

Sample problems for sections 2.3 & 2.4.

- 1) Your company estimates it will have to replace a piece of equipment at a cost of \$800,000 in 5 years. To do this a sinking fund is established by making equal monthly payments into an account paying 6.6% compounded monthly. How much should each payment be? (\$11,290.42)
- 2) Betty deposits \$2000 annually into a Roth IRA that earns 6.85% compounded annually. Due to a change in employment, these deposits stop after 10 years, but the account continues to earn interest until Betty retires 25 years after the last deposit is made. How much is in the account when Betty retires? (\$143,785.10)
- 3) You make monthly deposits of \$100 into an annuity and after 30 years wish to accumulate \$160,000. What annual rate compounded monthly will be required to do this? (0.083480405763)
- 4) You desire to save \$200,000 for retirement. You can afford to save \$125 a month into a mutual fund that averages 7.75% compounded monthly. How many years will be needed to do this? (31.426831333098)
- 5) You decide to buy a TV set for \$800 and agree to pay for it with 18 equal monthly payments at 1.5% interest per month on the unpaid balance. How much are your payments? (\$51.05) What is the total interest paid? (\$118.90)
- 6) American Capital offers a 7-year ordinary annuity with a guaranteed rate of 6.35% compounded annually. How much should you pay for one of these annuities if you want to receive payments of \$10,000 annually over the 7-year period? (\$55,135.98)
- 7) Al Bundy says he paid \$25,000 down on a new house and will pay \$525 per month for 30 years. If interest is 7.8% compounded monthly, what was the selling price of the house? (\$97929.78)

8) You have found the house of your dreams. The selling price is \$175,000 with an interest rate of 5.5% compounded monthly. Determine the monthly house payment if the loan is for:

a) 30 years (\$993.64) b) 15 years (\$1429.90)

Determine the total interest paid for the loan in part (a) (\$182,710.40) and (b) (\$82,382).

Suppose you have financed your home for 30 years. How much is the unpaid balance after making payments for 20 years? (\$91,557.55)

Suppose before making the first payment you receive a raise and can pay an extra \$150 each month (30 year loan). How long will it take to pay off the mortgage? (22.022274711642 years)

9) At the time of retirement, a couple has \$200,000 in an account that pays 8.4% compounded monthly. If they decide to withdraw equal monthly payments for 10 years, at the end of which time the account will have zero balance, how much should they withdraw each month? (\$2469.04)

10) Two twins Lauren & Mallory both will save \$2000 at 12% compounded annually. Mallory begins at age 20 and deposits \$2000 a year till age 29, for a total of 10 deposits, then does nothing till retirement at age 65 (36 years). How much will Mallory have at age 65? Lauren begins at age 29 depositing \$2000 a year until retirement at age 65 (37 deposits). How much will Lauren have at retirement? (Mallory: \$2,075,509.03) (Lauren: \$1,087,197.38).