Activity 5
Calculating a Car Loan

John Neral

CALCULATORS: Casio: *fx-9860G* • Casio: *fx-9750G Plus*

Teaching Notes/Lesson Plan

Objective

Within this lesson, the participant will be able to use the Casio calculator to determine such information as monthly payment, interest rate, and total cost of the loan by using the TVM (Time Value Money) application.

Getting Started

Have a class discussion about buying a car. Ask the class:

When that day comes, what kind of car will it be?

Do you want an expensive luxury car, an SUV, a hybrid vehicle, or a reasonable and conservative car?

Along with examining the kind of car you would like to purchase, talk about how a budget must also play a factor in that decision. Ask the following questions:

How much money are you willing to spend on a new car?

Will you pay for the car in cash or will you finance all or part of that purchase?

How long will you want to finance the car and how will that interest rate affect your total cost of the car?

These questions will be answered as they explore the Time Value Money application and use its features to help us calculate the cost of a new car.

Activity Notes

Have students use the newspaper or Internet and research the kind of car they would like to purchase along with its selling price. Websites like www.edmunds.com can be very useful in because it gives the actual invoice price (the price the dealership pays) for the car. Tell them that the dealership's profit is determined by how much more they sell the car over the actual invoice price.

Extension

Have students write a reflection paper that describes their feelings about the various payment options. Some questions they might reflect upon are:

Do you believe that a higher interest rate for a longer loan period is better than a smaller interest rate for a shorter time period?

What factors might make an individual decide on taking a longer loan?

Do you believe it is financially responsible for someone to take a seven-year car loan? If this were your scenario, what would you do?

Remind them that they must examine any additional expenses you have and how those expenses affect maintaining a car loan.

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Calculator Notes

Calculator Notes

To Use the Time Value Money application:

- Highlight the **TVM** (Time Value Money) application from the Main Menu and press **EXE**.
- Press **F4** for Amortization to calculate any loan.
- Enter the desired data leaving the one item you need to solve for blank.
- Use the soft menu to calculate the desired information.

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Answers to the Problems

Answers

1. $20.96

2. $5020.96

3. $1,790.85

4. $474.65

5. $405.53

6. 7.42%

7. 4 years @ 4.99% = $805.87 per month
5 years @ 5.49% = $668.38 per month
6 years @ 5.99% = $579.89 per month
7 years @ 6.49% = $519.56 per month

Name _____ **Date** _____

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Student Worksheet:

Sooner or later, you are going to buy a car. When that day comes, what kind of car will it be? Do you want an expensive luxury car, an SUV, a hybrid vehicle, or a reasonable and conservative car? Along with examining the kind of car you would like to purchase, budget must also play a factor in that decision. How much money are you willing to spend on a new car? Will you pay for the car in cash or will you finance all or part of that purchase? How long will you want to finance the car and how will that interest rate affect your total cost of the car? These questions will be answered as we explore the Time Value Money application and use its features to help us calculate the cost of your new car.

Using the newspaper or Internet, research the kind of car you would like to purchase along with its selling price. Websites like www.edmunds.com can be very useful in that it gives you the actual invoice price (the price the dealership pays) for the car. The dealership's profit is determined by how much more they sell the car over their actual invoice price.

Having a car is a necessity for most. However, as gas prices continue to rise, consumers are becoming more self-conscious of how much money they spend on their monthly car payment as well as their monthly gas budget. Sometimes, automobile manufacturers run special incentives where lower interest rate financing on a new vehicle may entice more consumers into buying their product. Let's explore this scenario.

Ed wants to buy a new car. Making sure that he stays within his budget, he does not want to spend more than $21,000 for his new car. This price includes tax, license fees, registration, etc… If the interest rate of Ed's car loan is 5.49% and he will maintain that loan for 5 years (60 months), how much will his car payment be each month?

To calculate Ed's car payment, access the TVM application from the Main Menu.

Press **F4** for Amortization and begin entering the following information:

- Leave PM1 = 0 and PM2 = 0.
- Set *n* = 60 (Since the loan is for 5 years, there are 60 months in 5 years.)
- Set I% = 5.49 (This is the interest rate for his car loan.)
- PV = -21000 (This is the present value or amount of the loan. The loan will be completely paid when the amount reaches 0.)
- PMT = 0 (This is the Payment and this is the information we are solving for in this problem. Even if there is a number there from a previous problem, it is okay to leave it there. (I personally like to set it to 0.)
- FV = 0 (This is Future Value. (In order to fully pay off the car, the future value of the loan must be equal to 0.)
- P/Y = 12 (This refers to the number of installment periods per year. Since this is a car loan, there will be monthly payments made on the loan.)

Name _____ **Date** _____

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Student Worksheet:

- C/Y = 12 (This refers to the number of times the loan is compounded during the year. By setting this to 12, it means that the loan will be compounded monthly.)
- Press **F6** for Compound Interest Information.
- Press **F4** to calculate the monthly payment.
- The payment is $401.03.

Problems

1. Calculate the Simple Interest for an account, which has $5,000, has an interest rate of 4.25% and is held for 3 years (36 months). Express your answer in dollars and cents. _____

2. What is the simple future value of the account in problem 1? _____

3. What is the future value of an account that is opened with $1,000, has an interest rate of 6%, and is compounded annually for a total of 10 years? _____

4. Calculate the monthly payment for a $25,000 car loan, financed over 5 years at an interest rate of 5.25%. (Hint: Set the P/Y = 12 and C/Y = 12.) _____

5. Refer to problem 4 and determine the monthly payment of the same loan if financed over 6 years at the same interest rate. _____

6. Refer to problem 4 and determine the interest rate of the same loan financed over 5 years in order to maintain a monthly payment of $500.00. Round your answer to the nearest hundredth of a percent. _____

7. You want to buy a brand new SUV and are prepared to pay $35,000 (tax, registration, etc…included) for the vehicle. You have secured an interest rate of 4.99% for a four-year loan. However, if you believe the monthly payment is too high, you can opt to add one more year of the loan AND increase the interest rate by .5%. List the monthly payment options for a four, five, six, and seven-year loan. _____