Simple Interest

$$I = PRT$$

I = Interest

P = Principal

R = Rate (Interest Rate)

T = time (year)

Saving $2000 5% for 5 years

$I = PRT$

$I = 2000(.05)(5)$

$I = \$500$

$MV = \$2500$

$P = 2000$

$R = 5\% \rightarrow .05$

$T = 5$ years

Maturity Value → Value of Loan or Savings Account at the end of the term

→ Principal + Interest

$1060 Loans 6.5% for 3 months

$I = PRT$

$I = 1060(.065)(3/12)$

$I = 17.23$

$I = \$1077.23$

$P = 1060$

$R = .065$

$T = 3 \text{ months}$
$= 3/12$

1 year → 12 months

52 weeks

360 Days

$2000 savings 5% Rate for 5 years

$y_0 = 2000$

$y_1 = 2100$

$y_2 = 2205$

$y_3 = 2315.25$

$y_4 = 2431.01$

$y_5 = 2552.56$

$2000(.05)(1) = 100$

$2100(.05)(1) = 105$

$2205(.05)(1) = 110.25$

$2315.25(.05)(1) = 115.76$

$2431.01(.05)(1) = 121.55$

Compound Interest

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

A = total value of Loan or Savings

P = Principal

R = Interest Rate

T = time (years)

N = # of times compounding

$2000 5% 5 years

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

$A = 2000\left(1 + \frac{.05}{1}\right)^{(1)(5)}$

$A = 2000\left(1.05\right)^{5}$

$A = 2000(1.28)$

$A = 2552.56$

$P = 2000$

$R = 5\% \rightarrow .05$

$T = 5$ years

$N = 1$

$\wedge \; y^x \quad x^y$

$10000 6% 40years n=1

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

$$A = 10000\left(1 + \frac{.06}{1}\right)^{1(40)}$$

$$A = 10000\,(1.06)^{40}$$

$$A = 10000\ (10.29\ldots)$$

$$A = 102857.18$$

$P = 10000$

$R = .06$

$T = 40y$

$n = 1$

$10000 6% 30 years n=1

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

$$A = 10000\left(1 + \frac{.06}{1}\right)^{1(30)}$$

$$A = 10000\,(1.06)^{30}$$

$$A = 10000\,(5.743491)$$

$$A = 57,434.91$$

$P = 10000$

$R = .06$

$T = 30$

$n = 1$

Anually or yearly	$n = 1$
semianually	$n = 2$
Quarterly	$n = 4$
Monthly	$n = 12$
bi-weekly	$n = 26$
weekly	$n = 52$
daily	$n = 360$

$3000 6% 5 years n=12

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

$$A = 3000\left(1 + \frac{.06}{12}\right)^{(12)(5)}$$

$P = 3000$

$R = .06$

$T = 5$

$n = 12$

$$A = 3000(1.005)^{60}$$

$$A = 3000(1.35\ldots)$$

$$A = 4046.55$$