repeat statements." << endl; **Part 2:**

int count = 5; while (--count > 0) cout << count << " "; cout << endl; **Part 3:**

int count = 5; while (count-- > 0) cout << count << " ";

cout << endl;

**Part 4:**

int count = 1; while (count++ <= 5) cout << count \* (count - 2) << " "; cout << endl;

**Problem 5:**

Write a program that reads a set of integers and then finds and prints the sum of the even and odd integers

# Problem 6: Palindrome

A palindrome is a number or a text phrase that reads the same backward as forward. For example, each of the following five-digit integers is a palindrome: 12321, 55555, 45554 and 11611. Write a program that reads in a five-digit integer and determines whether it’s a palindrome. [Hint: Use the division and modulus operators to separate the number into its individual digits.]

# Problem 7: Printing the Decimal Equivalent of a Binary Number

Input an integer containing only 0s and 1s (i.e., a “binary” integer) and print its decimal equivalent. Use the modulus and division operators to pick off the “binary” number’s digits one at a time from right to left. Much as in the decimal number system, where the rightmost digit has a positional value of 1, the next digit left has a positional value of 10, then 100, then 1000, and so on, in the binary number system the rightmost digit has a positional value of 1, the next digit left has a positional value of 2, then 4, then 8, and so on. Thus, the decimal number 234 can be interpreted as 2 \* 100 + 3 \* 10 + 4 \* 1. The decimal equivalent of binary 1101 is 1 \* 1 + 0 \* 2 + 1 \* 4 + 1 \* 8 or 1 + 0 + 4 + 8, or 13.

# Problem 8

Write down a code that will input a character. Display the count if entered character is vowels like a, e, I, o, u and if enter number is consonant then display the count of consonant. Input character until user enter ‘n’ character. If ‘n’ character is entered, then print number of vowels enter and number of consonants entered as well. List the necessary variables for this program.

# Problem 9

Take date of birth from user and calculate his/her age. (You have to tell the age of person considering last calculated month is October 2020)

For example, if input is

Day 10

Month 7

Year 2013

Output must be

Your age is 7 years two months and 20 days

# Problem 10: Enforcing Privacy with Cryptography (Encryption)

The explosive growth of Internet communications and data storage on Internet-connected computers has greatly increased privacy concerns. The field of cryptography is concerned with coding data to make it difficult (and hopefully—with the most advanced schemes—impossible) for unauthorized users to read. In this exercise you’ll investigate a simple scheme for encrypting and decrypting data. A company that wants to send data over the Internet has asked you to write a program that will encrypt it so that it may be transmitted more securely. All the data is transmitted as four-digit integers. Your application should read a four-digit integer entered by the user and encrypt it as follows: Replace each digit with the result of adding 7 to the digit and getting the remainder after dividing the new value by 10. Then swap the first digit with the third and swap the second digit with the fourth. Then print the encrypted integer.

# Problem: 11 | Pass by value

Write a program that uses the function **isNumPalindrome**. Test your program on the following numbers:

10, 34, 22, 333, 678, 67876, 44444, and 123454321.

# Problem: 12 | Factorial using value returning function

We have to write a C++ program to find out the factorial of a given number using iteration in mathematics, the factorial of a positive integer n, denoted by n!, is the product of all **positive** integers less than or equal to n.

For example,

5! = 5 \* 4 \* 3 \* 2 \* 1 = 120

The value of 0! is 1, according to the convention for an empty product.

**NOTE: Factorial is calculated only for non-negative integers.**

**Expected Input and Output**

**Case 1. When we take a positive integer** If the input number is 5, then the expected output will be 120.

**Case 2. When the number is zero.** If the input number is 0, then the expected output will be 1.

# Problem: 13 | Guess-the-Number Game

Write a program that plays the game of “guess the number” as follows: Your program chooses the number to be guessed by selecting an integer at random in the range 1 to 1000. The program then displays the following:

***I have a number between 1 and 1000.***

***Can you guess my number?***

***Please type your first guess.***

The player then types a first guess. The program responds with one of the following:

1. ***Excellent! You guessed the number! Would you like to play again (y or n)?***
2. ***Too low. Try again.***
3. ***Too high. Try again.***

If the player’s guess is incorrect, your program should loop until the player finally gets the number right. Your program should keep telling the player Too high or too low to help the player “zero in” on the correct answer. Write a function that checks the number is correct, too high or to low. Also find the count of the number of attempts to find a right number. Use the concept of pass by reference.