

WAMC Lab Template

Math Concept(s): Modeling

Source / Text: Financial Algebra – 1st Addition, Chapter 10 – Prepare a Budget

Financial Algebra – 2nd Addition, Chapter 11 – Prepare a Budget

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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):

This lab is to take place upon the completion of Unit 10-4 (Cash Flow and Budgeting). The purpose of this lab is to develop a deeper understanding of personal budgets and the necessity to be able to make adjustment to the budget based on changes in cost. This lab is to facilitate a result-oriented process that is focused on improving both the academic achievement and functional performance of the student in order to facilitate the student's movement from school to post-school activities, including post-secondary education/training, employment, and if appropriate, independent living skills.

Lab Plan

Lab Title:

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Prerequisite skills: (i.e., vocabulary, measurement techniques, formulas, etc.)

- Excel Spreadsheets (or Spreadsheet Software utilized by your school)
- Simple budget construction
- How to use and write formulas in a spreadsheet

Vocabulary

- Income; Total Income; Fixed Expenses; Variable Expenses

Lab objective:

- Students will create a method of creating their annual monthly budget and make projections into the future about changes to that budget.

Standards:

CCSS-M:

- A-SSE Interpret the structure of expression
- A-CED Create equations that describe numbers or relationships
- F-IF Understand the concept of a function and use function notation
- F-BF Build a function that models a relationship between two quantities
- S-ID Summarize, represent, and interpret data on a single count or measurement variable

- S-IC Make inferences and justify conclusions from sample surveys, experiments, and observational studies

Standards for Mathematical Practice:

- Reason abstractly and quantitatively
- Use appropriate tools strategically
- Attend to precision

State Standards addressed (2008 Washington State Mathematics Standards):

- Math:
 - A1.6B Make Valid inferences and draw conclusions based on data
 - A1.8C Evaluate a solution for reasonableness, verify its accuracy, and interpret the solution in the context of the original problem
- Reading
 - Determine two or more central ideas of a text and analyze their development over the course of the text, including how they interact and build on one another to provide a complex analysis, provide an objective summary of the text.

Next Generation Science Standards:

- HS-ETS1-3.** Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts.
- HS-ETS1-4.** Use a computer simulation to model the impact of proposed solutions to a complex real-world problem with numerous criteria and constraints on interactions within and between systems relevant to the problem.

Leadership/21st Century Skills:

21st Century Interdisciplinary themes (Check those that apply to the above activity.)			
<input type="checkbox"/> Global Awareness	<input checked="" type="checkbox"/> Financial/Economic/Business/Entrepreneurial Literacy	<input type="checkbox"/> Civic Literacy	
<input type="checkbox"/> Health/Safety Literacy	<input type="checkbox"/> Environmental Literacy		
21st Century Skills (Check those that students will demonstrate in the above activity.)			
LEARNING AND INNOVATION	INFORMATION, MEDIA & TECHNOLOGY SKILLS	LIFE & CAREER SKILLS	Productivity and Accountability
<u>Creativity and Innovation</u>	<u>Information Literacy</u>	<u>Flexibility and Adaptability</u>	<u>Productivity and Accountability</u>
<input checked="" type="checkbox"/> Think Creatively	<input type="checkbox"/> Access and Evaluate Information	<input type="checkbox"/> Adapt to Change	<input type="checkbox"/> Manage Projects
<input type="checkbox"/> Work Creatively with Others	<input checked="" type="checkbox"/> Use and manage Information	<input checked="" type="checkbox"/> Be Flexible	<input checked="" type="checkbox"/> Produce Results
<input type="checkbox"/> Implement Innovations	<u>Media Literacy</u>	<u>Initiative and Self-Direction</u>	<u>Leadership and Responsibility</u>
<u>Critical Thinking and Problem Solving</u>	<input type="checkbox"/> Analyze Media	<input checked="" type="checkbox"/> Manage Goals and Time	<input type="checkbox"/> Guide and Lead Others
<input checked="" type="checkbox"/> Reason Effectively	<input type="checkbox"/> Create Media Products	<input checked="" type="checkbox"/> Work Independently	<input type="checkbox"/> Be Responsible to Others
<input type="checkbox"/> Use Systems Thinking	<u>Information, Communications and Technology (ICT Literacy)</u>	<input type="checkbox"/> Be Self-Directed Learners	
<input checked="" type="checkbox"/> Make Judgments and Decisions	<input checked="" type="checkbox"/> Apply Technology Effectively	<u>Social and Cross-Cultural</u>	
<input checked="" type="checkbox"/> Solve Problems		<input type="checkbox"/> Interact Effectively with Others	
<u>Communication and Collaboration</u>		<input type="checkbox"/> Work Effectively in Diverse Teams	
<input type="checkbox"/> Communicate Clearly			
<input type="checkbox"/> Collaborate with Others			

