

Business Math Handout 1:

Compound Interest: Rate Comparison

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

Name _____ Date _____

Discussion

Compound interest is calculated periodically depending on the value of the loan or investment. As you are gaining interest on that loan or investment, that interest is added to its value; and thus you are essentially earning (or paying) interest on interest.

This kind of situation is generally the best when investing since you can earn on the interest of that investment as well. The compound interest investment is calculated by the following equation:

$$FV = PV(1 + i)^n$$

where PV is the principal value of the investment, FV is the future value of the investment, i is the interest rate per compounding period, and n is the number of compounding periods. In this activity you will investigate how changing the interest rate affects the return on the investment.

Example Calculations

Compare the value of a \$5,000 investment after 30 years at 3%, 6%, 8%, 10%, 12% if the compounds are yearly.

Recall the equation:

At 3%:

$$FV = 5,000 (1 + 0.03)^{30}$$
$$FV = \$12,136.31$$

At 6%:

$$FV = 5,000 (1 + 0.06)^{30}$$
$$FV = \$28,717.46$$

At 8%:

$$FV = 5,000 (1 + 0.08)^{30}$$
$$FV = \$50,313.28$$

At 10%:

$$FV = 5,000 (1 + 0.10)^{30}$$
$$FV = \$87,247.01$$

At 12%:

$$FV = 5,000 (1 + 0.12)^{30}$$
$$FV = \$149,799.61$$

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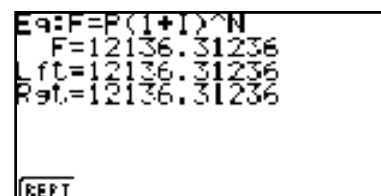
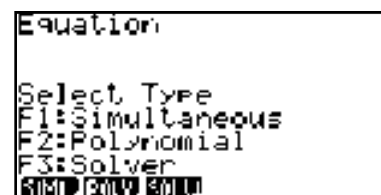
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Using the Calculator:

- Press the **AC/ON** button, the **MENU** key and press **A** for **EQUA**.
- Press **F3** for Solver.
- Enter equation:
 - **ALPHA F SHIFT = ALPHA P (1 + ALPHA I) ^ ALPHA N EXE**
- Type in the values for the variables:
 - For **P** type **5000 EXE**.
 - For **I** type **0.03 EXE**.
 - For **N** type **30 EXE**.
- Solve for Future Value:
 - Highlight **F** and press **F6** for **Solv**.
 - Press **F1** to return to the previous screen.



Type in the new value for **N** and repeat the calculations for 6%, 8%, 10% and 12%.

Practice Problems

Compare the return on a \$10,000 investment after 5 years at 2%, 3%, 4%, 5%, and 6%. Describe what happens to an investment as you increase the investment percentage rate.
