

# ***A Car for College?***

**By Maxine Casey**

**Federal Reserve Bank of Atlanta**

**Lesson Plan of the Year Contest, 2007–2008**

***Third Place***

## LESSON DESCRIPTION

This is a four-day computer-based research project in which students develop their own hypothetical budgets for buying a vehicle.

Students first learn about interest rates by completing an online scavenger hunt using a Federal Reserve Web site. They also discover minimum wage rates and youth employment regulations by searching U.S. Department of Labor Web sites. They research vehicle Web sites for auto information and car loans, determine monthly payment options using an online amortization calculator, and ultimately create a pre- and post-vehicle budget on a Microsoft Excel spreadsheet.

On the last day, students outline their budgets and the type of vehicles they select in a PowerPoint presentation.

An assessment rubric is provided for the teacher to use in grading the students.

## GRADE LEVEL AND SUBJECT

Personal Finance: Grades 10–12

## CONCEPTS

- Budget
- Income
- Minimum wage
- Loan
- Interest rates
- Down payment
- Principal

## NATIONAL CONTENT STANDARDS IN ECONOMICS

### National Council on Economic Education

#### Standard 12—Role of Interest Rates

- **Benchmark 1 for Grade 12:** An interest rate is a price of money that is borrowed or saved.
- **Benchmark 2 for Grade 12:** Like other prices, the forces of supply and demand determine interest rates.
- **Benchmark 7 for Grade 12:** Higher interest rates reduce business investment

spending and consumer spending on housing, cars, and other major purchases. Policies that raise interest rates can be used to reduce these kinds of spending, while policies that decrease interest rates can be used to increase these kinds of spending.

## Jump\$tart Coalition (Personal Finance Standards) Planning and Money Management

### Standard 1

Develop a plan for spending and saving.

### Standard 6

Develop a personal financial plan.

## OBJECTIVES

Students will be able to

- Define interest as the price of money.
- Explain why interest rates are higher on loans than on deposits.
- Identify the current federal minimum wage.
- Describe youth employment regulations as outlined by the U.S. Department of Labor.
- Research and compare financial loan options using an amortization calculator.
- Estimate personal expenses.
- Apply technology skills, personal finance concepts, and mathematical calculations to the creation of a hypothetical budget to finance a car.
- Create and deliver a PowerPoint presentation of a personal budget for buying a vehicle.

## TIME REQUIRED

Four, 50-minute class periods

## MATERIALS

- [www.newyorkfed.org/interest\\_rates.html](http://www.newyorkfed.org/interest_rates.html)  
This site offers an informative and comprehensive overview on interest rates and the role of the Federal Reserve.
- [www.dol.gov/compliance/topics/wages.htm](http://www.dol.gov/compliance/topics/wages.htm)  
This U.S. Department of Labor site outlines legal requirements regarding employment and wages.

- [www.youthrules.dol.gov/hours.htm](http://www.youthrules.dol.gov/hours.htm)  
This Web site outlines the number of hours that youth can legally work.
- [www.bankrate.com/brm/amortization-calculator.asp](http://www.bankrate.com/brm/amortization-calculator.asp)  
This Web site is one of many that provide amortization calculations.

### Various Web sites for Vehicle Research, e.g.

- [www.chevrolet.com](http://www.chevrolet.com)
- [www.honda.com](http://www.honda.com)
- [www.fordvehicles.com](http://www.fordvehicles.com)
- [www.chrysler.com](http://www.chrysler.com)
- [www.nissanusa.com](http://www.nissanusa.com)

### Microsoft Excel Budget Template File

- *Visual 1: Budget Template*
- *Activity 1: Scavenger Hunt*—1 copy per student
- *Activity 2: Budget Template File*—Student Directions
- *Microsoft Excel "Budget Template File"* (electronic copy attached)
- *Activity 3: Guidelines for PowerPoint Presentation*—1 copy per student.

### Teacher Materials

- *Key—Activity 1 Scavenger Hunt*
- *Oral Presentation Rubric*—1 x number of students
- *Sample Student PowerPoint* (attached)

## PROCEDURE

### Day 1

1. Ask students if they have thought about the kind of car they would like to buy when they graduate from high school.
  - What would it cost?
  - How would they pay for it?
  - Would they require a car loan?
  - What would a loan cost?
  - Could they work in the meantime to help them buy the car they want?

