```
//File name: lab07.cpp
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//Date: 2/11/2020
//Purposes,
// program 1: Calculate the Area of a pentagon based on radius
// program 2: To calculate the area of a polygon based on
//            side length and number of sides
#include "iostream"
#include <math.h>
using namespace std;

#define prog 1
#if prog == 1
int main()
{
	const double PI = 3.14159265;
	double radius = 0.0;
	double sidelength = 0.0;
	double area = 0.0;

	cout << "Enter the lenth from the center to a vertex:";
	cin >> radius;

	sidelength = 2.0*radius *sin(PI / 5.0);
	area = (5.0 * pow(sidelength, 2.0)) / (4 * tan(PI / 5.0));
	area = static_cast<int>(area * 100) / 100.0;

	cout << "The length of the pentagon is " << area << endl;

	return 0;
}
```

```
Enter the lenth from the center to a vertex:5.5
The length of the pentagon is 71.92
```

```
#elif prog == 2
int main() {
	const double PI = 3.14159265;
	int side_num = 0;
	double sidelength = 0.0;
	double area = 0.0;

	cout << "Enter the number of sides:";
	cin >> side_num;
	cout << "Enter the side:";
	cin >> sidelength;

	area = (side_num * pow(sidelength, 2.0)) / (4.0 * tan(PI /
static_cast<double>(side_num)));
	area = static_cast<int>(area * 100) / 100.0;

	cout << "The area of the pentagon is " << area;
	return 0;
}
#endif
```

```
Enter the number of sides:5
Enter the side:6.5
The area of the pentagon is 72.69
```