• A Sinking Fund is an annuity for which the amount of the payment is determined by a desired future value.

1. Suppose a freshman has a goal to have $3,000 saved up when they graduate (in 3 years and 9 months) for a graduation trip. They find an account that pays 3.4% interest compounded monthly. They decide to make (equal) monthly deposits into this account every month. How much should each deposit be?

2. You’re just starting out with a new business and your friend (a graphic designer) offers to do all the graphic design work for the first 2 years for only $7,000. And since they are your friend they agree to collect the money at the end of the 2 years. To make sure you have they money saved you decide to start making payments each quarter (starting today) in an account that pays 5.77% interest compounded quarterly. How much should each deposit be?

Using A Sinking Fund to Pay off a (non-annuity) Loan

• First determine the ‘Total Amount to be Repaid’/FV on the Loan. Use Simple interest, Compound Interest, or Continually Compounded Interest, as is appropriate for the question.

• Then the ‘Total Amt. to be Repaid’/FV from the loan is the FV for the annuity. Use this number to do a Annuity Questions as usual.

• Be sure to keep the numbers separate (Often the non-annuity loan and the annuity will have different interest rates and/or payment frequencies)

3. The Town Council has to borrow 1.1 million dollars for 5 years for repairs after a natural disaster. The investors loan the Town Council the money at 6% interest, compounded annually. The Town won’t pay the investors until the end of the 5 years, but the deal requires the Town to set up a sinking fund and make semiannual deposits into the account to accumulate the full maturity value of the loan. The Town sets up an account at a local bank which offers them an interest rate of 4.9%. How much should each deposit be?
4. Thelma is 25 and hopes to retire in 45 years (at age 70). She sets the goal of having $1,000,000 in her retirement savings plan, and will have money automatically deducted from her paycheck twice a month and deposited into her retirement account. She assumes her retirement account will continue to average 8% interest. How much should each deposit be?

5. (Optional) Louis doesn’t start saving for her retirement until she’s 35. She also plans to retire at age 70 (in 35 years). She has the same $1,000,000 goal as Thelma, and will make twice-monthly deposits into a similar account where she also expects to earn 8% interest. How much should each of Louis’s deposits be?

6. (Optional) A large manufacturing business got a $2,500,000 loan for new equipment. The loan has a term of 6 years and an APR of 9.04%. The business will repay the entire loan (including interest) at the end of 6 years. To make sure they have enough money by then, they decide to start a sinking fund, and make semiannual deposits. If their sinking fund gets 2.9% interest, how much should each payment be?