Lab Template

Text: Financial Algebra
Volume: _____ Chapter: ____5_____
Unit number: ___5__ Title of unit: Linear Automobile Depreciation
Developed by *(Include contact information)***: Theresa McElrath**

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Attach the Following Documents:

1. **Lab Instructions**
2. **Student Handout(s)**
3. **Rubric and/or Assessment Tool**

Short Description (Be sure to include where in your unit this lab takes place):

Lab work will be done throughout chapter 5 beginning with section 5.1 Students will be learning the value of new and pre-owned automobiles and understanding linear automobile depreciation.

Straight Line Depreciation

LAB PLAN

TEACHER:

- **Lab Objective: Write, interpret, and graph a straight line depreciation equation. Interpret the graph of a straight line depreciation**

- **Statement of prerequisite skills needed** Use a graphing calculator, understand slope ratio, understand straight line depreciation and define the intercepts of a straight line depreciation equation

- **Vocabulary**
  See page 245 key terms
- **State Standards addressed:**

1. **Math:**
2. **Common Core State Standards addressed:**
3. Create equations that describe numbers or relationships
4. Analyze functions using different representations
5. Construct and compare linear and exponential models and solve problems
6. Summarize, represent, and interpret data on two categorical and quantitative variables
   - **Reading:**
   - **Writing:**
   - **Leadership: FBLA**
   - **SCAN Skills/Workplace Skills:**

- **Teacher Preparation:**
  - Materials:
    - Poster board
    - Scissors
    - Glue
    - Glue sticks
    - Colored pencils and markers
    - Rulers
    - Graphing calculators
    - Websites noted
    - Color printer preferred
    - Construction paper
    - Colored copy paper
    - Computer
    - Internet access
    - Graph paper
  - Set-Up Required:
    - Assemble materials
    - Have copies of lab for distribution

- **Lab Organizational Strategies:**
  - Grouping/Leadership/Presentation Opportunities: Students will choose a partner/partners to work with or count them off to pair them up.
  - Cooperative Learning: Teams will learn to work together by dividing up work on the lab and presenting as a team.
  - Expectations: Students will understand straight line depreciation
  - Time-line: Length of time of chapter 5

- **Post Lab Follow-Up/Conclusions** *(to be covered after student completes lab)*
  - Discuss real world application of learning from lab: How do the automobile industry, car dealers, and individual owners define "car value"? What makes a car personally valuable? What might contribute to the monetary value of a car?
  - Career Applications: The whole scenario could happen to a student, parent, or other relative. Students could also encounter this scenario when purchasing a car.
  - Optional or Extension Activities: Follow up with end of chapter lab quiz.

Chapter 5.5 Student Lab Directions

1. Student will be purchasing both a new and pre-owned vehicle of their choice.
2. Student will visit website at http://www.mendenhallautocenter.com/juneau-used-cars and select a new car and a pre-owned car of their choice.
3. Print out details of each car including price. This sets the standard.
4. Students must also locate a car dealership in Washington and a car dealership in Idaho via the web. Students must find the identical cars(that they located at the mendenhall website) at these two websites
5. Print out details of each car including price.
6. Using the straight line depreciation equation, compute depreciation on the four new cars, but on the older car, you are to find the original price.
7. Students must determine depreciation and graph findings
8. Create a spread sheet using Excel for the same information in step 6 and print spreadsheet and formula sheet.
9. Assemble all information and create a poster.
10. Students compare their findings to information given at the Kelly Blue Book and the NADA websites
11. Team will present in front of class.
12. Students will take end of lab quiz. (See below)
13. For extra credit students can take their information for their used car to a car dealership and ask the dealership what would they give them for a trade-in dollar amount, and ask how the dealership comes up with the dollar amount they will then price the car at to be sold once again.

Lesson Plan

Text: Financial Algebra
Volume: _____ **Chapter: 5**
Unit number __5___ **Title of unit** **Linear Automobile Depreciation**
Developed by: Theresa McElrath
Date: June 26, 2012

Chapter 5 Section 5 Approximate time for lesson 2-3 class periods
Introduce Vocabulary and straight line depreciation equation
Students will be learning appreciation/depreciation of tangible items such as automobiles and collectibles using linear depreciation method of depreciation.

LESSON PLAN

TEACHER: Teacher Prep/ Lesson Plan

- **Lesson Objectives (Students will be able to:)**
  Write, interpret, and graph a straight line depreciation equation.
  Interpret the graph of a straight line depreciation.

