Lab Framework

Text:CORD

Unit number and title: A Bridge to Units 15 and 16

Short Description: Solving Equations

Developed by: John Stumpf

Contact Information: jstumpf@bethelsd.org

Date:6/25/08

Lab Title

Hybrid Cars: Are They Worth the Cost?

LAB PLAN

TEACHER: Teacher Prep/ Lesson Plan

- **Lab Objective**
  To determine the number of miles you have to drive to offset the cost of a hybrid gas/electric car.
- **Statement of pre-requisite skills needed** (i.e., vocabulary, measurement techniques, formulas, etc.)
  Working with and solving linear equations
- **Vocabulary**
  Hybrid Cars, mile per gallon (MPG), total cost
- **Materials List**
  Calculator, lab worksheet, average cost of new vehicles both regular and hybrid, fuel efficiency.
- **GLEs (State Standards) addressed**
  Math: 1.1.6, 1.2.1
  Reading: 1.3.2
  Writing: 3.1.1
- **Leadership Skills**
  Problem solving, cost analysis
- **SCAN Skills/Workplace Skills**
  Problem solving, arithmetic, responsibility
- **Set-up information**
  Need to access computers to find the average cost and MPG of both regular and hybrid cars. The current price of a gallon of gasoline.
- **Lab organization** (-Grouping/leadership opportunities/cooperative learning expectations; -**Timeline required)**
  Can be done alone or with small groups
- **Teacher Assessment of student learning** (scoring guide, rubric)
  Students will be assessed for both accuracy and completion of the lab worksheet.
- **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
  How to solve one and two-step equations.

- **Optional activities**
  Use different priced cars and MPG

- **Career Applications**
  Sales, business, marketing

LAB TITLE: **Hybrid Cars: Are They Worth the Cost?**

STUDENT INSTRUCTIONS:

- **Statement of problem addressed by lab**
  Is the price of a hybrid car a good value compared to a regular car?

- **Grouping instructions and roles**
  Individual work

- **Procedures** – steps to follow/instructions
  1) Access computer to find the average cost and MPG for both a regular and hybrid car (make sure that the models are comparable in size and quality).
  2) Record the price of each vehicle in the appropriate places on the worksheet.
  3) Record the MPG in the appropriate space.
  4) Find the difference in price and MPG
  5) Calculate the cost per mile by dividing the cost per gallon by the difference in MPG.
  6) Write a linear equation where the difference in vehicle cost (c) is equal to the cost per mile times mile (m).
- **Outcome instructions**
  How many miles do you have to drive to make the costs comparable?

- **Assessment instructions** (peer-teacher)
  Complete the worksheet and write a paragraph defending your choice on which car is a better value.

Lab Data Collection

Student: _____ **Date:** _____

Unit: Bridge to Units 15 and 16

Lab Title: **Hybrid Cars: Are They Worth the Cost?**

Criteria: Write the problem/objective in statement form

With all the talk about the high cost of gas, are hybrid cars worth the value in gas savings?

Data Collection: Record the collected/given data

Cost of Vehicles:	**Average MPG:**
Regular_____	_____
Hybrid_____	_____

Cost of regular gasoline per gallon:_____

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

Difference in vehicle costs:_____(hybrid – regular)

Difference in MPG:_____ (hybrid – regular)

Calculate the cost per mile savings:_____(Price per gallon/difference in MPG)

Write the equation using your numbers and then solve showing all your work:
Cost difference (C) = cost per mile savings (s) x miles (m) $C = sm$

Summary Statement:

Which is a better deal. Write a paragraph defending your answer using the math you performed.

Other Assessment(s)