

Throughout the finance unit, we recommend that you use the online financial calculators for simplicity and accuracy whenever they are available. If you choose to use the optional manual calculator formulas be very careful because some of them are difficult to enter correctly!

Finance Formula Abbreviations (in alphabetical order)

APR	Annual Percentage Rate (expressed as a decimal, not a percentage)			
n	Number of compounding periods or payments per year			
	Yearly (or annually) = 1	Semi-annually = 2	Quarterly = 4	Monthly = 12
	Twice per month = 24	Bi-weekly = 26	Weekly = 52	Daily = 365
y	Number of years of savings or payments			

Finance 1 – Saving Money Formulas

Simple Interest (There is no online calculator for this...use a manual calculator)

$$\text{Simple Interest Earned} = \text{Principal} \times \text{APR} \times y$$

Period Interest Rate (There is no online calculator for this...use a manual calculator)

$$\text{Period interest rate} = \frac{\text{APR}}{n}$$

Compound Interest Accrued Value (Online **future account balance** calculator recommended)

$$\text{Optional manual calculator version: } \text{Accrued value} = \text{Principal} \left(1 + \frac{\text{APR}}{n} \right)^{(n \cdot Y)}$$

Annual Percentage Yield Formula (Online **APY** calculator recommended)

$$\text{Optional manual calculator version: } \text{APY} = \left(1 + \frac{\text{APR}}{n} \right)^n - 1$$

Installment Savings Plan Accrued Value (Online **future account balance** calculator recommended)

$$\text{Optional manual calculator version: } \text{Accrued value} = \text{Recurring deposit} \times \frac{\left[\left(1 + \frac{\text{APR}}{n} \right)^{(n \cdot Y)} - 1 \right]}{\left(\frac{\text{APR}}{n} \right)}$$

Monthly Deposit Needed to Reach Savings Goal (Online **deposit needed to reach goal** calculator recommended)

$$\text{Optional manual calculator version: } \text{Needed monthly deposit} = \frac{\text{Goal} \times \left(\frac{\text{APR}}{12} \right)}{\left[\left(1 + \frac{\text{APR}}{12} \right)^{(12 \cdot y)} - 1 \right]}$$

Finance 2 – Borrowing Money Formulas

Monthly Loan Payment (Online **monthly loan payment** calculator recommended)

Optional manual calculator version:
$$\text{Monthly Payment} = \frac{\text{Principal} \times \frac{APR}{12} \times \left(1 + \frac{APR}{12}\right)^{(12 \cdot y)}}{\left[\left(1 + \frac{APR}{12}\right)^{(12 \cdot y)} - 1\right]}$$

How Much Loan Can You Afford (Online **how much loan can you afford** calculator recommended)

Optional manual calculator version:
$$\text{Loan you can afford} = \frac{\text{Monthly payment} \times \left[\left(1 + \frac{APR}{12}\right)^{12 \cdot y} - 1\right]}{\left[\frac{APR}{12} \times \left(1 + \frac{APR}{12}\right)^{12 \cdot y}\right]}$$

Finance 3 – Credit Cards

Credit Card Basics (There is no online calculator for this...use a manual calculator)

The *finance charge* for your monthly credit card bill is calculated as follows:

$$\text{Finance charge} = \frac{APR}{12} \times (\text{Previous balance})$$

Your *monthly credit card balance* is calculated as follows:

$$\text{New balance} = \text{Previous balance} - \text{Payments} + \text{Purchases} + \text{Finance charge}$$

Future Credit Card Balance making Minimum Payments (Online **calculator** of the same name recommended)

Optional manual calculator version:

$$\text{Balance after } t \text{ minimum payments} = \text{Initial balance} \times \left[1 + \frac{APR}{12} - m\right]^t$$

m is the percent (in decimal form) of the balance that must be paid each month

t is the number of minimum monthly payments (so 2 years of payments is $t = 2 \times 12 = 24$)