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

Materials

- Paper; Pencils; Computers; Spreadsheet Program; Internet Access; Printer; Projection system

Set-Up Required:

- There is no needed additional setup

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Lab Organization Strategies:

Grouping/Leadership/Presentation Opportunities:

- Students will work with a partner in groups of two.
- The students will decide which partner will look up the increases in real estate taxes and utilities. The other student will look up the changes in transportation cost, insurance, and food.
- Together the students will arrive at a monthly food and entertainment cost.
- Upon completion of the lab, the students will present their results utilizing the Projection System for the whole class.

Cooperative Learning:

- Students will work together to research the information required to create both the budget and the projected budget increases.

Expectations:

- Students will learn that a budget has to be re-evaluated often in order for it to be a real and relevant document.

Timeline:

- This lab should take between 3 and 4 class periods to complete (depending on the length of the class period).

Post Lab Follow-Up/conclusions:

Discuss real world application of learning from lab

- Why is it important to have a budget?
- If costs are going up yearly, how do you make adjustments if your income is not changing?
- What would you be willing to give up to stay within your budget?

Career Applications

- Banker; Accountant; Real Estate Agent; Doctor; Financial Advisor; Insurance Agent; Stock Broker; Construction Worker

Optional or Extension Activities

- Expand the budget projection to include a period of 7 years

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Student Instructions:

1. You will be given a financial report to use to construct a monthly budget for a client.
2. You will use Excel or the school spreadsheet software to build your monthly budget showing the income and expenses for each month of the year.
3. You will print and save this budget to be used for grading your project.
4. You will then convert this monthly budget breakdown into an annual budget for your client. You will print and save this budget to be used for grading.
5. You will then search the internet for information regarding the increase in cost for the variable expense items in the budget.
6. You will use the indicated changes in the variable expenses to construct a 3-year projection of the yearly budget for your client.
7. You will print and save this 3-year budget to be used for grading.
8. You will be scored on your completed project that will contain the monthly budget your constructed, the annual budget, and the 3-year projected budget. If the score is not an average of 2.5 or better, the project must be redone.

Scoring Rubric:

Score	4	3	2	1
Monthly Budget	Your budget has no errors in it.	Your budget has less than 3 errors in it.	Your budget has some errors but less than 6.	Your budget has 6 or more errors.
Annual Budget	Your budget has no errors in it.	Your budget has less than 3 errors in it.	Your budget has some errors but less than 6.	Your budget has 6 or more errors.
3-year Projection	Your budget has no errors in it.	Your budget has less than 3 math errors in it.	Your budget has some math errors but less than 6.	Your budget has 6 or more math errors.

