Name: _____

Linear Equations and Systems

For this week's project you will be implementing what you've learned about linear relations, functions, and modeling.

The Scenario:

Your parents tell you that you are in charge of their next purchasing decision. It is up to you whether they are buying a car, gym membership, phone, etc. Your parents agree to foot the bill if you can figure out which of the two to three plans is the best option for your family given the amount of times you'll use it in a month/year. Two is the minimum number of plans that you can compare.

Research:

In the space below, fill in details about the competing plans. Look up current deals being offered for whatever purchase you are interested in (car, gym membership, phone, etc.)

Calculations / Methods:

- In the space below write out what each plan offers, fill in calculation tables for 5 inputs, then write linear equations in the form y = mx + b that represent the plans.

Define Variables: *x* will represent _____ and *y* will represent _____.

1. **Option 1:**

Input	Calculation	Output

Equation:

2. **Option 2:**

Input	Calculation	Output

Equation:

3. **Option 3:**

Input	Calculation	Output

Equation:

- Next, graph each of the lines you developed together on one coordinate grid. Be sure to label the lines with the appropriate equations and matching plans.

- Analyze your graphs carefully and answer the following questions below. Be sure to use complete sentences!

1) When do your plans charge the same amount? EXPLAIN (including how you know).
2) When is the first plan a better choice? EXPLAIN.
3) When is the second plan a better choice? EXPLAIN.
4) Discuss how your graphs help you answer the questions above.
5) What are other circumstances that might make a more expensive plan better even though it costs more money? Describe any other relevant variables that would have to be considered to make an educated consumer choice.
6) Determine which plan works best for you given your circumstances and all analyses above. Then choose or create a fictional person who would choose the other option. Write at least 1 complete & thorough paragraph of explanation for each person.

Extension Options:
Use three or more plans (make sure to answer relevant questions for any plans beyond two). Or compare a second set of plans that is related to the first set. Create a short (~1 minute) video ad that explains why a certain type of person should make a certain choice. Show how to use Algebra to calculate the answer to #1.

PROJECT REQUIREMENTS:

1) All calculations must be done NEATLY and ACCURATELY.

2) Show all steps and explanations whenever requested.

3) Graphs should be properly labeled.