Mth 105 Review For Test 1

Problem Solving

Skills to have:

- How to find a %
- How to increase by a %
- How to find % increase
- How to decrease by a %
- How to find % decrease
- Compare with % by saying this amount is __% of that amount.
- What is a proportion?
- Solve a proportion by cross-multiplying
- If quantities are proportional, how to use the rate to find another quantity.
- ~~Use dimensional analysis to convert, if some facts are provided.~~
- ~~Estimate the number of toilet flushes in Oregon in a year, based on some basic facts. Write down the facts you would need.~~

Work the following problems in your textbook:	**Then work the following problems starting on page 18.**
page 2 Try it Now 1 page 4 Try it Now 2 page 12 Try it Now 5 *Solutions for these 3 are on pages 16-17.	1, 3, 5, 7, 9, 13, 31, 33, 35, 43, 53, 63, 65 *Answers for these are in the back of the book starting on page 449.

Finance

Terms:

Principal Interest Amount Interest Rate Repayment Amount	APR (Annual Percentage Rate) Treasury Notes (T-notes) Compound Interest	Savings Annuity Payout Annuity Loan

Formula: Simple Interest	Extra Formulas
$I = P_0rt$ $A = P_0 + I$	$A=P_0+P_0rt$ $A=P_0(1+rt)$

Simple Interest Skills:

- Find the amount of simple interest that would be charged/earned one time.
- Find the amount of simple interest that would be charged or earned over a period of time, at regular time intervals.
- Find the total repayment amount for a loan with simple interest.
- Find the amount of interest you would earn from a T-bill.
- Find the amount you would pay for a T-bill with a given face value, interest rate, and maturity time.
- Find the APR someone is charging if we know the time, the interest amount, and the loan amount.

Formula: Compound Interest	same formula, different letters: version in your book:
$A = P(1 + \frac{r}{n})^{nt}$	$P_N = P_0(1 + \frac{r}{k})^{k \cdot N}$

Compound Interest Skills:

- Find the ending amount when given the initial investment, interest rate, number of compounding periods, and number of years.
- Find the starting amount (principal) needed in a specific situation to get to a given ending value.

Annuity Formula	**Payout Annuity Formula/Loans Formula**
$P_N = \frac{d((1+\frac{r}{k})^{N \cdot k} - 1)}{(\frac{r}{k})}$ P_N is the balance in the account after N years d is the regular deposit amount r is the annual interest rate in decimal form k is the number of compounding periods in one year	$P_0 = \frac{d(1-(1+\frac{r}{k})^{-N \cdot k})}{(\frac{r}{k})}$ P_0 is the balance in the account at the beginning (or the amount of the loan) d is the withdrawal amount or loan payment amount r is the annual interest rate in decimal form k is the number of compounding periods in one year N is the length of the annuity (or loan) in years

Annuity Skills:

- Find the ending amount of a savings annuity when given: the regular deposit amount, the compounding frequency, the interest rate, and the number of years.
- Find the regular deposit amount needed when given: ending amount of a savings annuity, the compounding frequency, the interest rate, and the number of years.
- Find the starting amount needed for a payout annuity when given: the regular withdrawal amount, the compounding frequency, the interest rate, and the number of years
- Find the regular withdrawal amount possible when given: the starting amount of a payout annuity, the compounding frequency, the interest rate, and the number of years of withdrawals

Loans Skills:

- Start with a monthly payment amount, an interest rate, a compounding frequency, and the number of years of your loan. Figure out what loan amount you can afford.
- Or start with a loan amount, interest rate, compounding frequency, number of years, and generate the payment amount.
- Find the remaining loan balance partway through a loan period

Which Equation to Use?

- Be able to recognize what type of problem you are working, and what formula to use, based on the situation described.

~~Solving for Time~~

- ~~Use the guess and check method to answer questions where the unknown value is in the exponent, or is harder to solve for by algebra methods.~~

Problems to Try Starting on page 222: 1-23 odd, 33 *Answers starting on page 458.