Tell students that if they develop a budget—a plan for income and spending—in advance of graduation,

it will help them make their wants affordable.

2. Inform students they are going to conduct an online research project. It will give them some knowledge and skills to help them develop a budget and decide about buying a car two years from now. (The teacher can easily adapt the project to show what students could afford one year from now; see step 9.)
3. Distribute *Activity 1: Scavenger Hunt*. Direct students to [www.newyorkfed.org/education/interest\\_rates.html](http://www.newyorkfed.org/education/interest_rates.html) and have them use the information on the Web site to complete *Part A: Interest Rates*.
4. Review *Part A*, using the *Teacher Key* and the Web site as a guide. Reinforce the following key points:
  - The Federal Reserve is the central bank of the United States,
  - Banks and financial institutions channel funds from savers to borrowers and investors,
  - Interest is the price paid for the use of someone else's money,
  - Borrowers pay a higher interest rate than savers receive because banks must make a profit to stay in business,
  - The federal funds rate, which banks pay on loans from each other, influences other short-term interest rates such as car loans,
  - There are different loans and interest rates available to consumers to compare before assuming a loan, and
  - The principal (amount borrowed), the interest rate, and amortization period (the number of years of a loan) affect monthly payments and the total cost of a loan.
5. Have students complete *Activity 1: Scavenger Hunt, Part B*, using [www.youthrules.dol.gov/hours.htm](http://www.youthrules.dol.gov/hours.htm).
6. Review *Part B*, using the *Teacher Key* and the Web site as a guide.

## Day 2

7. If desired, display a copy of *Visual 1: Budget Template* or an electronic copy of the same document. Distribute a copy of *Activity 2: Budget Template File—Student Directions* to each student and go over the directions. Have students open the Microsoft Excel “Budget Template” file. Explain to students that the first time they complete this file it will be a “Pre-Vehicle Budget” file. They will *not* include vehicle-related expenses this time because their goal is to save money for buying a car.
8. Tell students to decide how many hours they plan to work each month from January to December inclusive to earn income. They must stay within Department of Labor guidelines for their age.

Using the formula bar on the budget template, they should key a formula to calculate the number of hours they will work each month multiplied by the current federal minimum wage as posted on the U.S. Department of labor Web site.

Students should calculate taxes at a rate of 15% on their gross pay, and enter amounts they plan to spend on clothes and entertainment in the appropriate budget cells.

9. At the end of year one, students will have an ending balance on the “Pre-Vehicle Budget” file.

If the teacher wants this to be a two-year budget project, tell students to assume the same budget for another year, so they should multiply their ending balance by 2 to determine the amount of money that they will have on hand after the second year. They may use any part of that amount as a down payment for a vehicle.

(If desired, the teacher can make this a one-year project by simply having students use their ending balance on the

“Pre-Vehicle Budget” as the amount that may be put toward a down payment)

10. Students next begin research on various vehicles to determine how much they can afford to pay. They search Web sites such as
  - [www.chevrolet.com](http://www.chevrolet.com),
  - [www.honda.com](http://www.honda.com),
  - [www.fordvehicles.com](http://www.fordvehicles.com),
  - [www.chrysler.com](http://www.chrysler.com),
  - [www.nissanusa.com](http://www.nissanusa.com),where they can find local dealers and interest rates.
11. Once students find a selection of vehicles, interest rates, and prices, they locate an amortization calculator, such as the one a [www.bankrate.com/brm/amortization-calculator.asp](http://www.bankrate.com/brm/amortization-calculator.asp).

When they open the payment calculator, they should enter the interest rate, either 4 or 5 for the number of years, and begin to enter various amounts of principal until they find a monthly payment affordable within their budget.

Encourage students to explore different rates and time periods. This will help them understand repayment schedules and total amount repaid.

12. Before beginning work on the “Budget With Vehicle” file, students must decide how much of their ending balance from the “Pre-Vehicle Budget” file (multiplied by 2 if you want them to assume two years of work) they want to use as a down payment. They must also decide which vehicle to buy and choose a monthly payment they can afford.

They can experiment with +2% and -2% on any given interest rate by keying these items at the bottom left-hand side of their budget templates to see how such changes in an interest rate might affect them.

