Interest Formulas and Terminology

(Examples for 5 years at 10% nominal annual interest)

(P=Present, F=Future, A=Annual, n=Periods, i=Decimal Interest)

Present to Future

Compound amount, Future worth of $1, (1.6105)

\[ F = P \times (1 + i)^n \]

Future to Present

Present value, Present worth of $1, (.6209)

\[ P = F \times \left( \frac{1}{1+i} \right)^n \]

Present to Annual

Annuity whose PV is 1, Partial payment to amortize $1, Capital recovery, Amortization, (.2638)

\[ A = P \times \left( \frac{i(1+i)^n}{(1+i)^n - 1} \right) \]

Annual to Present

Present value of annuity, Present worth of $1 per period, (3.7908)

\[ P = A \times \left( \frac{(1+i)^n - 1}{i(1+i)^n} \right) \]

Future to Annual

Sinking fund, (.1638)

\[ A = F \times \left( \frac{i}{(1+i)^n - 1} \right) \]
Annual to Future
Amount of annuity, Future worth of $1 per period, (6.1051)

\[ F = A \times \left( \frac{(1+i)^n - 1}{i} \right) \]

Compounding more frequently than annual
Effective annual rate of interest \( r \), Periods per year \( t \)

\[ r = \left( 1 + \frac{i}{t} \right)^t - 1 \]