

## Algorithm and Flowchat

### Definition Algorithm

Algorithm can be defined as the set of rules and sequential steps that define how a particular problem can be solved in finite and ordered sequence.

### Function of Algorithms

An algorithm generally takes some input, carries out a number of effective steps in a finite amount of time, and produces some output.

### Characteristics of Algorithms

Every algorithm should have the following five characteristic features

1. Input
2. Output
3. Definiteness
4. Effectiveness
5. Termination

**Example1:** Write an algorithm to compute the area and circumference of a circle given the diameter  $d$ . Use the formulae and

Solution

Step 1: Start

Step 2: Get the diameter  $d$

Step 3: Compute

Step 4: Compute

Step 5: Compute

Step 6: Display the results

Step 7: Stop

**Example 2:** Write an algorithm that tells you how to wash dishes

Solution

Step 1: start

Step 2: scrape food off dishes

Step 3: wash the dishes with soap and water

Step 4: Rinse the dishes

Step 5: Dry them

Step 6: Stop

**Example 3:** Write an algorithm to evaluate the equation  $y = a(b-c)^2/d+2$

Solution

Step 1: start

Step 2: input the value of  $a$ ,  $b$ ,  $c$ ,  $d$

Step 3: Value of  $y$  is to be calculated

Step 4: Calculate the value of  $b-c$  and denote  $f$

Step 5: Calculate the square of  $f$

Step 6: Multiply  $f$  by  $a$  and denote  $g$

Step 7: Calculate the value of  $d+2$  and denote h

Step 8: divide h by g

Step 9: We get the value of y

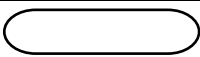


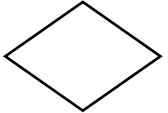


Step 10: Print y

Step 11: Stop

### **Definition of Flowchart**

This is the graphical representation of steps involved in solving a given problem. More formally, flowchart is a pictorial representation in which symbols are used to show the various operation and decision to be followed in solving a problem.

Some standard symbols used in drawing a program flow chart are:

Symbol	Description
	<u>Terminal symbol</u> : It is used represent start and end
	<u>Input/output symbol</u> : It is used to represent any input or output
	<u>The processing symbol</u> : It is used to represent some type of data manipulation or arithmetic operation.
	<u>The decision symbol</u> : it is used to represent a logical comparison operation.
	<u>The direction of flow symbol</u> : It indicate the next step in the program
	<u>The connector symbol</u> : it is used when several symbols displayed at one point might cause confusion and reduce understanding.

Example 1: Draw a flow chart to print the area of a 10cm square

Solution