# Write algorithm and draw flowcharts for the following problems:

1. Input “hours” and “rate” from the user. Calculate the pay of employee. If hours are less than 40, rate = hours \* rate, otherwise pay = 40 \* rate + (hours – 40) \* rate \* 1.5. Print the “pay”.
2. Take input from the user in “a” & “b” (variables). You should print the value of “a”, the number of times user enters “b” lesser or equal to “a”.
3. Read four numbers from the user in variables. Print “Equal” if any of these two numbers are equal and “Unequal” if all numbers are different from each other.
4. The program will need to get a letter (A for addition, S for subtraction, M for multiplication, or D for division) and two integers from the user. If the user enters an invalid letter, the program should not ask the user for the two integers. Instead, it should display an appropriate error message before the program ends. **(Note: When subtracting or dividing your program should always subtract/divide lesser number from the greater number)**
5. Read a non-negative integer in a variable and print its HCF.
6. Input a number from the user and print factorial of it. (**Note: Your algorithm should be generic for every integer)**
7. Repeatedly print the value of the variable “num”, decreasing it by 0.5 each time  
   as long as “num” remains positive.
8. If variable “number” is odd, change its value so that it is now 3 times “number” plus 1, otherwise change its value so that it is now half of “number” (rounded down when “number” is odd)
9. Swap two variables without using a 3rd variable.
10. You have only two bottles. One has capacity of 3 liters and the other has of 5 liters. Your task is to measure 4 liters using these two bottles. **(Note: You have no measuring scale in these bottles)**