PROJECT OVERVIEW PART 1: *DEFINE*

Name of Project:	**Are you buying or leasing your dream car???????**	Duration: 3 weeks
Subject/Course:	**Algebra 1**	Grade Level:9
Other subject areas to be included, if any:	**Daniela Gjorgjevska**	

Project Idea Summary of the issue, challenge, investigation, scenario, or problem:	Leasing or Buying a Car Students will pick up a car that they would like to own in the near future and investigate how much it cost to lease the car, pay in cash, or pay for the car with the loan. Their challenge is to make a decision is it better option to buy or lease a car?
Driving Question	Is it Cheaper to buy or lease a car?
Content and Skills Standards to be addressed:	L1: Reasoning About Numbers, Systems, and Quantitative Situations L1.1.5 Justify numerical relationships. L1.2.4 Organize and summarize a data set in a table, plot, chart, or spreadsheet; find patterns in a display of data; understand and critique data displays in the media. L2: Calculation, Algorithm, and Estimation **L2.1 Calculation Using Real and Complex Numbers** L2.1.1 Explain the meaning and uses of weighted averages. A1: expressions, equations, and inequalities **A1.1 Construction, Interpretation, and Manipulation of Expressions** A1.1.1 Give a verbal description of an expression that is presented in symbolic form, write an algebraic expression from a verbal description, and evaluate expressions given values of the variables.

A1.2Solutions of Equations and Inequalities

A1.2.1 Write equations and inequalities with one or two variables to represent mathematical or applied situations, and solve.

A1.2.2 Associate a given equation with a function whose zeros are the solutions of the equation.

A1.2.3 Solve linear and quadratic equations and inequalities including systems of up to three linear equations with three unknowns. Justify steps in the solution, and apply the quadratic formula appropriately.

A2: Functions:

A2.1 Definitions, Representations, and Attributes of Functions

A2.1.1 Determine whether a relationship (given in contextual, symbolic, tabular, or graphical form) is a function and identify its domain and range.

A2.1.2 Read, interpret, and use function notation and evaluate a function at a value in its domain.

A2.1.3 Represent functions in symbols, graphs, tables, diagrams, or words and translate among representations.

A2.1.6 Identify the zeros of a function, the intervals where the values of a function are positive or negative, and describe the behavior of a function as x approaches positive or negative infinity, given the symbolic and graphical representations.

A2.1.7 Identify and interpret the key features of a function from its graph or its formula(s).

A2.3.2 Describe the tabular pattern associated with functions having a constant rate of change (linear); or variable rates of change.

A2.4.1 Identify the family of function best suited for modeling a given real-world situation.

A2.4.2 Adapt the general symbolic form of a function to one that fits the specifications of a given situation by using the information to replace arbitrary constants with numbers.

A2.4.3 Using the adapted general symbolic form, draw reasonable conclusions about the situation being modeled.

A3: Families of Functions

A3.1Lines and Linear Functions

A3.1.1 Write the symbolic forms of linear functions (standard, point-slope, and slope-intercept) given appropriate

information and convert between forms.

A3.1.2 Graph lines (including those of the form $x = h$ and $y = k$) given appropriate information.

A3.1.3 Relate the coefficients in a linear function to the slope and x- and y- intercepts of its graph.

		T+A	E		T+A	E
21st Century Skills to be explicitly *taught and assessed* (T+A) or that will be *encouraged* (E) by project work, but not taught or assessed:	Collaboration		E	Other:		
	Presentation		E			
	Critical Thinking:		E			

			Presentation Audience:	
Culminating Products and Performances	**Group:**		Class:	
			School:	
			Community:	
	Individual:		Experts:	
			Web:	
			Other:	

PROJECT OVERVIEW PART 2: *DESIGN*

"Grabber" to launch inquiry & generate interest:	

Buy ❓ 🟢 **Lease** ❓

Assessments					
	Formative Assessments (Checkpoints During Project)	Quizzes/Tests		Practice Presentations	
		Journal/Learning Log		Notes	
		Preliminary Plans/Outlines/Prototypes		Checklists	
		Rough Drafts	√	Concept Maps	
		Online Tests/Exams		Other:	
	Summative Assessments (End of Project)	Written Product(s), with rubric: _____	√	Other Product(s) or Performance(s), with rubric: _____	√
		Oral Presentation, with rubric	√	Peer Evaluation	
		Multiple Choice/Short Answer Test		Self-Evaluation	
		Essay Test		Other:	

