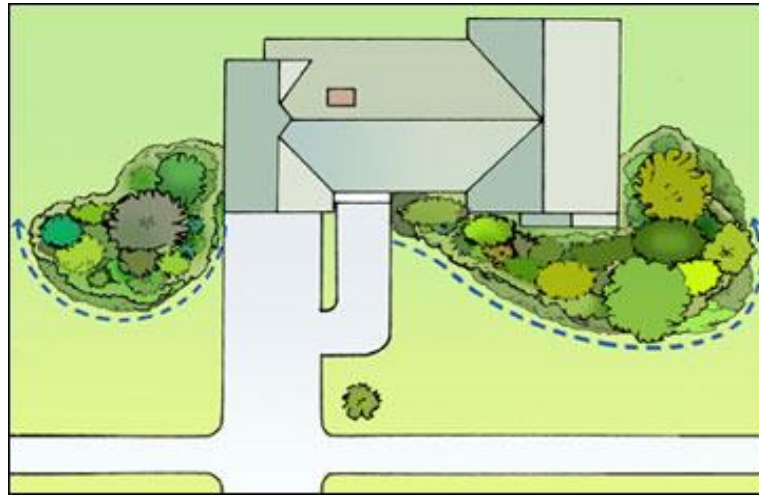


Name _____
Date _____ PER _____
PROJECT IS DUE ON _____

MYP UNIT 4 PROJECT
Similar Figures, Transformations,
& Dimensional Changes

LANDSCAPING The YARD!

Ross Sterling's Math contest is to design the best landscaped yard using geometric shapes



Landscape Designer: Is a profession that modifies features of a land through architecture and gardens.

Project Description: All eighth grade math students will compete to design the best landscaped yard using math skills, geometric shapes, and creativity. The objective is to create similar figures of your house and flowerbeds on your graph paper (yard) using translation, reflection, and dilation transformations. To complete the project you must thoroughly and thoughtfully answer each reflection question and justify your reasoning. Each part of the project has a designated due date. Failure to complete any part will result in loss of points.

Parent Signature: Parents/Guardians please review the project description, due dates, and expectations of this project with your child and sign below. Your child has been encouraged to seek assistance before or after school with any 8th grade math teacher in the event that he/she needs additional help.

I. House Dilation

- A. Draw an x-axis and y-axis centered on your graph paper.
- B. Select a house template, line up your house corners on even numbered coordinates and trace onto your graph paper.
- C. Label each vertex in alphabetical order and with their coordinates. Record this information in the table below.
- D. The original house will be dilated by a scale factor of your choosing. Remember you will be landscaping the yard, so you want enough space to meet the project criteria.
- E. Show how the scale factor is applied to each original coordinate in the “scale factor” column. Record this information in the table below.
- F. On the graph, dilate your house then label the vertex of the new image using prime notation and with their new coordinates.

House Dilatio n Table				
Original House		Scale Factor =	New Image of House	
Original Vertex	Coordinates of Vertex	Process or Rule	Image Vertex	Coordinates of Vertex
	(,)			(,)

II. Flowerbed Creation

To design your landscape you will now decide what shape your flowerbed will be. Use pattern blocks to create a composite figure that will be the outline of your flowerbed. Copy the shape of the figure onto your landscape; keep every vertex at an intersection on the graph. You may copy your flowerbed more than once anywhere on your graph, but leave enough space for at least one translated flowerbed and at least one reflected flowerbed.

II. Translation of Flowerbed

Determine which flowerbed to translate. Record and label the vertex and coordinates in the table.

Record the rule in the table. You must show the translation rule applied to each coordinate in the “translation rule” column. Label the new image “translated flowerbed” on your layout.

Flowerbed Translation Table				
Original Flowerbed		Translation Rule	Translated Flowerbed Image	
Original Vertex	Coordinates of Vertex		Image Vertex	Coordinates of Vertex
	(,)			(,)

III. Reflection of Flowerbed

Select a flowerbed and determine if it is to be reflected over either the x- or y- axis. Record the rule in the table. You must show the reflected rule applied to each coordinate in the “reflected rule” column. Label the new image “reflected flowerbed” on your layout.

Flowerbed Reflection Table				
Original Flowerbed		Reflected Rule	Reflected Flowerbed Image	
Original Vertex	Coordinates of Vertex		Image Vertex	Coordinates of Vertex
	(,)			(,)

IV. **Perimeter and Area of House**

- A. Record the name of each side of your house and its length. Show how the scale factor is applied to the length of the sides to create your new dilated image. Determine the perimeter of the original house and show how the scale factor is applied to the perimeter.

DILATIONS and PERIMETER				
Original House		Scale Factor	New House	
Name of side	Length		Name of side	Length
Perimeter			Perimeter	

- A. Determine the area of your original house by dividing it into rectangles. Record the area for each section in the table below. Calculate the entire area and record in the table. Show how the scale factor is applied to the area in the “scale factor” column. Record the new area in the table.

DILATIONS and AREA				
Original House		Scale Factor	New House	

Section	Area		Section	Area
Total			Total	

V. **Reflection Questions and Justification**

1. **What scale factor did you choose?**
2. **Why did you choose this scale factor?**
3. **How could you verify that the dilated house is similar to the original house?**
4. **Describe the relationship between the perimeter of the original house and the dilated house. Why did this change occur?**
5. **Describe the relationship between the area of the original house and the dilated house. Why did this change occur?**
6. **If this pattern continues, describe the relationship between the volume of the original house and the dilated house.**
7. **Describe another situation in which you would need the ability to translate, reflect, and dilate figures? Why is this concept important?**
8. **How did the scale factor affect the cost of your landscaping project?**
9. **To what extent can my actions change the world?**
10. **Why is change important?**

VI. **Checkpoints**

PART 1 – House Dilation and Flowerbed Creation DUE _____

- ☐ I labeled every vertex of my original house in alphabetical order with coordinates.
- ☐ I labeled every vertex of my dilated house in alphabetical order using prime notation with coordinates
- ☐ I determined a scale factor for dilation.
- ☐ I recorded and completed the dilation table
- ☐ I created a composite figure using 2 or more pattern blocks and drew the outline on my layout.

Parent Signature _____

Teacher Signature _____

PART 2 – Translation DUE _____

- ☐ I selected a flowerbed to translate and labeled each vertex in alphabetical order with coordinates.
- ☐ I translated the flowerbed on my layout and labeled each vertex in alphabetical order using prime notation and with coordinates.
- ☐ I recorded all information in the translation table.
- ☐ I recorded the translation rule and applied it to each coordinate.

Parent Signature _____

Teacher Signature _____

PART 3 – Reflection DUE _____

- ☐ I selected a flowerbed to reflect and labeled each vertex in alphabetical order with coordinates.
- ☐ I reflected the flowerbed on my layout and labeled each vertex in alphabetical order using prime notation and with coordinates.
- ☐ I recorded all information in the reflection table.
- ☐ I recorded the reflection rule and applied it to each coordinate.

Parent Signature _____

Teacher Signature _____

PART 4 – Perimeter and Area of House DUE _____

- ☐ I named each side of the original house and found the length.
- ☐ I found the perimeter of the original and used the scale factor to determine the perimeter of the dilated house.
- ☐ I found the area of the original and used the scale factor to determine the area of the dilated house.

PART 5 – Area of Flowerbeds and Cost of Fertilizer

- ☐ I created a table to organize my information.
- ☐ I found the total area of flowerbeds.
- ☐ I calculated the amount of fertilizer needed to cover the flowerbeds.
- ☐ I calculated the total cost to cover all flowerbeds with mulch.

Parent Signature _____

Teacher Signature _____