In addition, they must estimate what they will spend on fuel and oil, and make any necessary adjustments

to their expenses for clothes and entertainment.

Once they have made these decisions, they can complete their "Budget With Vehicle" file templates.

Tell students that although in the "real world" they will have to pay auto insurance. For the purposes of this exercise, they may assume that someone else pays this on their behalf. (Because there are so many variables that affect student auto insurance, it would be difficult to arrive at a figure given the nature of this exercise.)

### Day 3

13. Distribute a copy of *Activity 3: Guidelines for PowerPoint Presentation* to each student. Review the directions and answer any questions.
14. Have students prepare their PowerPoint presentations to be given on day 4.

### Day 4

15. Students present their PowerPoint projects to peers. Encourage them to ask questions of each other and be sure that presenters clarify any necessary points. Collect copies of PowerPoint presentations for grading, using the *Oral Presentation Rubric* provided in the teacher materials.

## CLOSURE

Use the following questions to review the main points of the lesson:

1. Why do bank loans and loans from other financial institutions generally have higher interest rates than interest rates paid on deposits? (*The difference represents a profit to the bank or financial institution for channeling funds from savers to borrowers and investors.*)
2. How might a change in the federal funds rate affect what interest rate you pay on a car loan? (*Because the federal funds*

*rate is what banks pay when they borrow from each other, it affects the rates they charge when they lend. Those rates, in turn, influence other short-term interest rates for borrowers and lenders.*)

3. What factors affect the monthly payment of a loan? (*The principal, the interest rate, and the amortization period.*)
4. Which factor was the most important in deciding your loan option—the rate, the monthly payment, the length of the loan, or the total cost of the loan? (*Answers will vary, but students will discover that there are different criteria for selecting loan options, and that no single answer applies to all borrowers or situations.*)
5. In what ways did you modify your original pre-vehicle budget to afford your car? (*Students should be able to explain what they gave up to afford the vehicle they decided to buy.*)

# *Visual 1*

## A Car for College—Possible or Not?

Student Name \_\_\_\_\_

	Jan.	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Beginning Balance	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
Income												
Taxes												
Vehicle												
Fuel & Oil												
Clothes												
Entertainment												
Total Expenses												
Ending Balance	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$

Interest Rate + 2%

Interest Rate - 2%

# Activity 1

## Scavenger Hunt

### Part A: Interest Rates

**Directions:** Go to [www.newyorkfed.org/education/interest\\_rates.html](http://www.newyorkfed.org/education/interest_rates.html) and find answers to the following questions.

1. What is "interest"?

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2. What is "APR"?

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3. Why are banks willing to pay interest on their customers' deposits?

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4. Name one way in which people contribute to the supply of credit in the economy.

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5. Name one way in which people contribute to the demand for credit in the economy.

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# **Activity 1**

## **Scavenger Hunt**

### **Part A: Interest Rates (continued)**

6. Why might an auto loan carry a lower rate than a credit card loan?

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7. Why do banks charge higher interest rates on the loans they make than they pay on deposits?

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8. Why are interest rates on home mortgages important?

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9. What is the Federal Reserve system?

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10. What is monetary policy?

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11. List three goals of monetary policy.

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# Activity 1

## Scavenger Hunt

### Part A: Interest Rates (continued)

12. What is the name of the interest rate that banks charge one another for very short-term loans?

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13. How do lower interest rates help:

a) consumers?

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b) businesses?

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14. What is simple interest?

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15. What is compound interest?

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16. What is the "rule of 72"?

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# Activity 1

## Scavenger Hunt

### Part B: Youth Employment

Go to [www.youthrules.dol.gov/hours.htm](http://www.youthrules.dol.gov/hours.htm) for answers to the following questions:

17. How many hours can a 15-year-old student work during:

a school week? \_\_\_\_\_

a non-school week? \_\_\_\_\_

18. What are the restrictions on the work hours for a 16+-year-old student?

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Go to [www.dol.gov/compliance/topics/wages.htm](http://www.dol.gov/compliance/topics/wages.htm) for answers to the following questions:

19. What is the federal minimum wage for covered, nonexempt employees effective July 24, 2008?

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20. Must young workers be paid the minimum wage?

