MA162: Finite mathematics

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SCHEDULE:

- Bring practice exam today.
- Exam 3 is Today, Nov 14th, 5:00pm-7:00pm in CB106.

Today we will review chapter 5.

Exam 3 breakdown

- **Chapter 5**, Interest and the Time Value of Money

  - Simple interest

  - Compound interest

  - Sinking funds

  - Amortized loans

- Chapter 6, Counting

  - Inclusion exclusion

  - Inclusion exclusion

  - Multiplication principle

  - Permutations

Simple interest

- Mr. Marjoram is temporarily short on money, but will have plenty in a week or two. His \$80 electrical bill is due too soon, and he contemplates four options:

  (A) Pay it late, including a \$4 late fee

  (B) Put it on his 24% APR credit card for one month (incurring 2% simple interest)

  (C) Get a loan from the pawn shop for 1% monthly interest and a \$5 processing fee

  (D) Get a loan from Chek-N-Go at 432% APR for two weeks (incurring 16.80% simple interest)

  How much interest does each option incur?
  Which is the cheapest option?

Compound interest

- Mrs. Oregano just received notification that her interest rate is changing from 12% APR to 24% APR, effective in three months. She expects to incur interest for the next six months. Assuming no further changes, how much interest will $250.00 incur over the next six months: that is three months at 12% APR and three months at 24% APR, all compounded monthly.

- The interest after six months is _____ dollars.

- Mrs. Oregano has a limited time offer to transfer the present $250.00 to an 18% APR account. How much interest would the $250.00 incur after six months at 18% APR, compounded monthly?

- The interest would be _____ dollars.

Sinking funds

- Zach Crusoe is saving for the future. He has deposited $0.10 per day into his 3.60% APR savings account (compounded daily, 360 days per year) for two years. How much is his account currently worth?

  (a) His account is worth _____ dollars.

  As he has gotten older, his responsibilities and allowance have increased. How much will his account be worth if he now deposits $0.25 per day for the next year?

  (b) His account is worth _____ dollars after 3 years: 2 years of $0.10 per day, and 1 year of $0.25 per day

Amortized loans

- Dr. Tarragon is buying his potatoes on credit and plans to purchase $1000.00 worth of Yukon Golds at 18% APR compounded monthly. He needs to have them paid off by the end of the year, 9 months from now. How much is his monthly payment?

- A monthly payment of _____ dollars will pay off the loan in 9 months.

- A monthly payment of _____ dollars will pay off the loan in 18 months.

- How long to pay it off at $15 per month? After one month, the debt is _____ dollars, so after the payment the remaining debt is _____ dollars.

- What is the remaining debt after 6 years?