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Information for initial construction of budget

Client Financial Report

Monthly Income:	
Primary Employment \$5,600	
Secondary Employment \$500	
Monthly Fixed Expenses:	Non-Monthly Fixed Expenses:
Rent/Mortgage \$2,400	Life Insurance \$150 every 3 months
Car Loan Payment \$200	Tuition \$1,500 in Jan. and Aug.
Education Loan Payment \$150	R.E. Taxes \$2,000 in Feb and Sept.
Personal Loan Payment \$80	Non-Monthly Variable Expenses:
Health Insurance Premium \$50	Medical/Dental \$600 in Dec.
Car Insurance Premium \$60	Auto Related \$700 in Oct.
Homeowner's/Renter's Insurance \$50	Home Related \$250 in Apr. and Aug.
Variable Expenses	Vacation \$1,200 in Jul.
Groceries (Food) \$800	Gifts \$200 in Feb. and Nov.
Dining Out \$150	Contributions \$400 in May
Fuel (Car) \$160	Repairs \$600 in Oct.
Cell Phone \$120	
Electricity \$80	
Water \$30	
Entertainment \$200	
Savings \$300	
Debt Reduction \$160	

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Income	Jan	Feb	Mar	Apr	May	Jun	Jul
Primary Employment	\$ 5,600	\$ 5,600	\$ 5,600	\$ 5,600	\$ 5,600	\$ 5,600	\$ 5,600
Secondary Employment	\$ 500	\$ 500	\$ 500	\$ 500	\$ 500	\$ 500	\$ 500
Other Income							
Total Income	\$ 6,100	\$ 6,100	\$ 6,100	\$ 6,100	\$ 6,100	\$ 6,100	\$ 6,100

Fixed Expenses

Rent/Mortgage	\$ 2,400	\$ 2,400	\$ 2,400	\$ 2,400	\$ 2,400	\$ 2,400	\$ 2,400
Car Loan Payment	\$ 200	\$ 200	\$ 200	\$ 200	\$ 200	\$ 200	\$ 200
Education Loan Payment	\$ 150	\$ 150	\$ 150	\$ 150	\$ 150	\$ 150	\$ 150
Personal Loan Payment	\$ 80	\$ 80	\$ 80	\$ 80	\$ 80	\$ 80	\$ 80
Health Insurance Premium	\$ 50	\$ 50	\$ 50	\$ 50	\$ 50	\$ 50	\$ 50
Life Insurance Premium							
Car Insurance Premium	\$ 60	\$ 60	\$ 60	\$ 60	\$ 60	\$ 60	\$ 60
Homeowner's/Renter's Insurance	\$ 50	\$ 50	\$ 50	\$ 50	\$ 50	\$ 50	\$ 50
Cable TV							
Life Insurance			\$ 150			\$ 150	
Tuition	\$ 1,500						
Taxes		\$ 2,000					

Variable Expenses

Groceries (Food)	\$ 800	\$ 800	\$ 800	\$ 800	\$ 800	\$ 800	\$ 800
Dining Out	\$ 150	\$ 150	\$ 150	\$ 150	\$ 150	\$ 150	\$ 150
Fuel (Car)	\$ 160	\$ 160	\$ 160	\$ 160	\$ 160	\$ 160	\$ 160
Cell Phone	\$ 120	\$ 120	\$ 120	\$ 120	\$ 120	\$ 120	\$ 120
Land Line Phone							
Electricity	\$ 80	\$ 80	\$ 80	\$ 80	\$ 80	\$ 80	\$ 80
Water	\$ 30	\$ 30	\$ 30	\$ 30	\$ 30	\$ 30	\$ 30
Sewer							
Sanitation							
Medical							
Medical/Dental							
Auto Related							
Home Related				\$ 250			
Vacation							\$ 1,200
Gifts		\$ 200					
Contributions					\$ 400		
Repairs							
Entertainment	\$ 200	\$ 200	\$ 200	\$ 200	\$ 200	\$ 200	\$ 200
Savings	\$ 300	\$ 300	\$ 300	\$ 300	\$ 300	\$ 300	\$ 300
Debt Reduction	\$ 160	\$ 160	\$ 160	\$ 160	\$ 160	\$ 160	\$ 160
Other							
Total Expenses	\$ 6,490	\$ 7,190	\$ 5,140	\$ 5,240	\$ 5,390	\$ 5,140	\$ 6,190