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## **Activity 2**

# **Budget Template File**

**Student Directions:** You are going to build a 12-month, January to December “Pre-Vehicle Budget,” which will guide you in your decision to buy an affordable vehicle. Since the budget template is in Microsoft Excel, it will do calculations for you as you proceed. You are also going to build a “Budget with Vehicle,” which will show how you plan to pay for a vehicle.

**Note:** For purposes of this exercise, assume that someone else pays your vehicle insurance.

1. Open the Budget Template file. Enter your name and Pre-Vehicle Budget.
2. Go to [www.dol.gov/compliance/topics.wages.htm](http://www.dol.gov/compliance/topics.wages.htm) and find the current federal minimum wage. This will represent your hourly wage rate.
3. Go to [www.youthrules.dol.gov/hours.htm](http://www.youthrules.dol.gov/hours.htm). Decide how many hours you want to work each month from January to December within the legal limits for your age.
4. Use the formula bar to key in the number of hours you will work each month multiplied by the wage rate. This will result in your gross income.
5. Calculate taxes at a rate of 15% on your gross pay.
6. Decide how much you want to budget for clothes and entertainment each month and enter those amounts in the appropriate cells.
7. Make a note of your one-year ending balance here: \$\_\_\_\_\_.

If your teacher tells you that this is a two-year project, assume that you continue with the same budget for another year. Multiply your ending balance by two to arrive at your second-year ending balance. Enter that amount here: \$\_\_\_\_\_

You may use any part of your ending balance as a down payment for a vehicle, but be sure to leave enough for a starting balance to meet your January expenses, if January income is insufficient to do so.

8. Search Web sites for information on vehicle prices and interest rates. You can find local dealers through sites such as [www.chevrolet.com](http://www.chevrolet.com), [www.honda.com](http://www.honda.com), [www.fordvehicles.com](http://www.fordvehicles.com), [www.chrysler.com](http://www.chrysler.com), and [www.nissanusa.com](http://www.nissanusa.com).

## **Activity 2**

### **Budget Template File (continued)**

9. Make a list of several vehicles, prices, and interest rates you want to consider.

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10. Go to [www.bankrate.com/brm/amortization-calculator.asp](http://www.bankrate.com/brm/amortization-calculator.asp) to find out monthly payment options. You may then enter the interest rate, the number of years (try 4 and 5 for different results), and various amounts of principal to determine the monthly payments you can afford for a vehicle you would like. You may reduce the amount of principal borrowed by paying a down payment—any part of your ending balance from the Pre-Vehicle Budget.

11. Save your Pre-Vehicle Budget.

12. Open a new Budget Template File. Enter your name and Budget with Vehicle.

13. Enter your opening balance (your ending balance minus down payment and enough money for January expenses, if January income is insufficient to pay these).

14. Complete the Budget with Vehicle Template by entering amounts for income, taxes, monthly vehicle payment, estimates for fuel and oil, and amounts for clothes and entertainment. If you want to find out what difference a 2% higher or 2% lower interest rate would make on your monthly payments, click on the interest rate cells at the bottom left-hand side of the Budget Template below the ending balance column. Make any adjustments you think necessary to end up with a realistic budget.

## ***Activity 3***

# **Guidelines for PowerPoint Presentation**

- Begin with a title slide that includes your name.
- Include your income calculations showing hours worked, rate of pay, and totals per month.
- Copy your Pre-Vehicle Budget to a slide and be prepared to explain it.
- Show vehicle make, model, specs, mpg, MSRP, down payment, monthly payment, and terms.
- Show the total cost of your loan (monthly payments x total number of months).
- Copy your Budget with Vehicle, including payment and fuel expenses, to a slide.
- Reference the Web sites you used.
- Animate bulleted lists.
- Remove hyperlinks to prevent opening a Web site while presenting.
- Speak clearly and make eye contact during presentation.

# Activity 1

## Scavenger Hunt

### Part A: Interest Rates

#### Teacher Key

**Directions:** Go to [www.newyorkfed.org/education/interest\\_rates.html](http://www.newyorkfed.org/education/interest_rates.html) and find answers to the following questions.

