## **Practice Set: Operators (12 problems) – v202**

1. Program that will take two numbers <b>X</b> and <b>Y</b> as inputs, then calculate and print the values of their addition, subtraction, multiplication, division (quotient and remainder).    Sample input (X,Y)	SL	Problem	n statement	Difficulty levels
Sample input (r)   Sample output	1.			*
Sample input (r)   Sample output		Sample input (X,Y)	Sample output	_
2. Program that will calculate the circumference of a circle having radius <b>r</b> .  Circumference, C = 2 * P <sub>1</sub> * r  Sample input ( <b>r</b> )  Sample output  Circumference: 31.4  10.5  10.5  Program that will take two numbers ( <b>a</b> , <b>b</b> ) as inputs and compute the value of the equation – (Without using math.h)  X = (3.31 * a² + 2.01 * b³) / (7.16 * b² + 2.01 * a³)  Sample input ( <b>a</b> , <b>b</b> )  Sample output  X = (3.31 * a² + 2.01 * b³) / (7.16 * b² + 2.01 * a³)  Sample input ( <b>a</b> , <b>b</b> )  Sample output  The sample output  Sample output  Sample output  Sample output  Sample output  Sample input ( <b>a</b> , <b>b</b> )  Sample output  Sample output  Sample input ( <b>a</b> , <b>b</b> )  Sample output  Sample input ( <b>a</b> , <b>b</b> )  Sample output  Sample input ( <b>a</b> , <b>b</b> )  Sample output  Sample input ( <b>a</b> , <b>b</b> )  Sample output  Sample input ( <b>a</b> , <b>b</b> )  Sample input ( <b>a</b> , <b>b</b> )  Sample output  Sample input ( <b>a</b> , <b>b</b> )  Sample input ( <b>a</b> , <b>b</b> )  Sample output  Sample input ( <b>a</b> , <b>b</b> )  Sample input ( <b>a</b> )  Sample input ( <b>a</b> )  Sample input ( <b>a</b> )			Addition: 15 Subtraction: -5 Multiplication: 50 Quotient: 0  -14 % 3 = -2 -14 % -3 = -2 14 % -3 = 2	
Circumference, $C = 2 * Pi * r$ Sample input (r)  Sample output  Circumference: 31.4  10.5  Circumference: 65.94  3. Program that will take two numbers (a, b) as inputs and compute the value of the equation – (Without using math.h) $X = (3.31 * a^2 + 2.01 * b^3) / (7.16 * b^2 + 2.01 * a^3)$ Sample input (a, b)  5		-5 10.5	Addition: 5.5 Subtraction: -15.5 Multiplication: -52.5 Quotient: 0	
Circumference, $C = 2 * Pi * r$ Sample input (r)  Sample output  Circumference: 31.4  10.5  Circumference: 65.94  3. Program that will take two numbers (a, b) as inputs and compute the value of the equation – (Without using math.h) $X = (3.31 * a^2 + 2.01 * b^3) / (7.16 * b^2 + 2.01 * a^3)$ Sample input (a, b)  Sample output  5 10.5 $X = 2.315475$ $X = 2.315475$ $X = -12.766287$ 4. Program that will increment and decrement a number X by 1 inside the <i>printf</i> function. (Use ++ and operators)  Sample input(X)  Sample output $X = 3.31 * a^2 + 2.01 * b^3 = 2.01 * a^3 = 2.01 * a$				
Sample input (a, b)   Sample output	2.			*
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 <sup>2</sup> + 2.01 * b <sup>3</sup> ) / (7.16 * b <sup>2</sup> + 2.01 * a <sup>3</sup> )   Sample input (a, b)   Sample output     5		Sample input (r)	Sample output	
3. Program that will take two numbers (a, b) as inputs and compute the value of the equation – (Without using math.h) $X = (3.31 * a^2 + 2.01 * b^3) / (7.16 * b^2 + 2.01 * a^3)$ Sample input (a, b)  5				
(Without using math.h) $X = (3.31 * a^2 + 2.01 * b^3) / (7.16 * b^2 + 2.01 * a^3)$ Sample input (a, b) $5 = 10.5$ $10$		10.5	Circumference: 65.94	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	3.	(Without using math.h)		*
100 -250   X = -12.766287     4. Program that will increment and decrement a number X by 1 inside the <i>printf</i> function. (Use ++ and operators)     Sample input(X)   Sample output     5   X++: 5     ++X: 6     X: 5		Sample input (a, b)	Sample output	
4. Program that will increment and decrement a number <b>X</b> by 1 inside the <i>printf</i> function. (Use ++ and operators)  Sample input(X)  Sample output  X++: 5  ++X: 6  X: 5				
Sample input(X)   Sample output		100 -250	X = -12.766287	
5	4.		number $\mathbf{X}$ by 1 inside the <i>printf</i> function. (Use	**
5		Sample input(X)	Sample output	
X: 5			X++: 5	
			X : 4	

