The student will write python code to answer the following discounted cash flow questions. Not only does this exercise reinforce earlier financial practices, but gives the student a chance to practice mathematical and string python coding skills.

1. If you put up $31,000 today in exchange for a 6.25 percent, 14-year annuity, what will the annual cash flow?

2. Live Forever Life Insurance Co. is selling a perpetuity contract that pays $1,200 monthly. The contract currently sells for $61,000?

   a) What is the monthly return on this investment vehicle?

   b) What is the APR? (Do not round your intermediate calculations.)

   c) What is the effective annual rate? (Do not round your intermediate calculations.)

3. Suppose an investment offers to triple your money in 72 months (but you don't believe it, prove it).

   What rate of return per quarter are you being offered?

4. You have just won the lottery and will receive $540,000 in one year. You will receive payments for 16 years, which will increase 5 percent per year. The appropriate discount rate is 10 percent.

   What is the present value of your winnings?

5. You're prepared to make monthly payments of $380, beginning at the end of this month, into an account that pays 8 percent interest compounded monthly.

   How many payments will you have made when your account balance reaches $25,694? (Do not round your intermediate calculations.)

6. You need a 30-year, fixed-rate mortgage to buy a new home for $230,000. Your mortgage bank will lend you the money at a 7.6 percent APR for this 360-month loan. However, you can afford monthly payments of only $800, so you offer to pay off any remaining loan balance at the end of the loan in the form of a single balloon payment.

   How large will this balloon payment have to be for you to keep your monthly payments at $800?

7. You have just purchased a new warehouse. To finance the purchase, you've arranged for a 30-year mortgage loan for 80 percent of the $2,800,000 purchase price. The monthly payment on this loan will be $17,000.

   (a) What is the APR on this loan?
   (b) What is the EAR?

8. A 16-year annuity pays $1,700 per month, and payments are made at the end of each month. The interest rate is 13 percent compounded monthly for the first Six years and 10 percent compounded monthly thereafter.

   What is the present value of the annuity?

9. You want to buy a new sports car from Muscle Motors for $43,000. The contract is in the form of a 60-month annuity due at an 8.25 percent APR.

   What will your monthly payment be?

10. You are looking at a one-year loan of $5,000. The interest rate is quoted as 10 percent plus 3 points. A point on a loan is simply 1 percent (one percentage point) of the loan amount. Quotes like this one is common with home mortgages. The interest rate quotation in this example requires the borrower to pay 3 points to the lender up front and repay the loan later with 10 percent interest.

    What rate would you be paying, actually?