**Compound Interest**

**Compound Interest Formula:**

Example 1:



Answer:

It is a good idea to list what we know in the formula before trying to use the formula.

FV ( or A) = ? n = 1 ( compounded yearly = once per year)

P = 1000 t = 10

R= 3% = 0.03

Write down the formula, then fill in the known values.

 A = 1000( 1 + $\frac{0.03}{1}$ )1x10

 = 1000(1.03)10 \*\*\*Follow order of operations\*\*\*

 = 1000 ( 1.343916..)

 = 1343.92

The future value of Alek’s investment is $1343.92.

Example 2:



1. P = 1000

R = 3% = 0.03

n = 12 ( monthly = 12 times per year)

t = 10

FV = ?

 FV = P( 1+ $\frac{r}{n}$ )nxt

 FV = 1000( 1 + $\frac{.03}{12}$)12x10

 FV = 1000( 1.0025)120

FV = 1000(1.3493535…)

 = 1349.35

The future value of Conner’s investment is $1349.35.

(b) FV = P + I

So

 I = FV – P

 I = 1349.35 – 1000

 = 349.35

Conner earned $349.35 in interest.

Example 3:

Emma invested $3000 at an interest rate of 2.8%.a compounded semi annually for 5 years.

1. What amount of money did Emma have after 5 years?
2. How much interest did Emma earn?

Answer:

 P = 3000

R= 2.8%= 0.028

n= 2 ( semi annually = twice a year)

t= 5

 FV = P( 1+ $\frac{r}{n}$ )nxt

FV = 3000( 1 + $\frac{0.028}{2}$)2x5

 FV = 3000(1.014)10

 FV = 3000(1.1491574…)

 FV =3447.47

Emma had $3447.47 after 5 years.

1. I = FV – P

 I = 3447.47 – 3000

 I = 447.47

Emma earned $447.47 in interest.

Example 4:

Joey borrowed $4000 to buy a used car. He was charged interest at a rate of 8%/a compounded quarterly. If the loan was for 3 years’ how much money did Joey need to repay?

Answer:

P = 4000

r = 8% = 0.08

n = 4 ( quarterly = 4 times per year)

t= 3

 FV = P( 1+ $\frac{r}{n}$ )nxt

 FV = 4000( 1 + $\frac{.08}{4}$ )4x3

 FV = 4000(1.02)12

 FV = 4000(1.2682417…)

 FV =5072.97

Joey needed to repay $5072.97 after 3 years.

\*\*\*\*Extra Practice Questions from the book\*\*\*\*

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