CS161 - Programming Assignment 2 - Geometry Fun, part 2

The purpose of this assignment is to get more experience working with numeric data as well as demonstrating an understanding of good coding practices (writing clear, self-documenting code and following typical programming conventions).

The assignment builds upon the last assignment (Geometry Fun). Additions are shown below in blue.

Overview

Write a program named GeometryFun which prompts a user for a positive whole number and outputs the following:

- The perimeter and area of a square whose side length is equal to the entered number
- The radius, perimeter, and area of a circle whose diameter is equal to the entered number
- The perimeter and area of an equilateral triangle whose side length is equal to the entered number.

The program will use the command line for it's input and output (I/O).

Sample Output

Output should look similar to this (assuming 7 was entered):

```
Please enter a whole number: 7

A square with side length of 7
          has a perimeter of 28
          has an area of 49

A circle with a diameter of 7
          has a radius of 3.5
          has a perimeter of 21.996
          has an area of 38.483

A equilateral triangle with side length of 7
          has a perimeter of 21
          has an area of 21.218
```

Technical details

- PI should be declared as a constant with 5 digits of precision.
- Results of all computations should be stored in variables (don't do calculations and output at the same time).

- Program should use integer math when appropriate and floating point math when appropriate.
- program should demonstrate use of a static_cast.
- The program should demonstrate the use of the tab character (\t);
- The program should demonstrate the use of the pow() and sqrt() functions.
- Decimal numbers should be output with 3 digits after the decimal number

As with all programs written in this course, maintainability is as important as functionality, so your code should be clear and easy to follow. Make sure it follows the class coding conventions.

Before submitting, use this program checklist to verify you didn't forget anything!

Extra Credit - Optional

In addition to all the above, prompt for a number of sides and calculate and display the perimeter and area of a regular polygon with that number of sides (of the entered length). Note: the perimeter is easy, no extra credit for that. It's the area that's a challenge.

Or something else that uses some advanced math functions ("advanced" will be determined by the instructor).