Lab Framework 17C

Text: Cord Applied Math
Unit number and title: Unit 17 Graphing Data
Short Description: Students determine cost per gallon and total for a trip for three different cars. They then will make adjustments in gasoline costs to increase or decrease.
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Lab Title

Which Car is more economical?

LAB PLAN

TEACHER: Teacher Prep/ Lesson Plan

- **Lab Objective**
  Graph data as points on a graph.
  Graph prices
  Find the slope of a graphed line
  Interpret data from data
- **Statement of pre-requisite skills needed** (i.e., vocabulary, measurement techniques, formulas, etc.)
  Problem solving, estimating, using charts, graphs, tables, plotting information
- **Vocabulary**
  reimburse
- **Materials List**
  Internet access
  Pencils
  Graph paper
  Ruler
- **GLEs (State Standards) addressed**
  Math:
  1.2 Understand and apply concepts and procedures from data
  2.2.1 Select and use relevant information to construct solutions
  3.1.1 Analyze, compare, and integrate mathematical information from multiple sources.
  3.3.2 Evaluate reasonableness of results.
  Reading:
  2.1 Demonstrate evidence of reading comprehension.
  2.2 Understand and apply knowledge of text components to comprehend text/data.
  Writing:
  1.2 Gathers, analyzes, synthesizes, and organizes information from a variety of sources.
  2.2 Writes for different purposes
  3.3.1 Uses legible handwriting
  3.3.2 Spells accurately in final draft.

- **Leadership Skills**
  Student works cooperatively with partner or in teams to reach common goal.
  Student will demonstrate social responsibility in classroom (teamwork, appropriate voice volume.)
  Students will complete task on time.
  Students will be involved in using critical thinking skills to make predictions.
- **SCAN Skills/Workplace Skills**
  Students will demonstrate employability skills by attending class and being on time.
  Communicate with others using respect and appropriate language for classroom.
  Students will complete tasks and leave work area clean.

- **Set-up information**

- **Lab organization**(-Grouping/leadership opportunities/cooperative learning expectations; -**Timeline required)**
  One class period
  Cooperative learning working in groups of 2-3
  Communication and math skills
- **Teacher Assessment of student learning** (scoring guide, rubric)
  All students participate in activity
  Students communicate their conclusions from data
  Students write how car and gasoline prices can make a difference in travel costs.
- **Summary of learning** (to be finished after student completes lab)
  -discuss real world application of learning from lab
  -opportunity for students to share/present learning
  --reflect on prices in the past and prices in their future

- **Optional activities**
  Share information from class for all car facts used in this assignment.

- **Career Applications**
  Career decisions determine affordability of purchased vehicles.

LAB TITLE: Car Economy

STUDENT INSTRUCTIONS:

- **Statement of problem addressed by lab**
  Will your future career allow you to purchase products you desire?
  Do the miles per gallon for your car really matter?

- **Grouping instructions and roles**
  Students get into groups of 3
  Mathematician—does calculations for expenses
  Recorder—plots information on graph paper
  Quality control—verifies accuracy of data on paper

- **Procedures** – steps to follow/instructions

  Calculators needed for multiplication and division
  Quality control—verifies accuracy of data on graph
  --draws lines to connect data on graph

- **Outcome instructions**
  Students can make connections to their life and state their thoughts in sentence format.
  Ask for volunteers from the class to express their thoughts or surprises from this activity.

- **Assessment instructions** (peer-teacher)
  Teacher observes students as they work on task.
  Teacher collects papers from groups and checks for completeness of task.

Lab Data Collection

Student: _____ Date: _____

Unit: 17 Graphing Data

Lab Title: Car Economy

Criteria: Write the problem/objective in statement form

Will your future career allow you to purchase products you desire?
Do the miles per gallon for your car really matter?

Data Collection: Record the collected/given data

Calculations: Complete the given calculations to solve for an answer(s)

See Page 5 for student worksheet.

Summary Statement:

Other Assessment(s)

Which Car is more economical?

You and your co-workers are going on a company trip to Seattle. Three people will be driving the group of workers. You will need to find the total mileage from Vancouver to Seattle. (164 miles—one way) Remember you will need a **round trip total mileage.**

Plot the cost of the gasoline for your trip to Seattle

Car		Miles Per Gallon (mpg)	Total Gallons Used (Miles driven/mpg)	Gas Cost/Trip ($3.00 per gal.)
1 You	2002 Toyota Corolla	30	____gal. used	_____
2 Sue	2003 Toyota Camry	32	____gal. used	_____
3 Scott	2005 Buick LeSabre	29	____gal. used	_____

Cars								
3								
2								
1								
0								
	200	300	325	350	375	400	425	

Miles Driven

When you return from your trip you will be reimbursed for driving for this trip.

Your company reimburses you .505 per mile driven.
Figure the money you will receive for driving on this trip.

Miles driven _____ x .505 per miles = _____ money received for driving.

Plot this reimbursed amount on the same graph you have made.

Which driver made the most money for driving for this trip?_____
Why?_____

Now….as you know gasoline prices continue to increase. Using the information below, figure the gasoline cost for the same trip with different prices for gasoline.

Car		Miles Per Gallon (mpg)	Total Gallons Used (Miles driven/mpg)	Gas Cost/Trip **($3.28 gal.)**
1 You	2002 Toyota Corolla	30	____gal. used	_____
2 Sue	2003 Toyota Camry	32	____gal. used	_____
3 Scott	2005 Buick LeSabre	29	____gal. used	_____

What would happen if gas prices decreased? Figure the cost with new gas price.

Car	Miles Per Gallon (mpg)	Total Gallons Used (Miles driven/mpg)	Gas Cost/Trip **($2.29 gal.)**
1 You	30	____gal. used	_____
2 Sue	32	____gal. used	_____
3 Scott	29	____gal. used	_____