

Algebra I Final Project

Introduction: Systems of linear equations are a useful way to solve common problems in different areas of life. One of the most powerful ways to use them is in a comparison model where two similar situations are compared side by side to determine which one is better. In this project, you will be using systems of linear equations to decide which car to buy. To do so you will compare the base price (the cost of the car) and the cost of driving the car.

Situation: You just got your first job and have decided that it's time to buy a car. You must compare two cars of your choice and find which one would be a better buy over time. **NOTE: For simplicity, let's say gas cost \$2.50 per gallon.** Determine when a) you will spend the same amount on both cars and b) you will spend more on one car than the other.

Assignment: You will gather information (price of the car and the miles per gallon) for each of the cars. Then you will write a system of linear equations for both cars of your choice and create a graph to determine which will be the better buy. You will also verify your graphical information by using either the elimination or substitution method. Finally, you will create a book of your findings to present your choice and rationale.

Project Details:

- 1) Choose two cars to research. Be very specific with trim, model year, etc. Document reasoning for car choice (one paragraph minimum).
- 2) Collect the data for each car. Price and MPG of each car. Document source of data gathered.
- 3) Write the system of linear equations and a word problem once the data has been collected. Document the y-intercept and slope and what that means in your word problem.
- 4) Use the methods we have been studying (graphing and solving algebraically) to find the solution to the written system. Document all work done.
- 5) Compile all documentation for book of the project.
 - a. Rationale for choosing cars
 - b. Data and source of data
 - c. System of linear equations with explanation of the y-intercept and slope
 - d. Solution to the written systems (all work shown).

Grading Guidelines/Rubric:

1. Content (20 points)

- Clearly stated rationale for cars chosen
- Correct data and stated source of data
- System of linear equations written with clear interpretation
- Solution to created systems
 - Graphs
 - Verification method
- Proper interpretation of results

2. Neatness of book (10 points)

- Use ruler for precision with graphs
- Write neatly and legibly ~ your best writing. Use pen for the final.
- Mistakes are hardly noticeable.
- Color well (uniform use of colored markers and pencils).