ALGEBRA 1 ~ Cell Phone Task
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Math Essential Standards

- Approximate and interpret rates of change from graphical and numerical data.
- Create and use tabular, symbolic, graphical, and verbal representations and analyze and understand patterns, relations, and functions.
- Graphically display univariate and bivariate data and understand the implications of its characteristics**.**

Lifelong-learner Standards

- Plan and conduct research.
- Gather, organize, and analyze data, evaluate processes and products, and draw conclusions.
- Think analytically, critically, and creatively to pursue new ideas, acquire new knowledge, and make decisions.
- Understand and apply principles of logic and reasoning; develop, evaluate, and defend arguments.
- Acquire and use precise language to clearly communicate ideas, knowledge, and processes.
- Apply habits of mind and metacognitive strategies to plan, monitor, and evaluate one's own work.

KUD's

- Collect data.
- Create a scatterplot from data.
- Calculate a line of best fit (calculator usage ok).
- Plot points and lines by hand.

Task

- Students will research one type of phone for at least two different cell phone companies and determine which plan they would purchase.
- Students will create a scatterplot and determine a line of best fit relating the number of minutes to the monthly charge for each company and then compare their results.
- Students will write a synopsis describing which plan they chose and why that was the best choice for them.

Time Frame

1 – 2 days of in class work with computer access (for researching cell phone companies).
If 1 day of class, plan on giving students time outside of school to complete.

Pre-planning Sheet/Questions to consider:

- The average number of minutes I use per month: _____
- The average number of text messages I send per month: _____
- The average data usage per month: _____
- Other: _____

List some local cell-phone providers:
List some cell-phone models/features to consider (smart phone, keyboard, etc.)

Introduction

You have lost your cell phone and your parents want to teach you some responsibility so they have taken you off of their cell-phone plan. You need to determine what phone you will get and what provider/plan you will choose based on your average monthly usage from your data sheet. You must compare a minimum of two different cell phone companies.

First, for each company that you chose, create a scatterplot and determine a line of best fit for the number of included minutes based on the monthly charge. Compare your two lines of best fit to assess which is the best provider overall.

Second, look at the individual plans for each company and choose the option that is best for your cell phone usage. Feel free to include cell phone coverage and provider reliability in your final decision.

Finally, write a synopsis of your final decision. Include in this synopsis which company looked better when comparing the scatterplots and lines of best fit as well as why you chose the plan that you did. Turn in your data sheet, your scatterplots (with the line of best fit drawn on the scatterplot and the equation written below), and your self-evaluation on the included rubric with your synopsis.

Possible Extensions

Have students explain how they can use this model and process to make other financial decisions. Teachers could use this model for other financial data sets as well.

Rubric

*Note – the point values may be adjusted as necessary by the teacher.

	Not Proficient (1 point)	**Proficient (2 points)**	**Mastered (3 points)**
Accurate Data Collection	Illegitimate data	Legitimate but inaccurate data	Legitimate and accurate data
Accurate and complete legible scatterplots	All required information is not present and is unorganized	All information is present but unorganized	All information is present, organized, and legibly done
Complete and accurate lines of best fit	Attempted, but incorrect, no work shown	Correct answer but no work shown	All steps completed, correct answers with all work shown
Complete and legible data sheet	Not turned in	Partially complete	Complete
Detailed written synopsis	Partial, not detailed	Meets requirements but no elaboration	Elaborate description of process and thoughts

Completed rubric	Not turned in	Partially complete	Complete

Cell Phone Task Name: _____

Data Sheet

Questions to consider:

- The average number of minutes I use per month: _____
- The average number of text messages I send per month: _____
- The average data usage per month: _____
- Other: _____

List some local cell-phone providers:

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

List some cell-phone models/features to consider (smart phone, keyboard, etc.)

- _____
- _____
- _____

Choose two cell phone providers and one type of phone to investigate.

