Project 4: Polygon Math Using O.O.P.

This program uses a parent class called Polygon and subclasses for types of polygons.

Using the sample code provided, extend the program to also find the perimeter and area of four (4) additional two-dimensional shapes. Easier options include the following: circle, ellipse, rectangle, regular hexagon, regular octagon, regular decagon, regular dodecagon. The area of regular heptagons and nonagons require trigonometry or an approximation with enough accuracy based on trigonometry. Each shape (Class) should be a separate file from Main.

Have the user select the shape from a prompt using a Switch statement and then enter the side length(s) from a prompt.

Have the program then output the perimeter and area for the shape.

Have the program continue to take input regarding different shapes and side lengths until the user indicates s/he would like to quit.

Fix all perimeter and area formulas to round to the nearest hundredth.  
(Hint: You could start by fixing the area formula for the triangle as it currently rounds to nearest whole number.) The area of all shapes should be accurate to the nearest hundredth.

Use comments in a value-added way.

Bonus Options (up to 100 A+):

Extend your program to solve for one (1) to three (3) additional regular (or irregular) shapes besides the three additional that are required with bonus points awarded for each. Remember the rounding rule above.

Use trigonometry functions from the Math class to solve for one or more of your shape areas (e.g., for a heptagon and/or nonagon).

Solve for the area of an irregular shape(s) besides triangles, ellipses, and rectangles.

Improve upon the abstraction provided in the starter code to make your program more elegant.