This exercise is designed for practicing with writing computational expressions.

Write a C++ program that will compute the volume of a sphere. The mathematical formula, where R represents the radius of the sphere, is:

$$V = \frac{4}{3}\pi R^3$$

The volume is to be computed in both cubic-cm and cubic-inches. The user will provide the length of the radius in centimeters. This will require you to perform a conversion from cm to inches. There are 2.54 centimeters per inch.

Format your results to 3 digits after the decimal point as shown in the samples below.

PLANNING

1) What input value(s) does the user need to provide?
2) What would you name the variables to store the input and result values?
3) What data types should these values be?
4) Compute the volume in centimeters after reading the radius from the user.
5) How would you convert the result from cubic centimeters to cubic inches?
6) Write the computation as a C++ statement assuming you have values stored in your data variable(s).

USEFUL HINTS

The value for PI should be the best value the computer can provide us. Versions of C++ earlier than C++20 do not provide PI as a constant. (We are using earlier versions in this course.). The value for PI can be computed by using 2 * acos(0.0). You will need to #include <cmath> to use the acos function.

You will need #include <iomanip> for the formatting operations for output streams.

SAMPLES

Below I have provided two different sample executions of the program. You should check your results with other values as well.

```
Welcome to the volume calculator.

Enter the radius of your sphere (in cm): 1

For a sphere with a radius of 1.000 cm
The volume is: 4.189 cm-cubed,
or 0.256 inches-cubed

End Program
```

```
Welcome to the volume calculator.

Enter the radius of your sphere (in cm): 25

For a sphere with a radius of 25.000 cm
The volume is: 65449.847 cm-cubed,
or 3993.995 inches-cubed

End Program
```

user input is highlighted in yellow.

GRADING NOTES

The following must be present for you to get full credit for the assignment:

- The program has a block comment in the beginning that includes:
    - Your name
    - The date
    - The course
    - A description of the problem being solved.
- Variables have meaningful names and are declared prior to the computations
- Constants are used where appropriate
- The program executes correctly as described in the assignment. The correct results are output and the report is formatted as asked for.