Finance Formulas

List of Variables

r is the annual interest rate, as a decimal

i is the interest rate per period

t is the number of years

m is the number of periods (payments) per year

n is the total number of periods (payments)

P is the
- **Principal** using simple interest,
- **Present value** using compound interest
- **Present value of an annuity or remaining amount of a loan**

Note: Our text uses an upper case P to represent the principal.

A is the
- **Future value** of a fund using simple interest
- **Future value** of a fund using compound interest

PMT is the
- **Payment** to an annuity
- **Payment** of a loan

Note: Our text uses a lower case p to represent the payment.
Finance Formulas

Simple Interest

Interest  \[ I = Prt \quad \text{or} \quad I = A - P \]

Future Value  \[ A = P + Prt \quad \text{or} \quad A = P(1 + rt) \]
\[ A = P + I \]

Principal  \[ P = \frac{A}{1 + rt} \]

Compound Interest

Interest  \[ i = \frac{r}{m} \]
\[ \text{APR} = (1+i)^m - 1 \]

Number of periods  \[ n = m \times t \]

Compound Interest

Future Value  \[ A = P(1 + i)^n \]

Present Value  \[ P = \frac{A}{(1 + i)^n} \]

Annuities

Future Value  \[ A = PMT \times \frac{[(1 + i)^n - 1]}{i} \]

Present Value  \[ P = PMT \times \frac{[1 - (1 + i)^{-n}]}{i} \]

Payment to a  \[ PMT = A \times \frac{i}{[(1 + i)^n - 1]} \]

Sinking Fund

Amortization of Loans

Future Value  \[ A = PMT \times \frac{[(1 + i)^n - 1]}{i} \]

Present Value  \[ P = PMT \times \frac{[1 - (1 + i)^{-n}]}{i} \]

Payment  \[ PMT = P \times \frac{i}{[1 - (1 + i)^{-n}]} \]