Debriefing Methods	**(Individual, Group, and/or Whole Class)**	Journal/Learning Log		Focus Group	
		Whole-Class Discussion		Fishbowl Discussion	
		Survey		Other:	

Resources Needed	**On-site people, facilities:**	
	Equipment:	Computer, internet access,
	Materials:	Graph paper
	Community resources:	

PROJECT TEACHING AND LEARNING GUIDE	
Project:	**Course/Semester:**
Knowledge and Skills Needed by Students to successfully complete culminating products and performances, and do well on summative assessments	**Scaffolding / Materials / Lessons to be Provided** by the project teacher, other teachers, experts, mentors, community members

Students need to know current prices ➔	Gather all the information that you need for your project.
	Visit the web-sites of three car dialers that have your dream car.
	Provide information on the
	  1. Lease price
	  2. Cash price
	Same as cash (60 months) price

Students need to know how to organize and analyze information ➔	Organize your information in a table. Make a table that will display your information how much money you need as a down payment, and as the years are passing by, how much are your dream car costing you.
Students need to know how to graph ➔	Display your data on the graph. Graph your data on the same coordinate plane.
Students need to know how to derive equations. ➔	Support your graph and table with equations.
Students need to know how to summarize information ➔	Would you buy or lease your dream car?

P R O J E C T   C A L E N D A R

Project: Lease or Buy?			Start Date:04/ 27/09	
M O N D A Y	**T U E S D A Y**	**W E D N E S D A Y**	**T H U R S D A Y**	**F R I D A Y**
P R O J E C T W E E K O N E				
Start the Project: Intro: Driving Question		Turn in Draft on dealers and car prices.		Mini-Lesson My dream car and prices that my dealer offered.
P R O J E C T W E E K T W O				
	Kelly- Blue book instruction.	Mini-Lesson Constructing a table.	Mini-Lesson Constructing a graph	Mini-Lesson Deriving a formula
P R O J E C T W E E K T H R E E				
	Collecting Final Drafts			**Collecting Final Projects**

Project Week Four

Presentations		Reflections How can we modify		

		the project for next year?		

Reflection Summary

Buying a car is a dream come true for any high school student. It is usually the first major purchase that a young adult will make. While driven by a desire to own a nice and expensive car, the final calculations and the availability of finances might influence an adolescent's initial choice and lead him/her to change their dreams and purchase more logical and affordable option.

The Project "Buy or Lease" was implemented last year with one Algebra I class of 27 ninth graders. Students had an option to work individually or in groups of two, but all of them chose to work on the project individually; this was mainly due to the fact that they all wanted to purchase different cars. Students used various web-sites to collect necessary information while developing their projects and used graphing calculators for all mathematical calculations.

All of the students completed the project, and it was worth a test grade. A few of the students' projects were very elaborative, concise, and mathematically correct, but I did not take pictures of any of them nor of their presentations.

Students were excited to work on and complete the project, and I am planning to repeat the project with four Algebra I classes with around 120 ninth graders. When evaluating the project and the first experience that I had, I concluded that students easily accept high car prices and extremely high monthly payments, just to own the car of their dreams based on the fact that they live with their parents and do not have any other expenses. Due to the fact that ninth graders do not have a realistic view on the real life expenses, I would change the project by introducing imaginary "living alone" aspect and setting budget that the students must follow each.

In the effort to improve the project, I would include a few real life expenses. First students will choose their profession and corresponding annual income. Then they will calculate their expenses (student loans, health insurance), and other expenses (food, clothing, electricity, gas, telephone, water, cable, etc). Another major expense that the students will have to take into account is housing costs. Before they calculate how much money they have available for purchasing their dream car, students will have to save 7% of their annual income. After calculating their income and all of the expenses, students will have a clear picture of the remaining finances and will start looking for their dream car.