

Math 1332  
Chapter 8

**Section 1**

Percent: part of 100;  $\frac{N}{100} = N\%$

Fraction to Percent:

1. Divide numerator by denominator
2. Multiply by 100 (Move decimal 2 spaces to right)
3. Add percent sign

Decimal to Percent:

1. Move decimal 2 spaces to right.
2. Add percent sign.

Percent to Decimal

1. Move decimal to left 2 spaces. Add filler zeroes if needed.
2. Remove percent sign

Percent Formulas :

$$A = P \cdot B; \quad A \text{ is Percent of } B$$

$$\text{Sales tax} = \text{tax rate} \cdot \text{cost}$$

$$\text{Discount amount} = \text{discount rate} \cdot \text{original price}$$

$$\text{Percent Increase/Decrease: } \frac{\text{amount of change}}{\text{original amount}} \cdot 100$$

**Section 2**

Simple Interest:  $I = Prt$  Interest = (Principal)(rate)(time)

Future Value:  $A = P(1 + rt)$  A: future value

Bankers Rule: allows companies to use 360 days in a year for calculations rather than 365.

Discounted Loan: Loan in which lenders collect interest that will accrue on the loan at the time the loan is opened.

Discount: interest deducted from the discounted loan.

### Section 3

Compound Interest:  $A = P(1+r)^t$

Compound Interest paid  $n$  times a year:  $A = P\left(1 + \frac{r}{n}\right)^{nt}$

Annually:  $n = 1$

Semiannually:  $n = 2$

Quarterly:  $n = 4$

Present Value:  $P = \frac{A}{\left(1 + \frac{r}{n}\right)^{nt}}$

Effective Annual Yield: (effective rate); simple interest rate such that the account in question will produce the same amount at the end of one year as an account that was subjected to compound interest at the same rate.

$$P\left(1 + \frac{r}{n}\right)^{nt} = P(1+rt) \quad \text{when } t = 1$$

Effective Annual Yield:  $Y = \left(1 + \frac{r}{n}\right)^n - 1$

### Section 4

Interest Buying: repay a loan for the cost of a product each month.

Installment Loan: Loan with payments to payoff each time period.

Formulas:

Amount finance = Cash Price – Down Payment

Total Installment = Total monthly payments + Down Payment

Finance Charges = Total installment – Cash Price

How to Use APR table

1. Compute finance charge per \$100.  $\frac{\text{finance charge}}{\text{amount financed}} \cdot 100$
2. Find row for number of payments and find closest value to result from line 1.
3. Top of that column is APR

Unearned Interest:

Actuarial:  $u = \frac{kRV}{100 + V}$

Rule of 78:  $u = \frac{k(k+1)}{n(n+1)} \bullet F$

u = unearned interest

R = regular monthly payment

N = original number of payments

k = remaining # payments

V = finance charge per \$100

F = original finance charge

Methods to Calculate Interest on Credit Cards:

Unpaid balance:

$$P = \text{balance on the 1}^{\text{st}} \text{ day of the billing cycle} - \text{payments} + \text{credits}$$

Previous Balance:  $P = \text{unpaid balance on 1}^{\text{st}} \text{ day of billing cycle}$

$$\text{Average Daily: } P = \frac{\text{Sum of unpaid balances for each day}}{\text{number of days in billing cycle}}$$

**Section 5**

Mortgage: long term loan used to buy a home.

Down Payment: portion of sale price that is initially paid to the seller.

Amount of Mortgage: Difference between sale price and down payment

Mortgage brokers: companies who offer to find mortgage lenders for your loan

Fixed rate: same payment every time

Variable rate and Adjustable rate:

payments change from time to time pending on changes in interest rate.

Point: one time charge is equal to 1% of loan

Escrow: account used by lender to pay real estate taxes and insurance

Table 8.4: monthly payments per \$1000

Monthly Mortgage Payments: 
$$PMT = PV \frac{\frac{r}{n}}{1 - \left(1 + \frac{r}{n}\right)^{-nt}}$$

PV = amount of loan. N = number of payments per year

Amortized: both Principal and Interest are paid by a sequence of equal payments over an equal time period. We can build a document to show the payments for each month for the life of the loan. This is called a loan amortization schedule.

## Section 6

p. 449 Reading Stock Tables

pay per dividend = Div • number of shares

Vol 100s: number in the box times 100 = number of shares traded yesterday

Price – to – earning ratio: 
$$PE = \frac{\text{Yesterday closing price}}{\text{Annual earning per share}}$$

Annual earning = 
$$\frac{\text{Yesterday closing price}}{\text{PE ratio}}$$