# lab ASSIGNMENT 12.2

# GraphicPolygon

**Background:**

In Lab Assignment A6.2, we created a RegularPolygon class that maintained a large number of properties for any polygon of a given number and length of sides. By extending the RegularPolygon class to include the capabilities of the DrawingTool class, it is possible to display a graphic representation of any polygon. For example, a 9-sided regular polygon (nonagon) would be represented as follows:



**Assignment:**

1. Extend the RegularPolygon class created in Lab Assignment A6.2 to create a GraphicPolygon class. Use the following declarations as a starting point for your lab work.

**class** GraphicPolygon **extends** RegularPolygon{

**private** DrawingTool pen = **new** DrawingTool(**new** SketchPad(400, 400));

**private** **double** xPosition, yPosition;

// constructors

// Initializes a polygon of numSides sides and sideLength

// length in the superclass. The polygon is centered at

// xPosition = yPosition = 0

**public** GraphicPolygon(**int** numSides, **double** sideLength){

}

// Initializes a polygon of numSides sides and sideLength

// length in the superclass. The polygon is centered at

// xPosition = x and yPosition = y

**public** GraphicPolygon(**int** numSides, **double** sideLength, **double** x, **double** y){

}

// public methods

// Sets xPosition = x and yPosition = y to correspond to the new

// center of the polygon

**public** **void** moveTo(**double** x, **double** y){

}

// Draws the polygon about the center point (xPosition, yPosition).

// Uses properties inherited from RegularPolygon to determine the

// number and length of the sides, the radius of the inscribed circle,

// and the vertex angle with which to draw the polygon

**public** **void** draw(){

}

}

2. Write two constructor methods. The first constructor initializes the number and length of the sides of a polygon centered about the point (0, 0). The Second constructor is used to initialize a polygon a specified number and length of sides with a center at a specified x and y location.

3. Write a method that draws the polygon onto the Sketchpad window using the movement and drawing methods available in the DrawingTool class.

4. Write a method that moves the center of the polygon to a specified x and y location.

5. Write a testing class with a main() method that constructs a GraphicPolygon and calls each method. Sample usage for a polygon with 9 sides of length 100 would give:

GraphicPolygon gPoly = **new** GraphicPolygon(9, 100);

gPoly.draw();

**Instructions:**

1. Use the following values to test your functions:

Square: number of sides = 4, length of side = 150

Octagon: number of sides = 8, length of side = 100

Enneadecagon: number of sides = 19, length of side = 50

Enneacontakaihenagon: number of sides = 91, length of side = 10