- **List of prerequisite skills needed:**
  Understanding slope, graphing, using equations

- **Vocabulary:**
  Depreciate Appreciate Straight line depreciation Slope Straight line equation
- **State Standards addressed:**
- **Math:** A1.1B Solving problems Al.3B Represent a function with a symbolic expression, A1.4B Write and graph an equation, A1.8A Analyze a problem
  Reading: (Reading)
  Writing: (Writing)
  Leadership:

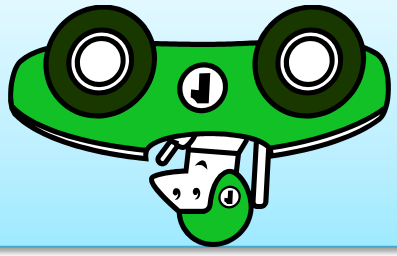
- **Teacher Preparation:** Examples from newspaper of new/used cars. Examples of sports trading cards and comic books. Graphing paper, doc camera

- **Content Delivery:** Working in small groups, students will be given examples of new cars and asked to compute how much in value the automobile has depreciated per year using based on time variable of 8-10-12 years. Students will write and graph their results using a straight line depreciation equation.
  Second part of the lesson has the students use collectibles (trading cards, comics) and find the appreciation in value using websites.

- **Instructional Documents** *Web sites: KellyBlueBook.com, NADA.com, Comicbook.about.com YouTube video Yourteacher.com*

- **Assessment Tool used in this Lesson** *(scoring method, guide, or rubric)*
  Rubric including points for participation
- **Reinforcement/Intervention/Extension Activities**
  Groups will present their findings using the doc camera
- **Career Applications** *Students will use these skills when purchasing high-end, long term items. Also provides skills used in banking, sales, marketing.*

Chapter 5
Sections 5 and 6
LAB Quiz



Maximum points are 100 IF all questions are answered and written in COMPLETE SENTENCES.

Based on your findings from the lab, what can you interpret about your depreciation from looking at your graph?

What was the difference between the prices on the Kelly Blue Book site and the NADA web site?

Why are the values different on the two web sites?

What are the advantages of buying a new car?

What are the disadvantages of buy a new car?

Why do car dealerships referred to used cars as 'previously owned' cars?

What are the advantages of buying a pre-owned car?

What are the disadvantages of buying a used or pre-owned car?

Would you rather buy a used car or a pre-owned car? Why?

Chapter 5 Section: 5 Linear Automobile Depreciation

End of Chapter Quiz

Please complete the following problems. Maximum score 100 points IF you

Complete all questions and show your work

1. Adrian purchased a new Ford Mustang for $25,350. This make and model straight line depreciates to zero after 13 years.
    a. What are the coordinates of the x- and y- intercepts for the depreciation equation?
    b. Determine the slope of the depreciation equation.
    c. Write the straight line depreciation equation that models this situation.
    d. Draw the graph of the straight line depreciation equation.

2. The straight line depreciation equation for a top-of-the-line luxury car is y = -3,400x + 85,000
    a. What is the original price of the car?
    b. How much value does the car lose per year?
    c. How many years will it take for the car to totally depreciate?

3. The straight line depreciation equation for Anthony's Toyota Camry is y = -2,680 + 26,800
    a. How much is his car worth after 48 months?
    b. How much is the car worth after 75 months?
    c. Suppose that M represents the length of time in months when his car still has value. Write an algebraic expression to represent the value of his car after M months.

4. Create a situation in which You buy a new car for $_____ And the car depreciates at $1,050 per year, Using a straight line depreciation equation (insert equation here

)where the car depreciates $1,050 per year, What is your car worth after 18 months? Please show your work.

Answer Key

1a: (0, 25,350) and (13,0)

1b: -1,950

1c: y=-1,950x + 25,350

2a: $85,000

2b: $3,400

2c: 25 years

3a: $16,080

3b: $10,050

3c: -2,680 (M) + 26,800
(12)

Websites for Chapter 5 Sections 5 and 6

http://www.mendenhallautocenter.com/juneau-used-cars

found new cars on this site as well

http://www.kbb.com/

www.NADA.com

The Kelly Blue Book and the NADA website were used for comparison information

YouTube sites used for Chapter 5 Sections 5 and 6 Include:

- Khanacademy
- Musicnotesonline (slope intercept rap)
- Rise up run out-mapping graph (music video)
- Door2math
- Lifeonyourown
- techtiptuesday