

I can calculate future value of a lump sum of money as well as the time required to double or triple an investment

Interest: The amount (rate) charged for a bank or individual to borrow money for a given period of time (usually yearly).

Compound Interest: Interest paid on previously earned interest (or owed interest).

Principal: The total amount of money borrowed initially.

Present Value: The amount of money you would need to invest now so that it would grow to a given A dollars in a specific time.

Compound Interest Formula:

The amount A after t years due to a principal P invested at an annual interest rate r compounded n times per year is:

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

Continuous Compounding:

The amount A after t years due to a principal P invested at an annual interest rate r compounded continuously is:

$$A = Pe^{rt}$$

Example 1: Jamieson has decided to open a bank account with and deposit \$1,250 to start. The account has a 2.6% APR (annual percentage rate) compounded monthly. How much will he have after 7 years?

Example 2: Jamieson borrowed \$34,575 to get his college education. If does not make any payments, how much will he owe in 10 years if the interest is compounded continuously at 5.25% APR?

$$P \rightarrow \text{Principal} = 1250$$

$$r \rightarrow \text{rate} = 0.026$$

$$n \rightarrow \text{\# of times compounded} = 12$$

$$t \rightarrow \text{\# of years} = 7$$

$$1250 \left(1 + \frac{0.026}{12} \right)^{12(7)} = \$1499.22$$

$$34575e^{0.0525(10)}$$

$$\$58447.61$$