My choices are:

1. _____ 2. _____ Phone type: _____

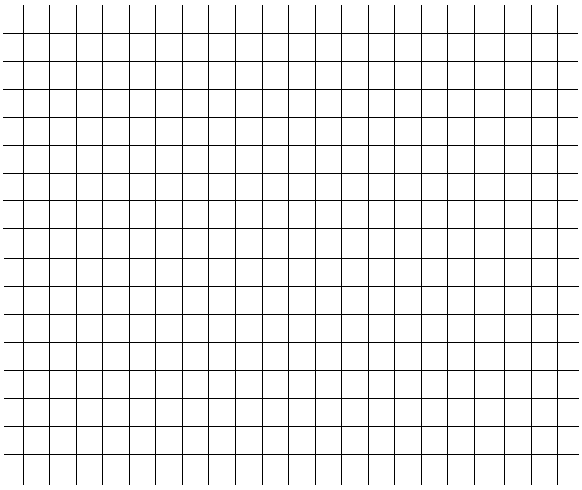
Cell Phone Task
Student Response Sheet

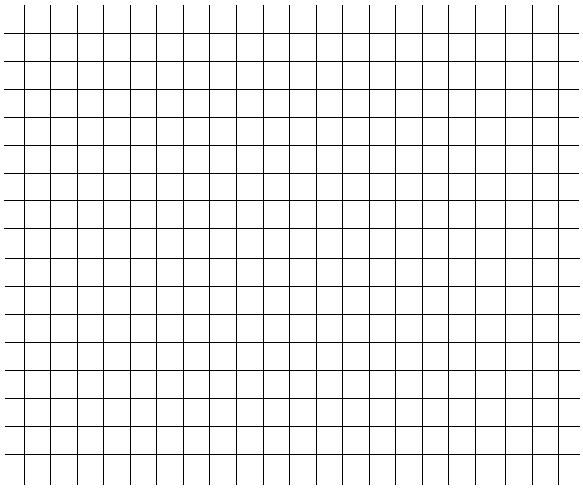
Name: _____

1. Scatterplots

Company #1: _____

Company #2: _____





Line of Best Fit: _____

Line of Best Fit: _____

2. Individual Cell Phone Plans

Phone Choice: _____

Company Choice: _____

Plan Choice:

Minutes: _____ # Text:_____ Data: _____

Total Cost: _____

*Don't forget to attach your completed data sheet, synopsis, and completed rubric!

Cell Phone Task Name: _____
Rubric

	Not Proficient (1 point)	**Proficient (2 points)**	**Mastered (3 points)**	**Student Score**	**Teacher Score**
Accurate Data Collection	Illegitimate data	Legitimate but inaccurate data	Legitimate and accurate data		
Accurate and complete legible scatterplots	All required information is not present and is unorganized	All information is present but unorganized	All information is present, organized, and neatly done		
Complete and accurate lines of best fit	Attempted, but incorrect, no work shown	Correct answer but no work shown	All steps completed, correct answers with all work shown		
Complete and legible data sheet	Not turned in	Partially complete	Complete		
Detailed written synopsis	Partial, not detailed	Meets requirements but no elaboration	Elaborate description of process and thoughts		
Completed rubric	Not turned in	Partially complete	Complete		

Student Self Evaluation: _____ out of (currently 18 points)

Teacher Evaluation: _____ out of (currently 18 points)

Cell Phone Problem Modifications

The cell phone problem was very engaging but requires some different mathematical options.

The scatter plot idea was very confusing.

The new thought is to compare cell phone companies on a single graph as a systems problem.

Because this is an Algebra I level problem, we are recommending that months be graphed on the x-axis and cost be graphed on the y-axis.

Students are being asked to choose a phone model for each of two companies and write a linear equation based on monthly cost. They should graph these linear equations on the same graph. They should compare the costs at one year and two years for their choices before making a decision based on cost and other factors (such as preference, coverage, etc.)

Here is a possible chart for organizing the data collection:

	Phone model and cost	Insurance Monthly?	Minutes Per Month?	Data per Month?	Texting Per Month?	Tethering Per Month?	Linear Equation For monthly cost
Company # 1							
Company # 2							