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Income	Aug	Sep	Oct	Nov	Dec	Annual Budget	Monthly Average
Primary Employment	\$ 5,600	\$ 5,600	\$ 5,600	\$ 5,600	\$ 5,600	\$ 67,200	\$ 5,600
Secondary Employment	\$ 500	\$ 500	\$ 500	\$ 500	\$ 500	\$ 6,000	\$ 500
Other Income						\$ -	\$ -
Total Income	\$ 6,100	\$ 73,200	\$ 6,100				
Fixed Expenses							
Rent/Mortgage	\$ 2,400	\$ 2,400	\$ 2,400	\$ 2,400	\$ 2,400	\$ 28,800	\$ 2,400
Car Loan Payment	\$ 200	\$ 200	\$ 200	\$ 200	\$ 200	\$ 2,400	\$ 200
Education Loan Payment	\$ 150	\$ 150	\$ 150	\$ 150	\$ 150	\$ 1,800	\$ 150
Personal Loan Payment	\$ 80	\$ 80	\$ 80	\$ 80	\$ 80	\$ 960	\$ 80
Health Insurance Premium	\$ 50	\$ 50	\$ 50	\$ 50	\$ 50	\$ 600	\$ 50
Life Insurance Premium						\$ -	\$ -
Car Insurance Premium	\$ 60	\$ 60	\$ 60	\$ 60	\$ 60	\$ 720	\$ 60
Homeowner's/Renter's Insurance	\$ 50	\$ 50	\$ 50	\$ 50	\$ 50	\$ 600	\$ 50
Cable TV						\$ -	\$ -
Life Insurance		\$ 150			\$ 150	\$ 600	\$ 50
Tuition	\$ 1,500					\$ 3,000	\$ 250
Taxes		\$ 2,000				\$ 4,000	\$ 333
Variable Expenses							
Groceries (Food)	\$ 800	\$ 800	\$ 800	\$ 800	\$ 800	\$ 9,600	\$ 800
Dining Out	\$ 150	\$ 150	\$ 150	\$ 150	\$ 150	\$ 1,800	\$ 150
Fuel (Car)	\$ 160	\$ 160	\$ 160	\$ 160	\$ 160	\$ 1,920	\$ 160
Cell Phone	\$ 120	\$ 120	\$ 120	\$ 120	\$ 120	\$ 1,440	\$ 120
Land Line Phone						\$ -	\$ -
Electricity	\$ 80	\$ 80	\$ 80	\$ 80	\$ 80	\$ 960	\$ 80
Water	\$ 30	\$ 30	\$ 30	\$ 30	\$ 30	\$ 360	\$ 30
Sewer						\$ -	\$ -
Sanitation						\$ -	\$ -
Medical						\$ -	\$ -
Medical/Dental					\$ 600	\$ 600	\$ 50
Auto Related			\$ 700			\$ 700	\$ 58
Home Related	\$ 250					\$ 500	\$ 42
Vacation						\$ 1,200	\$ 100
Gifts				\$ 200		\$ 400	\$ 33
Contributions						\$ 400	\$ 33
Repairs			\$ 600			\$ 600	\$ 50
Entertainment	\$ 200	\$ 200	\$ 200	\$ 200	\$ 200	\$ 2,400	\$ 200
Savings	\$ 300	\$ 300	\$ 300	\$ 300	\$ 300	\$ 3,600	\$ 300
Debt Reduction	\$ 160	\$ 160	\$ 160	\$ 160	\$ 160	\$ 1,920	\$ 160
Other						\$ -	\$ -
Total Expenses	\$ 6,740	\$ 7,140	\$ 6,290	\$ 5,190	\$ 5,740	\$ 71,880	\$ 5,990

