

Future Value with Compound Interest

Liberal Arts Mathematics

Overview

- Compound Interest Formula
- Examples

Compound Interest Formula

Future Value with Compound Interest

Compound Interest

- **Compound Interest:** interest is added to the principal at regular intervals.
- **Notes:**
 - Interest is calculated on the updated principal each time.
 - The time between adding interest to principal is called a **compounding period**

Future Value Formula with Compound Interest

$$FV = PV \left(1 + \frac{r}{n} \right)^{n \cdot t}$$

- FV = Future Value
- PV = Present Value
- r = annual interest rate as a decimal
- n = compounding periods per year
- t = time in years

Example

Future Value with Compound Interest

Example 1

Compute the future value of the investment with the given conditions.

- $PV = \$5,000$
- $r = 3.8\%$
- $t = 5$ years
- Monthly compounding

Example 2

Compute the future value of the investment with the given conditions.

- $PV = \$18,500$
- $r = 6.25\%$
- $t = 17$ years
- Quarterly compounding