Geometry Name_____ per____

Teacher _____

Supplies:

Pencil	Tracing Paper
Graph paper	Markers or Colored Pencils
Straightedge	Framing materials

Process:

Step 1: Plot and connect 5 vertices on the graph paper. You will be dilating your pentagon so plan accordingly. Label the vertices A, B, C, D and E and record the coordinates.

Step 2: Dilate your pentagon with a center of dilation at the origin. Label the vertices of the image pentagon F, G, H, I and J. Be sure to record your scale factor and the coordinates.

Step 3: Rotate *ABCDE* and *FGHIJ* 180° about the origin. Label the image polygons *A'B'C'D'E'* and *F'G'H'I'J'* respectively. Record the coordinates of *A'B'C'D'E'* and *F'G'H'I'J'*.

Step 4: Reflect all four pentagons: *ABCDE*, *FGHIJ*, *A'B'C'D'E'*, and *F'G'H'I'J'*. Be sure to record the line of reflection and the coordinates. Use the following mapping to label the vertices.

ABCDE → *A"B"C"D"E"*
FGHIJ → *F"G"H"I"J"*
A'B'C'D'E' → *A'"B'"C'"D'E'"*
F'G'H'I'J' → *F'"G'"H'"I'"J'"*

List all lines of symmetry used in your picture.

Step 5: Before proceeding, carefully review your record sheet. Make sure all coordinate, the scale factor, line of reflection and types of symmetry have been filled in.

Step 6: Trace your picture onto the tracing paper. Use pencil and keep the papers perfectly aligned. You may embellish your art by copying the graph onto the tracing paper multiple times in different positions as long as your final product has symmetry.

Step 7: Color your art to look like stained glass. Use bright colors and work neatly.

Step 8: Frame your "stained glass" picture by using card stock or another heavy material. I should be able to hold your art up to a light without it bending. I should be able to see light through the tracing paper.

Step 9: Grade yourself using the rubric attached to the record sheet. You will be turning in the graph paper, record sheet, completed rubric, and final artwork by the end of the next class.

Geometry Name_____ per____

Teacher _____

Record Sheet

Polygon	Coordinates				
ABCDE	A(,)	B (,)	C (,)	D (,)	E (,)
FGHIJ	F(,)	G (,)	H (,)	I (,)	J (,)
A'B'C'D'E'	A'(,)	B'(,)	C' (,)	D' (,)	E' (,)
F'G'H'I'J'	F'(,)	G' (,)	H' (,)	I' (,)	J' (,)
A"B"C"D"E"	A"(,)	B" (,)	C" (,)	D" (,)	E" (,)
F"G"H"I"J"	F"(,)	G" (,)	H" (,)	I" (,)	J" (,)
A'"B'"C'"D'"E'"	A'"(,)	B'" (,)	C'" (,)	D'" (,)	E'" (,)
F'"G'"H'"I'"J'"	F'"(,)	G'"(,)	H'" (,)	I'" (,)	J'" (,)

Scale factor used: _____

Line of reflection: _____

Lines of symmetry:

Rubric

Correct coordinates for 8 pentagons _____ (40)

The following will be graded using the graph (*you will not receive these points without it*):

Dilation _____ (5)

180° rotation _____ (5)

Reflection _____ (5)

Scale factor _____ (5)

Line of reflection _____ (5)

Lines of symmetry _____ (5)

The following will be graded using the tracing paper (*you will not receive these points without it*):

Color _____ (5)

Symmetry in final artwork _____ (5)

Frame _____ (5)

Neatness (straightedge used for all lines) _____ (10)

Completion of Rubric _____ (5)

Total _____ (100)