1. **Write a code in C++ that takes radius of a circle as input from user and outputs the circumference and area. The output should be clear and readable. Add proper comments to the code. You can set the value of π up to 3 decimal places?**

Code:

```
#include<iostream>
using namespace std;

#define PI 3.142

int main()
{
	double rad, C, A;
	//const double PI = 3.142;
	cout << "Enter the radius of cirlcle: ";
	cin >> rad;
	C = 2 * PI * rad;
	A = PI * rad * rad;
	cout << "Circumference of circle is: " << C << endl;
	cout << "Area of circle is: " << A;
	cout << endl;
	return 0;
}
```

Output:

```
Enter the radius of cirlcle: 7.3
Circumference of circle is: 45.8732
Area of circle is: 167.437
```

2. **Write a code in C++ that takes values of a and b from the user and displays result of polynomial $a^2 + 2ab + b^2$.**

Code:

```
#include<iostream>
using namespace std;

int main()
{
	int a, b, c;
	cout << "Enter the value of a: ";
	cin >> a;
	cout << "Enter the value of b: ";
	cin >> b;
	c = a * a + 2 * a * b + b * b;
	cout << "Result: " << c;
	cout << endl;
	return 0;
}
```

Output:

```
Enter the value of a: 12
Enter the value of b: 13
Result: 625
```

3. **Write a program that asks the user to enter a value for x and then displays the value of the following polynomial 2x^5+3x^4-x^3-2x^2+7x-6. To calculate x^5 you will have to use pow(x, 5). Note: include math.h library for pow.**

Code:

```
#include<iostream>
#include<math.h>
using namespace std;

int main()
{
	int x, res;
	cout << "Enter the value of x: ";
	cin >> x;
	res = 2 * pow(x,5) + 3 * pow(x,4) - pow(x,3) - 2 * pow(x,2)+ 7 *
	      x - 6;
	cout << "Result: " << res;
	cout << endl;
	return 0;
}
```

Output:

```
Enter the value of x: 3
Result: 699
```

4. **Take two complex number from user and add them. Print the resultant complex number.**

Code:

```
#include<iostream>
#include<math.h>
using namespace std;

int main()
{
	int a, b, c, d, r_sum, i_sum;
	cout << "Enter the real part of first number: ";
	cin >> a;
	cout << "Enter the imaginary part of first number: ";
	cin >> b;
	cout << "Enter the real part of second number: ";
	cin >> c;
	cout << "Enter the imaginary part of second number: ";
	cin >> d;
	r_sum = a + c;
	i_sum = b + d;
	cout << "Sum of two Complex Number: " << r_sum << " + i" << i_sum;
	cout << endl;
	return 0;
}
```

Output:

```
Enter the real part of first number: 10
Enter the imaginary part of first number: 12
Enter the real part of second number: 8
Enter the imaginary part of second number: 7
Sum of two Complex Number: 18 + i19
```

5. **Write a program to calculate the distance between two points using distance formula when coordinates of both the points are input by user.**

Code:

```
#include<iostream>
#include<math.h>
using namespace std;

int main()
{
	float x1, x2, y1, y2, d;
	cout << "Enter the x1: ";
	cin >> x1;
	cout << "Enter the y1: ";
	cin >> y1;
	cout << "Enter the x2: ";
	cin >> x2;
	cout << "Enter the y2: ";
	cin >> y2;
	d = sqrt(pow((x2 - x1),2) + pow((y2 - y1),2));
	cout << "Distance is: " << d;
	cout << endl;
	return 0;
}
```

Output:

```
Enter the x1: 3
Enter the y1: 7
Enter the x2: 9
Enter the y2: 4
Distance is: 6.7082
```

6. **Write a code in C++ to take length from user in centimeter and convert it into meter and kilometer.**

Code:

```
#include<iostream>
#include<math.h>
using namespace std;

int main()
{
	float len_in_cm, len_in_m, len_in_km ;
	cout << "Enter the length in centimeter: ";
	cin >> len_in_cm;
	len_in_m = len_in_cm / 100;
	len_in_km = len_in_cm / 100000;
	cout << "length in meter: " << len_in_m;
	cout << "\nlength in kilometer: " << len_in_km;
```

```
        cout << endl;
        return 0;
}
```

Output:

```
Enter the length in centimeter: 1500
length in meter: 15
length in kilometer: 0.015
```

7. **Write a code in C++ to enter P, T, R and calculate Simple Interest.**

Code:

```
#include<iostream>
#include<math.h>
using namespace std;

int main()
{
        int P, T;
        float R, I;

        cout << "Enter the Principal Amount(in $): ";
        cin >> P;
        cout << "\nEnter the Interest Rate(in percentage): ";
        cin >> R;
        cout << "\nEnter the Time(in year): ";
        cin >> T;
        I = P * ( R / 100)  * T;
        cout << "\nSimple Interest Amount is: " << I;
        cout << endl;
        return 0;
}
```

Output:

```
Enter the Principal Amount(in $): 100

Enter the Interest Rate(in %): 5

Enter the Time(in year): 1

Simple Interest Amount(in $): 5
```

8. **Write a program in C++ to convert temperature in Fahrenheit to Celsius.**

Code:

```
#include<iostream>
#include<math.h>
using namespace std;

int main()
{
        float F, C;
        cout << "Enter the Temperature(in Farenheit): ";
        cin >> F;
        C = (F - 32.0) * (5.0 / 9.0);
```

```
        cout << "\nTemperature(in Celsius): " << C;
        cout << endl;
        return 0;
}
```

Output: