

## Simple Interest

$$i = prt \quad \text{where } p = \text{principal} \quad r = \text{annual interest rate} \quad t = \text{time in year}$$

## Compound Interest

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

where A = the amount

p = the principal

r = the annual rate of interest

t = the time in years

n = the numbers of periods per year

### Present Value:

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

where P = present value

## Annual Percentage Rate (APR): use table

Finance charge = Interest

$$\text{Annual Percentage Rate} = \left( \frac{\text{Finance charge per}}{\$ 100 \text{ financed}} \right) = \frac{\text{Finance charge}}{\text{Amount financed}} \times \$100$$

## Actuarial Method

$$u = \frac{n p V}{100 + V}$$

Where  $u$  = unearned interest

$n$  = number of remaining monthly payments  
(excluding current payment)

$P$  = monthly payment

$V$  = the value from the APR table that corresponds  
to the annual percentage rate for the number  
of remaining payments

## Rule of 78s

$$u = \frac{f \cdot k(k+1)}{n(n+1)}$$

where  $u$  = unearned interest

$f$  = original finance charge

$k$  = number of remaining monthly payments  
(excluding current payment)

$n$  = original number of payments