

Business Math Handout 5: Compound Interest: Compounding Frequency

Miki Merritt

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

Name _____ Date _____

Discussion

Compounding frequency will change the value of the loan or investment. It determines how often a loan or investment agency calculates the interest and adds to the value of the loan/investment. There are several types of compounding frequencies: annual, monthly, and daily. If the loan/investment compounds annually, the interest is calculated once a year at the value of the APR and that interest is added to the value of the loan/investment. If the loan/investment compounds monthly, the interest is calculated once a month at the value of the APR divided by 12 and that interest is added to the value of the loan/investment each month. If the loan/investment compounds daily, the interest is calculated each day at the value of the APR divided by 365 and that interest is added to the value of the loan/investment daily.

Using the Calculator's TVM Function:

Investment parameters:

Principal value of investment: \$10,000

Number of payments: 360 (30 years)

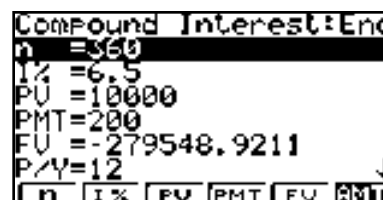
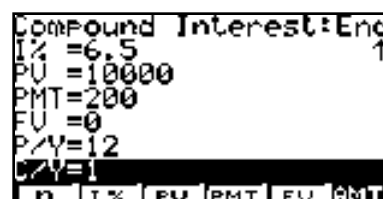
Payment value: \$200 per month

Interest rate: 6.5%

Compounding: Annually, Monthly, or Daily

Using the calculator's Time Value of Money (TVM) function:

- Press the **AC/ON** button, the **MENU** key, and select **C** for TVM.
 - Press **F2** for Compound Interest.
 - Enter in the parameters:
 - **N**: number of payments, type **360 EXE**.
 - **I%**: percent rate, type **6.5 EXE**.
 - **PV**: principal value, type **10000 EXE**.
 - **PMT**: payment amount, type **200 EXE**.
 - **FV**: future value, press the **down arrow key** to skip FV.
 - **P/Y**: payments per year, type **12 EXE**.
 - **C/Y**: compounds per year, type **1, 12, or 365 EXE**.
 - Solve for FV:
 - Press **F5** for FV.
- The future value will show up on the screen.
- Press **F1** to return to the previous



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Note: A positive payment increases the principal value, a negative payment decreases the principal value (if the principal value is positive). Use a positive number for investment payments and a negative for loan payments. The negative future value represents either what the bank owes you (for investments) or what you still owe the bank (for loans).

Practice Problems

Find the value of each investment at an annual, monthly, and daily compound rate after the 30 years:

Principal value of investment: \$5,000

Number of payments: 360 (30 years)

Payment value: \$500 per month

Interest rate: 5%

Compounding: Annually, Monthly, or Daily _____

Principal value of investment: \$20,000

Number of payments: 360 (30 years)

Payment value: \$100 per month

Interest rate: 8%

Compounding: Annually, Monthly, or Daily _____

Find the value of the loan in each case if compounded annually, monthly, and daily after the stated number of payments (remember, payments will be negative):

Principal value of loan: \$150,000

Number of payments: 150

Payment value: \$1000 per month

Interest rate: 6%

Compounding: Annually, Monthly, or Daily _____

Principal value of investment: \$8,000

Number of payments: 12

Payment value: \$150 per month

Interest rate: 8%

Compounding: Annually, Monthly, or Daily _____

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Summing Up:

1. How much does the investment change when you change the compounding frequency?

2. Which compounding frequency would you prefer for an investment? for a loan? Why?
