

## Compound Interest: TVM– Payments at Different APR

CALCULATORS: Casio: *fx-9750G Plus & CFX-9850G Series*

Name \_\_\_\_\_ Date \_\_\_\_\_

### Discussion

Interest rates can make a large difference in the payback value of a loan. Most credit card companies offer small "loans" of money at a very high interest rate and a bank can offer high-dollar loans at a lower interest rate. Also lending agencies may offer a lower interest rate for various lengths of the loan. The Casio fx-9750G PLUS's Time Value of Money function can help you calculate the payments on a loan at different interest rates. In this activity, you will explore the effect of differing APR on the payment of a loan over a specific amount of time.

### Using the Calculator's TVM Function:

n: number of compounding periods

I%: annual percentage rate

PV: principal value

PMT: payment (- if taking away from PV, + if adding to PV)

FV: future value of loan after n periods

P/Y: number of payments per year

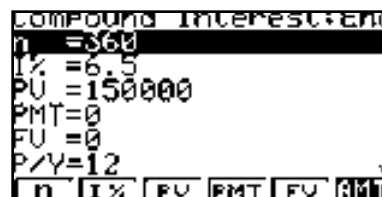
C/Y: number of compounding periods per year (generally the same as P/Y)

Loan parameters:      Principal value of loan: \$150,000  
                                  Number of payments: 360 (30 years)  
                                  Interest rate: 6.5%  
                                  Compounding: 12 per year



### Using the Calculator's Time Value of Money (TVM) Function:

- Press the **AC/ON** button, the **MENU** key, and press **C** for TVM.
- Press **F2** for Compound Interest.
- Enter in the parameters:
  - In n type **360 EXE**.
  - In I% type **6.5 EXE**.
  - In PV type **150000 EXE**.
- Press the **down arrow** to skip PMT.
  - In FV type **0 EXE**.
  - In P/Y type **12 EXE**. C/Y will set automatically with P/Y.
- Solve for PMT.
- Press **F4** for PMT. The payment value will appear on the screen. It is negative because that is what is owed to the bank.
- Press **F1** to return to the previous screen. The answer will appear next to PMT.



# Business Math Handout 4:

## Compound Interest: TVM– Payments at Different APR

(continued)

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### Practice Problems

Using the TVM function on the Casio *fx-9750G PLUS* to complete the following questions:

1. a. Using the following loan parameters, calculate the loan payment:

Principal value of loan: \$15,000

Number of payments: 60

Interest rate: 8%

Compounding: 12 per year

- b. Using the same loan parameters as in part A, calculate the loan payment if the interest rate were increased to 9%.

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- c. How much greater is the payment for the loan at 9% than at 8%?

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- d. Estimate the payment if the percentage rate were 10%. Check using the calculator.

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- e. How much total interest do you pay on a 10% loan? On the 8% loan?

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2. a. Using the following loan parameters, calculate the loan payment:

Principal value of loan: \$600

Number of payments: 12

Interest rate: 15.99%

Compounding: 12 per year

- b. Using the same loan parameters as in part A, calculate the loan payment if the interest rate were decreased to 12%.

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- c. How much greater is the payment for the loan at 15.99% than at 12%?

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- d. Estimate the payment if the percentage rate were 10%. Check using the calculator.

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- e. How much total interest do you pay on a 12% loan? On the 15.99% loan?

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