	-5	V 5	
	-3	X++: -5 ++X: -4	
		X: -5	
		X : -6	
5.	Program that will increment and decrement a number <b>X</b> by <b>Y</b> . (Use += and -= operators)		*
	Sample input(X,Y)	Sample output	
	5 10	Incremented Value: 10	
		Decremented Value: -5	
	-5 5	Incremented Value: 0	
		Decremented Value: -10	
6.	Program that will multiply and d	ivide a number <b>X</b> by <b>Y</b> . (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 evaluate the fo	llowing 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	
8.	Program that will take <b>a</b> , <b>b</b> & <b>c</b> a (0)	s inputs and decide if the statements are True (1) of False	**
		a) $(a+b) \le 80$	
	İ	b) $!(a+c)$	
		υι :ια τ ιι	
		c) $a! = 0$	
	Sample input (a b c)	c) $a! = 0$	
	Sample input (a, b, c)	c) $\alpha! = 0$ Sample output	
	Sample input (a, b, c) 10 -10 0	c) a! = 0    Sample output   a) 1	
	Sample input (a, b, c) 10 -10 0	c) a! = 0  Sample output  a) 1 b) 0	
	Sample input (a, b, c) 10 -10 0	c) a! = 0    Sample output   a) 1	
	Sample input (a, b, c) 10 -10 0	c) a! = 0  Sample output  a) 1 b) 0	
	Sample input (a, b, c) 10 -10 0	c) a! = 0  Sample output  a) 1 b) 0	

9.	Program that will take <b>a</b> , <b>b</b> & <b>c</b> as inputs and decide if the statements are True (1) of False (0)		***	
	1) $(a + b) \le 80 \&\& b \ge 0$ 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		
10.	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) - $\mathbf{root} = \frac{-\mathbf{b} \pm \mathbf{sqrt}(\mathbf{b}^2 - 4.\mathbf{a.c})}{2.\mathbf{a}}$		***	
	Sample input (a, b, c)	Sample output		
	2 4 -16	2.00 -4.00		
	1 2 3	Imaginary		
	Program that will evaluate the equation $2 \cos^2 x = \sqrt{3} \sin x + \sin \frac{x}{2}$			
11.			***	
11.	$2\cos^2 x - \sqrt{3}\sin x + \sin^2 \frac{1}{2}$		***	
11.	$2\cos^2 x - \sqrt{3}\sin x + \sin^2 x$ ; where	x 2 here 1<= x <=180 [No checking needed]	***	
11.	$2\cos^2 x - \sqrt{3}\sin x + \sin^2 \frac{1}{2}$	$\frac{x}{2}$	***	
11.	$2\cos^{2}x - \sqrt{3}\sin x + \sin^{2}x +$	x 2 here 1<= x <=180 [No checking needed]  Sample output	***	
11.	$2\cos^{2} x - \sqrt{3}\sin x + \sin^{2} x$ ; where the sample input (x) and (x) are the sample input (x) are the sample input (x).	x 2	***	
11.	$2\cos^{2} x - \sqrt{3}\sin x + \sin^{2} x$ ; where $\cos^{2} x - \sqrt{3}\cos x$	X	***	
	$2 \cos^{2} x - \sqrt{3} \sin x + \sin^{2} x$ ; where $\cos^{2} x - \sqrt{3} \cos^{2} x$ ; where $\cos^{2} x - \sqrt{3} \sin x + \sin^{2} x$ ; where $\cos^{2} x - \sqrt{3} \cos^{2} x$ ; where $\cos^{2} x - \sqrt{3} \sin x + \sin^{2} x$ ; where $\cos^{2} x - \sqrt{3} \cos^{2} x$	X		
	$2\cos^{2} x - \sqrt{3}\sin x + \sin^{2} x$ ; where $\cos^{2} x - \sqrt{3}\cos x$	Sample output		
	$2 \cos^{2} x - \sqrt{3} \sin x + \sin^{2} x$ ; where $\cos^{2} x - \sqrt{3} \cos^{2} x$ ; where $\cos^{2} x - \sqrt{3} \sin x + \sin^{2} x$ ; where $\cos^{2} x - \sqrt{3} \cos^{2} x$ ; where $\cos^{2} x - \sqrt{3} \sin x + \sin^{2} x$ ; where $\cos^{2} x - \sqrt{3} \cos^{2} x$	here 1<= x <=180 [No checking needed]    Sample output		
	$2 \cos^{2} x - \sqrt{3} \sin x + \sin^{2} x$ ; where $\cos^{2} x - \sqrt{3} \cos^{2} x$ ; where $\cos^{2} x - \sqrt{3} \sin x + \sin^{2} x$ ; where $\cos^{2} x - \sqrt{3} \cos^{2} x$ ; where $\cos^{2} x - \sqrt{3} \sin x + \sin^{2} x$ ; where $\cos^{2} x - \sqrt{3} \cos^{2} x$	Sample output		