

The project is worth 75 points (55 points for merit 20 points for communication and neatness). The bulk of your report must be typed or printed via a word processor. The report should be written in complete sentences, augmented by charts or tables (these may be hand drawn using a ruler) that explain how you reached your conclusions and what those conclusions are.

Under the Truth in Savings Act effective June 21, 1993, banks and savings institutions must use a uniform formula for calculating interest yield, or APY, in their advertising, so that consumers can compare rates. Typically, this is stated with two or three decimal place accuracy when written as a percent. In most instances, however, the actual dollar amount of the interest on an investment is computed using a nominal annual interest rate r and a specific compounding method (annually, monthly, daily, ...). Due to round off error, for large amounts of money and longer periods of time, the future value of your investment using your bank's procedures can differ slightly from the future value computed using the advertised APY for the investment.

In this project, we consider a variety of investment situations based upon advertisements which have appeared in newspapers (not necessarily the Courier Journal!).

1. In a chart giving the rates for 1-year CD's (certificates of deposit), Bank A was listed as offering a 1-year CD at a nominal annual compound interest rate of 5.59% with an APY of 5.75%, while Bank B offered its 1-year CD at a nominal annual compound interest rate of 5.67% with an APY of 5.75%. Showing your computations, explain in some detail how each of these banks is evidently employing one of the standard compounding frequencies (annually, semi-annually, quarterly, monthly, or daily) to legally advertise identical APY's for the same product even though each uses a different nominal compound interest rate in computing the actual interest on its CD.

2. Another local bank advertises a 9 month CD with a 6.15% APY, substantial penalty for early withdrawal, \$1,000 minimum deposit, nominal annual interest rate of 5.97%, compounded daily, using 30 day months, and hence a 360 day year.

- Rounding down to the nearest penny, compute the future value of this 9 month CD with a present value of \$1,000 using the nominal compound interest rate of 5.97% and the compounding procedures actually used by the bank.
- Rounding down to the nearest penny, compute the future value of the same CD using the APY in your calculations instead.
- Comment upon the dollar amounts computed in Parts a. and b.

3. Newlyweds Adam and Eve plan to purchase a new SUV in three years. The current price of the model they have their eyes on is \$26,400. the manufacturer projects that the price of its cars will rise at an annual rate of 2.7% over the next three years. The couple notices a 3-year CD advertised in a newspaper with compound interest rate of 7.2% compounded quarterly.

How much should they invest in such a CD today so as to pay cash for their dream SUV in three years? Round you answer to the nearest \$100.