

## ***Interested in Buying a Car?*** **A Pre-Algebra Activity with the *fx-9750G PLUS***

Many middle school students are already interested in cars and that interest just grows more intense as they enter high school. Teachers can take advantage of this interest to engage them in rich mathematics and problem solving. Calculators give students the opportunity to explore numerous situations and can help them become more informed consumers.

Let's explore a real problem that might help them become more financially aware.

Pose the following questions to your class:

- What kind of car are you interested in having as your first car?
- How much do you think that car would cost?
- Do you have a savings account with money that could be used as a down payment?
- How much do you think you could afford to pay each month on your car?

Let them work in groups to talk about the questions. Have the groups report out.

**Problem:** Suppose you want to purchase a car or truck that sells for \$14,000 and you have \$2000 in your savings in your savings account to use as a down payment.

- How much would you have to borrow?
- What might your monthly payment be if your loan was for 3 years at 6% interest?
- How much would you actually end up paying for the car?

Allow students, in groups of 3 or 4, to explore the problem with a calculator. Have them report out what they might do to solve the problem. After discussions, suggest the following strategy:

In the Run mode, seed the calculator with 12000. Tell students to enter  
 $\text{Ans} + \text{Ans} \times .06 / 12 - 300$ .

Explain what the calculator is doing. Have them press EXE key and count the number of times it takes to reach a zero (or negative) balance.

```
12000
Ans+Ans*.06/12-300
12000
11760
11518.8
11276.394
11032.77597
```

```
1401.876649
1108.886032
814.430462
518.5026143
221.0951274
-77.79939695
-378.1883939
```

Ask students:

How many times did it take to reach a zero balance?

Chances are we are looking at a used car, and most banks and S&Ls will only make loans on a used car for 3 years. What should you try next for possible car payments if \$300 was too low to pay the loan off in 3 years (36 months)?

Let students grapple with the problem until they zero in on a solution.

When they do, tell them that the *fx-9750G+* will do the work for them. Access the TVM menu from the main menu. Tell them to choose F2 (Compound interest).

Enter:

$n = 36$  (36 months)

$I\% = 6$  (6% interest)

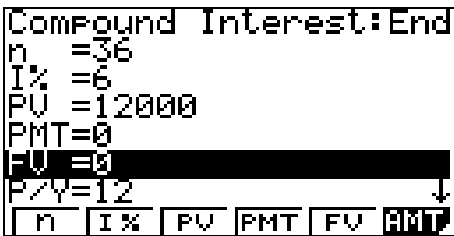
$PV = 12000$  (present value of the loan)

$PMT = 0$  (this is what we will solve for – the monthly payment)

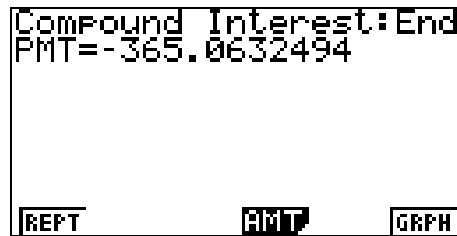
$FV = 0$  (the future value of the loan when it is paid off is \$0)

$P/Y = 12$  (12 monthly payments per year)

Press F4 for PMT (payment)



Compound Interest:End  
n =36  
I% =6  
PV =12000  
PMT=0  
FV =0  
P/Y=12  
↓  
| n | I% | PV | PMT | FV | AMT |



Compound Interest:End  
PMT=-365.0632494  
| REPT | | AMT | | GRFH |

Compare this value to the one they arrived at using trial and error. When they look for a part time job, what should they consider? How much will they actually pay for the car?

Ask students to investigate further. Have them bring in newspaper ads on the cars that they really want. Have them call local banks and S&Ls for interest rates as well as lengths of loans. Have them calculate the payments.