1. What is "interest"?  
*Interest is the price of money—the price that someone pays for the temporary use of someone else's money. Interest is also the compensation that someone receives for temporarily giving up the ability to spend money.*
2. What is "APR"?  
*Annual percentage rate.*
3. Why are banks willing to pay interest on their customers' deposits?  
*Banks are willing to pay interest on their customers' deposits because they can lend the funds at higher interest rates and make a profit.*
4. Name one way in which people contribute to the supply of credit in the economy.  
*Putting money in a bank. Buying U.S. Savings Bonds.*
5. Name one way in which people contribute to the demand for credit in the economy.  
*Borrowing money to buy a car. Carrying a balance on a credit card.*
6. Why might an auto loan carry a lower rate than a credit card loan?  
*The lender can take possession of the car if the buyer fails to pay.*
7. Why do banks charge higher interest rates on the loans they make than they pay on deposits?  
*They do so to make a profit.*
8. Why are interest rates on home mortgages important?  
*Mortgage interest is a major item in many people's budgets, and home ownership is the main way many families build up wealth.*
9. What is the Federal Reserve system?  
*The central bank of the United States.*

# Activity 1

## Scavenger Hunt

### Part A: Interest Rates

#### *Teacher Key (continued)*

10. What is monetary policy?  
*The efforts of the Federal Reserve to influence money and credit conditions in the economy to achieve macroeconomic goals.*
11. List three goals of monetary policy?  
*Stable prices, high employment, maximum sustainable growth.*
12. What is the name of the interest rate that banks charge one another for very short-term loans?  
*Federal funds rate*
13. How do lower interest rates help
  - a) consumers? *They make it easier for people to borrow to buy items such as cars and homes. Lower interest rates mean that consumers spend less on interest leaving them with more money to spend on goods and services*
  - b) businesses? *Lower interest rates make it easier for businesses to borrow to invest in equipment, inventories, and buildings. Increased business investment makes the economy grow faster as productivity, or output per worker, increases faster.*
14. What is simple interest?  
*Simple interest is interest paid only on the "principal," or the amount originally borrowed, and not on the interest owed on the loan.*
15. What is compound interest?  
*Compound interest is interest calculated not only on the principal, or the amount originally borrowed, but also on the interest that has accrued, or built up, at the time of the calculation.*
16. What is the "rule of 72"?  
*This is a quick way of calculating how many years it will take an amount of money to double when it receives compound interest. Divide the rate of interest (as a whole number) into 72 to find out how many years it will take for the money to double. For example, at a compound interest rate of 6 percent, the original amount invested will double in about 12 years (72 divided by 6). At a compound interest rate of 9 percent, the original amount invested will double in about 8 years (72 divided by 9).*

# ***Activity 1***

## **Scavenger Hunt**

### **Part B: Youth Employment**

#### ***Teacher Key***

Go to [www.youthrules.dol.gov/hours.htm](http://www.youthrules.dol.gov/hours.htm) for answers to the following questions:

17. How many hours can a 15-year-old student work during a school week?  
*18 hrs*

a non-school week?  
*40 hrs*

18. What are the restrictions on the work hours for a 16+-year-old student?  
*There are none.*

Go to [www.dol.gov/compliance/topics/wages.htm](http://www.dol.gov/compliance/topics/wages.htm) for answers to the following questions:

19. What is the federal minimum wage for covered, nonexempt employees effective July 24, 2008?  
*\$6.55 per hour*

20. Must young workers be paid the minimum wage?  
*A minimum wage of not less than \$4.25 per hour may be paid to employees under the age of 20 for their first 90 consecutive calendar days of employment with any employer as long as their work does not displace other workers. After 90 consecutive days of employment, or when the worker reaches age 20 (whichever comes first), the worker must receive at least the federal minimum wage.*



# Oral Presentation Rubric: A Car for College? Teacher Key

Student Name \_\_\_\_\_

CATEGORY	Possible Points	Points Earned
Payment is affordable for budget	20	
Organization of slides (title, income calculation, pre-vehicle budget, vehicle information, post-vehicle budget, Web sites cited)	6	
Title slide	2	
Income Calculation slide: hours, rate, total per month	5	
Pre-vehicle budget copied to slide and explained	10	
Vehicle information: Make, model, specs, mpg, MSRP, down payment, payment and terms	10	
Post-vehicle budget: includes payment and fuel expenses	10	
Web sites used are noted	5	
Spell check	5	
Bulleted lists are animated	6	
One transition for presentation	1	
Hyperlinks removed (to prevent opening a Web site while presenting)	5	
Presented to the audience (eye contact)	15	
<b>Total</b>	<b>100</b>	