

Name \_\_\_\_\_

## Algebra 1 Chapter 6 Cooperative Learning Project

Gavin Royse needs to have a grid of his yard for landscape workers to use when putting in a fence and two new trees. His house sits on an angle on the lot, which measures 80 feet by 80 feet. The boundaries of his house are described by the four equations below.

$$3x - 4y = 56$$

$$3x + 2y = 86$$

$$3x - 4y = -124$$

$$3x + 2y = 174$$

The house faces southwest.

The fence will run from the farthest north corner of the house to (5, 80) and then run along the north lot line to the corner of the lot (80, 80). It will then head south on the lot line to (80, 30). From there it will angle toward the house to (55, 5) and then head to the farthest east corner of the house.

A shade tree will be placed at the intersection of  $3x - 4y = 56$  and  $x + 3y = 171$ , while an ornamental tree will be placed 15 feet south of the west corner of the house.

Use the following steps to guide your results:

1. Draw in the lines representing the boundaries of the fence as described above.
2. Sketch the lines that represent the boundaries of the house.
3. Create a system of 4 *inequalities* that describes each side of Gavin's fenced area.

4. Determine the vertices of the house. (Do not estimate by looking at the graph, but instead solve the systems of equations given above.) **Show and label all work!**

5. Determine the vertices of the two trees. Show and label all work!

6. Construct a colorful and detailed graph that Gavin would give to the landscape workers. Be sure to consider the scale and size of your graph. Make sure the house, fence, and trees are clearly visible. (This is the part that will be graded according to the rubric)

7. Write 2 paragraphs explaining the following things:

- How did you find the vertices of the house and trees? (Rough sketch)
- Explain the process you used to construct your graph for the landscape workers. (Final product)

Rubric – House Project

Name \_\_\_\_\_

Point Value	0	1	2	3	4	5
<b>Colorful Detailed Final Project</b>	No Graph.	No color No detail.	Little detail No color.	One color and little detail <i>or</i> Only detail and no color.	Color and detailed but not neat.	Very neat colorful detailed.
<b>Correct Scale on Final Project</b>	Incorrect Scale			Correct scale, but does not use the whole page.		Correct scale, uses whole page.
<b>Create a Systems of Inequalities</b>	No systems	1 inequality correct	2 inequalities correct	3 inequalities correct	4 equations correct	4 inequalities correct
<b>Find the Vertices</b>	No vertices	All vertices correct but <b>No Work!</b>	<b>Shows all work</b> but 1 vertex is correct.	<b>Shows all work</b> but 2 vertices are correct.	<b>Shows all work</b> but 3 vertices are correct.	<b>Shows all work</b> and all vertices are correct.
<b>Vertices of the trees</b>	No vertices	All vertices correct but <b>No Work!</b>			<b>Shows all work</b> but 1 vertex is correct.	<b>Shows all work</b> and all vertices are correct.
<b>1<sup>st</sup> Paragraph</b>	No paragraph		Wrong explanation of the vertices. <b>Has some grammar mistakes.</b>	Incomplete explanation of the vertices. <b>Has some grammar mistakes.</b>	Correct explanation of the vertices. <b>Has some grammar mistakes.</b>	Correct explanation of the vertices. <b>Has no grammar mistakes.</b>

<b>2<sup>nd</sup> Paragraph</b>	No paragraph		Wrong explanation of the vertices. <b>Has some grammar mistakes.</b>	Incomplete explanation of the process. <b>Has some grammar mistakes.</b>	Correct explanation of the vertices. <b>Has some grammar mistakes.</b>	Correct explanation of the vertices. <b>Has no grammar mistakes.</b>
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