Project

Mr Uddin
Algebra II

Project Due: 10-15-2012

Systems of Linear Equations Group Project

Math Power Standard #1
Numbers and Operations
Students understand **value and apply properties and operations of numbers** thus allowing them to select and apply the rules necessary to solve problems in familiar, non-familiar as well as **real life situations.**

Introduction

Hello class!! We have been learning about how to analyze daily life situations using algebraic symbols, and how to create linear equations, and linear inequalities to solve real life problems (Remember the video we watched!!) last couple weeks. We saw that systems of linear equations are useful ways 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 your group will be choosing between two real life situations and then using systems of linear equations to decide what to buy. The two situations are: (Choose One)

1. Cell phone plans comparing monthly fee and price per text message.

2. Two cars comparing the base price (the cost of the car) and the cost of driving the car.

You will need to make your selection prior to beginning. Details of the two options are below.

Cell Phone Plans

Situation: You have just graduated from high school and moved away to college. Your parents have decided that it's time for you to pay for your own cell phone. You are a college student so you have to stick to a strict budget. For your cell phone, you have planned to spend no more than $55 per month. Now you need to determine whether you should go with **a plan that costs more per month but charges less per text message or a cheaper plan that charges more per message**.

Assignment: You will gather information from Verizon and AT&T or any two phone companies you like, either through their websites or a store location. **NOTE: you cannot purchase unlimited text messaging for this exercise.**

Car Comparison

Situation: You just got your first job and have decided that it's time to buy a car. You've narrowed it down to either the Chevy Camaro or the Toyota Prius, or any two cars you like. The Prius cost a bit more but gets better gas mileage so will cost less to drive per month. You need to determine how long it will take until you've spent more on the Camaro than you would have on the Prius to make your decision.

Assignment: You will gather information (price of the car and the miles per gallon) for each of the cars. Then you will build a system of linear equations to determine which will be the better buy.

Project Details

You will decide which project you want to do. If you wish to change the cars or alter the cell phone project talk to me and we will see what we can do. After you decide, you need to complete these following tasks.

1. **Data Chief**—As a Data Chief you will be responsible for collecting the data and building a word problem. If you don't have access to Internet let me know.

2. **Head Architect**— As a head architect you will be responsible for building the system of linear equations once the data has been collected.

3. **Master Analyst**— As a master Analyst you will be responsible for using the methods we have been studying (graphing, substitution, and elimination) to find the solution to the system built by the Head Architect.

4. **Lead Designer**— As a Lead Designer you will be responsible for designing the final display of the project. Possibilities are posters, kiosks, PowerPoint, or formal mathematical report. Although the Lead Designer is responsible for the design, all group members must contribute to the actual work of creating it.

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You have two weeks to complete the project. Please let me know if you need any help. I will be checking your progress every day.

Criterion A: Knowledge and Understanding

Through the following task

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Achievement Level	Level Descriptors
7-8 Unique, outstanding, advanced, remarkable, masterful	The student shows a **very good to excellent understanding** of concepts in the area(s): Students understand value and apply properties and operations of numbers thus **analyze** situations using algebraic symbols. Students **apply proper formulas and show works** to solve the mathematical problems. Students use models to show their understanding in representing mathematical relationships. The student **consistently** uses appropriate mathematical concepts and skills when solving **challenging** problems in a **variety** of contexts including both **familiar and unfamiliar** situations. They **select and apply** general rules correctly to solve problems including those in real-life contexts.
5-6 Solid, very good, clearly proficient	The student shows a **good understanding** of concepts in the area(s): Students understand value and apply properties and operations of numbers thus **analyze** situations using algebraic symbols. Students **apply proper formulas and show works** to solve the mathematical problems. Students use models to show their understanding in representing mathematical relationships. The student **generally** makes **appropriate** deductions when solving **simple and more complex** problems in **familiar** contexts. They generally **select and apply** general rules correctly to solve problems including those in real-life contexts.
3-4 Somewhat proficient, adequate, partially	The student shows a **satisfactory understanding** of concepts in the area(s):

proficient	Students understand value and apply properties and operations of numbers thus **analyze** situations using algebraic symbols. Students **apply proper formulas and show works** to solve the mathematical problems. Students use models to show their understanding in representing mathematical relationships. The student **sometimes** makes **appropriate** deductions when solving **challenging** problems, but performs more consistently on problems in familiar situations. They **sometimes select and apply** general rules correctly to solve problems including those in real-life contexts, but often need guidance from the teacher.
1-2 Weak, poor, limited understanding/proficiency	The student shows **limited understanding** of concepts in the area(s): Students understand value and apply properties and operations of numbers thus **analyze** situations using algebraic symbols. Students **apply proper formulas and show works** to solve the mathematical problems. Students use models to show their understanding in representing mathematical relationships. The student **attempts** to make deductions when solving **simple** problems in familiar **contexts**. They **have difficulty selecting and applying** general rules correctly to solve problems including those in real-life contexts, even with guidance from the teacher.
0 Basic, simple understanding/knowledge	The student does not a reach a standard described by any of the descriptors given below. **Little to no effort** was put toward completing this assignment in a meaningful way. **Little to no awareness or understanding** demonstrated.

Criterion C – Communication in mathematics

Through the following task

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Achievement Level	Published Descriptors
5 – 6 Unique, outstanding, advanced, remarkable, masterful	The student shows **good to very good** use of mathematical language (notation, symbols, terminology) **and** forms of mathematical representation (formulae, diagrams, tables, charts, graphs and models) in both oral and written explanations. The student's lines of reasoning are **concise**, **logical** and **complete** when investigating complex problems. The student moves **effectively** between different forms of representation.
3 – 4 Solid, very good, clearly proficient	The student shows **sufficient** use of mathematical language (notation, symbols, terminology) **and** forms of mathematical representation (formulae, diagrams, tables, charts, graphs and models). The student's lines of reasoning are **clear** though **not always logical** or **complete** when investigating complex problems, but are clear and logical for simple problems. You move between different forms of representation **with some success**.
1 – 2 Weak, poor, limited understanding/proficiency	You show **basic** use of mathematical language (notation, symbols, terminology) **and/or** forms of mathematical representation (formulae, diagrams, tables, charts, graphs and models). Your lines of reasoning are **difficult to follow** even on simple problems.
0 Weak, poor, limited understanding/proficiency	You do not reach a standard described by any of the descriptors given below. **Little to no effort** was put toward completing this assignment in a meaningful way. **Little to no awareness or understanding** demonstrated.