7.1

Name (print first and last) _____ **Per**_____ **Date:** 2/28 due 3/4

7.1 Similarity: Definition and Dilation **Geometry Regents 2013-2014 Ms. Lomac**

SLO: I can construct similar figures through dilation and describe the qualities required for 2 figures to be similar.

VOCABULARY (use these words while you are answering questions)

Dilation (Notation: D_k)	Segment	Length	Similar
Coordinates	Direction	Congruent	Units
Scale factor	Center of dilation	Origin	Proportional
Image	Original	Prime (Notation ‘)	

(1) ☐ Follow the directions below to graph **dilations**. You will use your graph to observe qualities of **similar** figures.

☐ (a) Label the vertices of the figure on your large graph paper. Use the coordinates below to figure out which letter goes with which vertex. (These coordinates are also written at the top of the graph.)

A(-3, -1) **B(-3, 0)** **C(2, 3)** **D(2, -3)** **E(0,-3)**

☐ (b) Label the origin O. [Note: the origin is (0,0).]

☐ (c) Use a ruler to CAREFULLY draw the rays below. Extend each ray to the very edge of the graph. Put a star in the box by the ray that has already been drawn for you.

☐ $\overrightarrow{OA}$ ☐ $\overrightarrow{OB}$ ☐ $\overrightarrow{OC}$ ☐ $\overrightarrow{OD}$ ☐ $\overrightarrow{OE}$

☐ (d) There are arcs on the ray that has been drawn for you. USE A COMPASS to measure from the origin to the first arc. How was this distance used to make the other 5 arcs?_____

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☐ (e) Label the points where the arc and the ray intersect with prime notation. Meaning, if the vertex is X, label the next intersection X’, then X’’, then X’’’, etc.

☐ (f) Repeat parts (d) and (e) for the other 4 rays. Remember to start by measuring from the origin to a vertex on the figure. (NOTE: Each arc should intersect the ray on a corner of a square of the grid.)

☐ (g) Record the coordinates for each point you have made at the top of your graph.

☐ (h) Highlight points A’B’C’D’ and E’ with a marker. Once you have highlighted all 5 points, connect them with the same color marker. Use a different color marker for each set of points below. Write the color you use in the blank.

Highlight and connect A"B"C"D" with _____

Highlight and connect A'"B'"C'"D'"E'" with _____

Highlight and connect A""B""C""D""E"" with _____

Highlight and connect A""""B""""C""""D""""E"""" with _____

(2) ☐ Use tracing paper to trace angle A. Compare the measure of angle A to the measure of angle A', A", A'", A"", A"""".

Repeat this process for the other angles: B, C, D, and E. Write a clear description about what you notice. _____

_____

_____

(3) ☐ Find the length of each segment for all 6 shapes. Show any necessary calculations in the space below. Record your final answers in the table at right.

	AB	BC	CD	DE	EA
Original					
'					
"					
'''					
''''					
'''''					

(4) ☐ Compare the side lengths of ABCDE to those of A'B'C'D'E'. What do you notice? Now compare the corresponding side lengths of the other 4 shapes to the side lengths of ABCDE. What do you notice? Write a clear summary of your observations. _____

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(5) ☐ Compare the coordinates for the points of ABCDE to those of A'B'C'D'E'. What do you notice? Now compare the coordinates of the other 4 shapes to the coordinates of ABCDE. What do you notice? Write a clear summary of your observations. _____

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(6) ☐ Define the word "**similar**" as you use it in everyday language. _____

_____

(7) ☐ The shapes you drew today are all **similar**. Define the word "**similar**" as it is used in geometry. Be sure to include information about the **angle measures** and **side lengths** of the shapes you drew today. Write your definition in the space below. Check your definition with the textbook definition and make any necessary changes. _____

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(8) ☐ The **similar** shapes you drew today are **images** of the original shape ABCDE. They were created with a process called **dilation**. Look up the word **dilation** in the geometry book and write the definition. You may need the glossary as well as chapter pages that describe how a **dilation** is made. _____

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(9) ☐ In your definition of **dilation**, you should have used the terms "**scale factor**" and "**center of dilation**." Describe what **scale factor** and **center of dilation** are in the space below _____

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