Operator Related Problems

(Total 15 questions)

SL	Problem statement	Difficulty levels
1.	Program that will take two numbers **X** and **Y** as inputs, then calculate and print the values of their addition, subtraction, multiplication, division (quotient and reminder). 	*
2.	Program that will calculate the circumference of a circle having radius **r.** Area, A = 2 * Pi * r	*
3.	Program that will take two numbers **(a, b)** as inputs and compute the value of the equation – (Without using math.h) $X = (3.31 * a^2 + 2.01 * b^3) / (7.16 * b^2 + 2.01 * a^3)$	*

Problem 1 tables:

Sample input (X,Y)	Sample output
5 10	Addition: 15 Subtraction: -5 Multiplication: 50 Quotient : 0 Reminder: 5
-5 10.5	Addition: 5.5 Subtraction: -15.5 Multiplication: -52.5 Quotient: 0 Reminder: -48

> -14 % 3 = -2
>
> -14 % -3 = -2

Problem 2 tables:

Sample input (r)	Sample output
5	Area: 31.4
10.5	Area: 65.94

Problem 3 tables:

Sample input (a, b)	Sample output
5 10.5	X = 2.315475
100 -250	X = -12.766287

4.	Program that will increment and decrement a number **X** by 1 inside the *printf* function. (Use ++ and - - operators)	**

Sample input(X)	Sample output
5	X++ : 5
	++X : 6
	X- - : 5
	--X : 4
-5	X++ : -5
	++X : -4
	X- - : -5
	--X : -6

5.	Program that will increment and decrement a number **X** by **Y**. (Use += and -= operators)	*

Sample input(X,Y)	Sample output
5 10	Incremented Value: ~~10~~ 15
	Decremented Value: -5
-5 5	Incremented Value: 0
	Decremented Value: -10

6.	Program that will multiply and divide a number **X** by **Y**. (Use *= and /= operators)	*

Sample input(X,Y)	Sample output
56 10	Multiplication: 560
	Division: 5
-56 -10	Multiplication: 560
	Division: 5

7.	Program that will declare and initialize an integer and a floating point number. Then it will perform floating to integer and integer to floating conversions using
	    (a) Assignment operation
	    (b) Type casting
		**

Sample input	Sample output
-150 123.125	Assignment: 123.125000 assigned to an int produces 123
	Assignment: -150 assigned to a float produces -150.000000
	Type Casting: (float) -150 produces -150.000000
	Type Casting: (int) 123.125 produces -123

8.	Program that will take two numbers as inputs and print the maximum value. (Using conditional operator - ?)	**

Sample input (x, y)	Sample output
20 100	Max: 100
50 -20	Max: 50

9.	Program that will evaluate the following equations -	*

$$X = a - b / 3 + c * 2 - 1$$
$$Y = a - (b / (3 + c) * 2) - 1$$
$$Z = a - ((b / 3) + c * 2) - 1$$

Sample input (a, b, c)	Sample output
9 12 3	X = 10
	Y = 4
	Z = -1

10.	Program that will take **a**, **b** & **c** as inputs and decide if the statements are True (1) of False (0)	**

a) $(a + b) \leq 80$
b) $!(a + c)$
c) $a! = 0$

Sample input (a, b, c)	Sample output
10 -10 0	a) 1
	b) 0
	c) 1

11.	Program that will take **a**, **b** & **c** as inputs and decide if the statements are True (1) of False (0)	***

1) $(a + b) \leq 80$ && $b \geq 0$
2) $(a - b) == 0$ ||$c! = 0$
3) $a! = b$ ||$(b < a)$&&$c > 0$

Sample input (a, b, c)	Sample output
10 -10 0	1) 0
	2) 1
	3) 1

12.	Program that will take calculate the roots of a quadratic equation (a.x^2 + b.x + c = 0) from the formula, (here, dot (.) stands for multiplication) - $$root = \frac{-b \pm sqrt(b^2 - 4.a.c)}{2.a}$$	***

Sample input (a, b, c)	Sample output
2 4 -16	2.00 -4.00
1 2 3	Imaginary

13.	Program that will evaluate the equation $$2\cos^2 x - \sqrt{3}\sin x + \sin\frac{x}{2}$$; where 1<= x <=180 [No checking needed]	***

Sample input (x)	Sample output
30	1.810066
120	0.778151
180	3.954243

14.	Program that will take a floating point number **X** as input and evaluate **A,B,C** where-
	    A = Value when **X** is rounded up to the nearest integer
	    B = Value when **X** is rounded down to the nearest integer
	    C = Absolute value of **X**
		**

Sample input(X)	Sample output
10.6	A = 11, B = 10, C = 10.6
-77.9	A = 78, B = 77, C = 77.9

15.	Program to find size of int, float, double and char of the system.	**

Sample input	Sample output
	Size of int in byte(s) = 4 Size of float in byte(s) = 4 Size of double in byte(s) = 8 Size of char in byte(s) = 1