Simple and Compound Interest

MATH 1001 – Quantitative Skills and Reasoning

Personal Finance Unit

pp. 201-204 in textbook

Simple Interest

Definitions

The **principal** in financial formulas is the balance upon which interest is paid.

Simple interest is interest paid only on the original principal, and not on any interest added at later dates.

$$I = P*r*t$$

I = simple interest
P = principal
r= rate
t = time (in years)

Simple Interest

Terry wants to buy a used truck. He borrows $7,650 from the bank. If the simple interest rate is 9% for four years, how much interest will Terry pay?

Simple Interest

Craig borrowed $1,399 from his parents to buy a stereo. His parents charged him 3 % simple interest for 2 years. How much interest did he pay his parents?

Simple Interest

Rachel invested $5,000 in a savings account that earned 4% simple interest. If she kept the money in the account for 50 months, how much interest did he earn?

Simple Interest

Chris wants to invest $7,200 in a savings account that pays 1.6% simple interest. How long will it take for this investment to double in value?

Simple Interest

How much would you need to deposit in an account now in order to have $3,750 in the account in 10 years? Assume the account earns 2% simple interest.

Compound Interest

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

Compound interest is interest paid on both the original principal and on all interest that has been added to the original principal.

FV = accumulated balance after t years

PV = starting principal

r = annual percentage rate (as a decimal)

t = number of years

n = number of compounding periods (e.g. annually, semi-annually, quarterly, monthly, daily)

Compound Interest

Suppose you invest $15,000 at 12% interest compounded monthly. What would your account balance be in 20 years?

FV =

PV =

r =

t =

n =

Compound Interest

Now suppose that you received interest on a quarterly basis, what is the new account balance?

FV =

PV =

r =

t =

n =

Compound Interest

How much would you need to deposit in an account now in order to have $4,200 in the account in 13 years? Assume the account earns 1.9% interest compounded monthly. Round to the nearest cent.

$$PV = FV\left(1+\frac{\mathrm{r}}{n}\right)^{(-nt)}$$