WAMC Lab Template

Math Concept(s): Linear and Exponential Depreciation (decay) / System
Source / Text: Financial Algebra - Cengage
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Attach the following documents:

- Lab Instructions
- Student Handout(s)
- Rubric and/or Assessment Tool

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

Students would find the value of a new domestic vehicle and foreign vehicle, that are roughly the same. Then they would find the value of those vehicles for the five previous years, to simulate the aging of that vehicle over the next five years.

The students then would need to enter this data onto a spreadsheet and graph the data on a piece of graph paper. I would also ask them to use their calculators to create lines of best fit for the data that they have just graphed.   Then determine when the vehicles would have equal values, if ever.

Students will then share their graph and findings with the class.

I would conduct this lab before teaching 4-5 & 4-6 (text v3). As a lead in to the work that will be done in those two sections of chapter 4.

Lab Plan

Lab Title: Foreign vs. Domestic Vehicles

Prerequisite skills: Being able to find cars for sale on the internet and determine values for them over the course of a five year period.

Lab objective: To show that Linear/Exponential Decay are factors that we deal with as we make educated decisions about choosing the right vehicle.

Standards: *(Note SPECIFIC relationship to Science, Technology, and/or Engineering)*

Mathematics K–12 Learning Standards:

- A-CED2, A-CED3, F-IF6, F-IF7a,F-IF7e, F-IF8, F-IF9, F-LE1b, F-LE1c, F-LE5, & S-ID6
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Standards for Mathematical Practice:

- MP 1 - 8

K-12 Learning Standards-ELA (Reading, Writing, Speaking & Listening):

- A.SSE.1; A.CED.2, 3, 4; A.REI.1, F.IF.4, 5; F.BF.1; F-LE.1c, 2, 5

K-12 Science Standards

- Science: HS-ETS1-4 (Computer simulation to model real world problem with numerous criteria)
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Technology

- Use computers to research data and create table of values.
- Use calculators to find lines of best fit.

Engineering

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Leadership/21st Century Skills:

<u>21st Century Interdisciplinary themes</u> (Check those that apply to the above activity.)
☐ Global Awareness ☒ Financial/Economic/Business/Entrepreneurial Literacy ☐ Civic Literacy
☐ Health/Safety Literacy ☐ Environmental Literacy

<u>21st Century Skills</u> (Check those that students will demonstrate in the above activity.)

LEARNING AND INNOVATION
<u>Creativity and Innovation</u>
☒ Think Creatively
☐ Work Creatively with Others
☐ Implement Innovations
<u>Critical Thinking and Problem Solving</u>
☒ Reason Effectively
☒ Use Systems Thinking
☐ Make Judgments and Decisions
☒ Solve Problems
<u>Communication and Collaboration</u>
☒ Communicate Clearly
☐ Collaborate with Others

INFORMATION, MEDIA & TECHNOLOGY SKILLS
<u>Information Literacy</u>
☒ Access and Evaluate Information
☒ Use and manage Information
<u>Media Literacy</u>
☐ Analyze Media
☐ Create Media Products
<u>Information, Communications and Technology (ICT Literacy)</u>
☒ Apply Technology Effectively

LIFE & CAREER SKILLS
<u>Flexibility and Adaptability</u>
☐ Adapt to Change
☐ Be Flexible
<u>Initiative and Self-Direction</u>
☐ Manage Goals and Time
☒ Work Independently
☒ Be Self-Directed Learners
<u>Social and Cross-Cultural</u>
☒ Interact Effectively with Others
☐ Work Effectively in Diverse Teams

Productivity and Accountability
☒ Manage Projects
☒ Produce Results
<u>Leadership and Responsibility</u>
☐ Guide and Lead Others
☒ Be Responsible to Others

Teacher Preparation: (What materials and set-up are required for this lab?)

Materials

- Project requirements worksheet.

Set-Up Required:

- Computer lab and calculators for all students
- Graph paper and rulers

Lab Organization Strategies:

Leadership (Connect to 21st Century Skills selected):

- Presentation of findings from the lab. Share graph, then show when cars will have the same value, and which is the better purchase.

Cooperative Learning:

- Collaboration during the project on how to use technology to find information and graph data.

Expectations:

Students will see that some vehicles make more sense to purchase because of the future value they have, while others may not make much difference.

Timeline:

- This will be a 135 minute project, three class periods.

Post Lab Follow-Up/Conclusions:

Discuss real world application of learning from lab

- Do all cars hold have the same depreciation over a given period of time?
- Sometimes a very small difference can pay a great reward in the future.

Career Applications

- Growth and Development

Optional or Extension Activities

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