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	Increase %	1st Year Monthly Budget	2nd Year Monthly Budget	3rd Year Monthly Budget
Income				
Primary Employment	1.00%	\$ 5,656.00	\$ 5,712.56	\$ 5,769.69
Secondary Employment	0.50%	\$ 502.50	\$ 505.01	\$ 507.54
Other Income		\$ -	\$ -	\$ -
Total Income		\$ 6,158.50	\$ 6,217.57	\$ 6,277.22

	Increase %	1st Year Monthly Budget	2nd Year Monthly Budget	3rd Year Monthly Budget
Fixed Expenses				
Rent/Mortgage		\$ 2,400.00	\$ 2,400.00	\$ 2,400.00
Car Loan Payment		\$ 200.00	\$ 200.00	\$ 200.00
Education Loan Payment		\$ 150.00	\$ 150.00	\$ 150.00
Personal Loan Payment		\$ 80.00	\$ 80.00	\$ 80.00
Health Insurance Premium		\$ 50.00	\$ 50.00	\$ 50.00
Life Insurance Premium		\$ -	\$ -	\$ -
Car Insurance Premium	5.00%	\$ 63.00	\$ 66.15	\$ 69.46
Homeowner's/Renter's Insurance	5.00%	\$ 52.50	\$ 55.13	\$ 57.88
Cable TV		\$ -	\$ -	\$ -
Life Insurance		\$ 50.00	\$ 50.00	\$ 50.00
Tuition	6.00%	\$ 265.00	\$ 280.90	\$ 297.75
Taxes	2.00%	\$ 340.00	\$ 346.80	\$ 353.74

	Increase %	1st Year Monthly Budget	2nd Year Monthly Budget	3rd Year Monthly Budget
Variable Expenses				
Groceries (Food)	3.00%	\$ 824.00	\$ 848.72	\$ 874.18
Dining Out	5.00%	\$ 157.50	\$ 165.38	\$ 173.64
Fuel (Car)	2.00%	\$ 163.20	\$ 166.46	\$ 169.79
Cell Phone	4.00%	\$ 124.80	\$ 129.79	\$ 134.98
Land Line Phone		\$ -	\$ -	\$ -
Electricity	5.00%	\$ 84.00	\$ 88.20	\$ 92.61
Water	2.00%	\$ 30.60	\$ 31.21	\$ 31.84
Sewer		\$ -	\$ -	\$ -
Sanitation		\$ -	\$ -	\$ -
Medical		\$ -	\$ -	\$ -
Medical/Dental	10.00%	\$ 55.00	\$ 60.50	\$ 66.55
Auto Related	4.00%	\$ 60.67	\$ 63.09	\$ 65.62
Home Related	5.00%	\$ 43.75	\$ 45.94	\$ 48.23
Vacation	6.00%	\$ 106.00	\$ 112.36	\$ 119.10
Gifts	4.00%	\$ 34.67	\$ 36.05	\$ 37.50
Contributions		\$ 33.33	\$ 33.33	\$ 33.33
Repairs	6.00%	\$ 53.00	\$ 56.18	\$ 59.55
Entertainment	3.00%	\$ 206.00	\$ 212.18	\$ 218.55
Savings		\$ 300.00	\$ 300.00	\$ 300.00
Debt Reduction		\$ 160.00	\$ 160.00	\$ 160.00
Other		\$ -	\$ -	\$ -
Total Expenses		\$ 6,087.02	\$ 6,188.38	\$ 6,294.31

Income
Primary Employment
Secondary Employment
Other Income
Total Income
Fixed Expenses
Rent/Mortgage
Car Loan Payment
Education Loan Payment
Personal Loan Payment
Health Insurance Premium
Life Insurance Premium
Car Insurance Premium
Homeowner's/Renter's Insurance
Cable TV
Life Insurance
Tuition
Taxes
Variable Expenses
Groceries (Food)
Dining Out
Fuel (Car)
Cell Phone
Land Line Phone
Electricity
Water
Sewer
Sanitation
Medical
Medical/Dental
Auto Related
Home Related
Vacation
Gifts
Contributions
Repairs
Entertainment
Savings
Debt Reduction
Other
Total Expenses

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