**For each of the problems below, identify the output(s), identify the inputs and decide if the problem is solvable. If it can be solved, generate an algorithm and create a two-column IPO chart with the required algorithm. The first column will contain the IPO information and the second column will contain C# statements**

Create a program that calculates and displays the average of three numbers. The user will enter the three numbers.

Output: average

Input: first, second, third

Sample Calculation: = (first + second + third)/3

Average = (1+2+3)/3 = 2

|  |  |  |
| --- | --- | --- |
| Input | Processing | Output |
| First  Second  third | Sum  Algorithm:   1. Prompt and accept first, second and third 2. Calculate Sum = (first + second + third) / 3 3. Display average | average |

Builders’s Inc. needs a program that allows its salesclerks to enter the diameter of a circle and the prices of railing material per foot. The program should display the circumference of the circle and total cost of the railing material. (Use 3.14 as the value of pi). [You should use double instead of int32 for the number]

**Output: circumference, costOfMaterial(Cost)**

**Input: diameter, price**

**Sample Calculation:   
circumference = diameter \* 3.14 = 100 \* 3.14 = 314,   
cost = circumference\*price = 314 \* 2 = 628**

|  |  |  |  |
| --- | --- | --- | --- |
| Input | Processing | | Output |
| diameter  price | Circumference  Pi=3.14  Algorithm:   1. Prompt and accept diameter and price 2. Calculate Circumference = diameter \* 3.14 3. Calculate Price = Circumference \* price 4. Display Circumference 5. Display Cost | | Circumference  Cost |
| IPO-Chart-Info | | C# | |
| Input:  diameter  price  Processing:  Output:  circumference  cost  Algorithm:   1. Prompt for diameter 2. Accept diameter 3. Prompt for price 4. Accept price 5. Calculate circumference = diameter \* 3.14 6. Calculate cost = circumference \* price 7. Display circumference 8. Display cost | | double circumference;  double cost;  Console.WriteLine(“Please enter the diameter”);  diameter = Convert.ToInt32(Console.ReadLine());  Console.WriteLine(“Please enter the price of railing per unit”);  price = Convert.ToInt32(Console.Readline());  circumference = diameter \* 3.14;  cost = circumference \* price;  Console.WriteLine(“The Circumference is”, circumference);  Console.Writeline(“The Cost is”, cost); | |

Willow Pools wants a program that allows its salespeople to enter the dimensions of a rectangular pool in meters. The program should display the volume of the rectangular pool.

**Output: poolVolume**

**Input: length, width, depth**

**Sample Calculation: length \* width \* depth**

Perry Brown needs a program that allows him to enter the length of fours sides of a polygon. The program should display the perimeter of the polygon.

**Output: perimeter**

**Input: side1, side2, side3, side4**

**Sample Calculation: perimeter = side1+side2+side3+side4**

|  |  |  |  |
| --- | --- | --- | --- |
| Input | Processing | | Output |
| Side1  Side2  Side3  Side4 | Algorithm:   1. Prompt and accept side1 2. Prompt and accept side2 3. Prompt and accept side3 4. Prompt and accept side4 5. Perimeter = side1+side2+side3+side4 6. Display perimeter | | perimeter |
| IPO-Chart-Info | | C# | |
| Input:  Side1  Side2  Side3  Side4  Processing:  Output:  perimeter  Algorithm:   1. Prompt and accept side1 2. Prompt and accept side2 3. Prompt and accept side3 4. Prompt and accept side4 5. Perimeter = side1+side2+side3+side4 6. Display perimeter | | //input  double side1;  double side2;  double side3;  double side4;  //processing  //output  double perimeter;  //Algorithm  Console.WriteLine(“Side 1 Length is:”);  Side1 = Convert.ToDouble(Console.ReadLine());  Console.WriteLine(“Side 2 Length is:”);  Side2 = Convert.ToDouble(Console.ReadLine());  Console.WriteLine(“Side 3 Length is:”);  Side3 = Convert.ToDouble(Console.ReadLine());  Console.WriteLine(“Side 4 Length is:”);  Side4 = Convert.ToDouble(Console.ReadLine());  Perimeter=side1+side2+side3+side4  Console.WriteLine(“The perimeter of the polygon is”, perimeter); | |