Mathematical C Programming

1. **WAP in C language to calculate the area of a circle.**

```
#include <stdio.h>
#include <math.h>
#include <stdlib.h>

int main() {

        const float PI = 3.14;
        float radius, area;

        system("cls");

        printf("\n Enter the radius of circle: ");
        scanf("%f", &radius);

        area = PI * pow(radius, 2);

        printf("\n The area of circle is %.2f .\n", area);

        getch();
        return 0;
}
```

2. **WAP in C to calculate the area of four walls of a room.**

```
#include <stdio.h>
#include <stdlib.h>

int main() {
        float length, breadth, height, area;

        printf("Enter the length, breadth & height of room: ");
        scanf("%f, %f, %f", &length, &breadth, &height);

        area = 2 * height * (length + breadth);

        printf("The area of four walls of room = %.2f\n", area);

        getch();

        return 0;
}
```

3. **WAP in C to calculate the area of a rectangle.**

```
#include <stdio.h>          // To use scanf(), printf() & getch()
#include <stdlib.h>         // For system standar library // Also, To use system()

int main() {

      system("cls");

        int length, breadth, area;

        printf("Enter the length and breadth of rectangle ");
        scanf("%d, %d", &length, &breadth);

        area = length * breadth;

        printf("The area of rectangle is: %d\n", area);

        getch();        // it holds the black screen until user press any key
        return 0;       // returns 0 indicates, that program executes successfully
}
```

4. **WAP in C to calculate the perimeter of a rectangular room.**

```
#include <stdio.h>
#include <stdlib.h>

int main() {

        float l, b, area;

        printf("Enter the length & breadth of the rectangular room : ");
        scanf("%f, %f", &l, &b);

        area = 2 * (l + b);

        printf("The area of rectangular room = %.2f \n", area);

        getch();

        return 0;

}
```

5. **WAP in C to calculate the cube of a number.**

```
#include <stdio.h>
#include <stdlib.h>
#include <math.h>            // Include <math.h> for pow() function

int main() {

   float n, cube;

   system("cls");

   printf("Enter a number: ");
   scanf("%f", &n);

   //  Calculate the cube using inbuilt pow() function
   cube = pow(n, 3);          // pow() will automatically type cast float to double data type

   // // Alternative custom way of calculating cube of any number
   // cube = n * n * n;

   // Display the result
   printf("The cube of %.2f = %.2f \n", n, cube);

   getch();

   return 0;

}
```

6. **WAP in C language to ask the user to enter any number and find the square root and cube root of the given number.**

```
#include <stdio.h>
#include <math.h>

int main() {

        long int number;                                // long int is long integer number
        double squareRoot, cubeRoot;     // double means decimal values having precision

           printf("Enter any number: ");
           scanf("%ld", &number);

        //    Calculate square root and cube root using inbuilt sqrt() and cbrt()
        //    Both, sqrt() and cbrt() function takes double as a input/parameter
        //    squareRoot = sqrt(number);
        //    cubeRoot = cbrt(number);



         // Alternative way: Calculate square root and cube root using inbuilt pow() function
           // 1.0/2.0  or 1.0/3.0  indicates the floating division, so giving float value. But, 1/2
        gives integer value i.e 0, which we don't want.
           squareRoot = pow(number, 1.0/2.0);
           cubeRoot = pow(number, 1.0/3.0);

           // Display the results
           printf("Square root of %ld is %.2f\n", number, squareRoot);
           printf("Cube root of %ld is %.2f\n", number, cubeRoot);

           return 0;
}
```

7. **WAP in C calculates the sum and average of given three numbers.**

```
#include <stdio.h>

int main() {

        float num1, num2, num3, avg, sum;

        printf("Enter three numbers: ");
        scanf("%f, %f, %f", &num1, &num2, &num3);
```

```
	// Sum Calculation
	sum = num1 + num2 + num3;
	printf("\nThe sum of %.2f, %.2f, and %.2f = %.2f\n", num1, num2, num3, sum);

	// Alternative: single liner
	//	printf("\nThe sum of %.2f, %.2f, and %.2f = %.2f\n", num1, num2, num3,
num1 + num2 + num3);

	// Average calculation
	avg = (num1 + num2 + num3) / 3.0;
	printf("\nThe average of %.2f, %.2f, and %.2f = %.2f\n", num1, num2, num3, avg);

	// Alternative: single liner
	//	printf("\nThe average of %.2f, %.2f, and %.2f = %.2f\n", num1, num2, num3,
(num1 + num2 + num3) / 3.0);

	getch();
	return 0;
}
```

8. WAP in C to display the profit amount when selling price & cost price is given.

```
#include <stdio.h>
#include <conio.h>

int main() {

	float SP, CP, Profit;

	printf("Enter the selling price and cost price of an item: ");
	scanf("%f, %f", &SP, &CP);

	Profit = SP - CP;

	printf("\nThe profit amount = %.2f \n", Profit);

	getch();
	return 0;
}
```

9. **WAP in C language to ask user to enter principal, time & rate and calculate simple interest and compound interest.**

```
#include <stdio.h>
//#include <conio.h>
#include <math.h>

int main()
{

 float p, r, t, simpleInterest, compoundInterest;

 // Best way: single liner Input code
 printf("Enter the Principal amount, rate of interest & Time in years: ");
 scanf("%f, %f, %f", &p, &r, &t);

 // Calculate Simple Interest
 simpleInterest = p * t * r / 100;
 printf("\n Simple Interest = %.2f \n", simpleInterest);

 // Calculate Compound Interest
compoundInterest = p * pow((1 + r / 100), t) - p;
printf("\n Compound Interest = %.2f \n", compoundInterest);

//    getch();   // used to pause the console/output screen until user presses the key
                 // it also captures the key press without showing in the console


   return 0;    // It indicates the program executed successfully without throwing any errors

//    return 1;  // It indicates the program encountered an error or unexpected condition.
//    return -1; // It indicates the specific type of error in the program.

}
```

10. **WAP in C to swap any two numbers.**

```
#include <stdio.h>

void main()
{

        float num1, num2, temp;

        printf("Enter any two numbers: ");
        scanf("%f, %f", &num1, &num2);

        // Logic of swapping two numbers using help of temp variable
        temp = num1;
        num1 = num2;
        num2 = temp;

        // After swapping
        printf("\nAfter swapping: \n");
        printf("num1 = %.2f \n", num1);
        printf("num2 = %.2f \n", num2);

        getch();
}
```

11. Another Question Here

12. Next Question Here

13. …
14.