

# 2-5 COMPOUND INTEREST FORMULA

## OBJECTIVES

**Compute** interest income using the compound interest formula.

**Compute** the Annual Percentage Yield (APY)

You will need:

- Student Notes
- Textbook
- Calculator
- Formula Chart
- Notebook Paper
- Pen or Pencil

Red Items are needed during  
the lecture

In the last section we learned that the advantage of a compound interest account is that you earn more interest income.

Is there an easier way to find the amount of interest earned?

Today we will learn how to use the compound interest formula.

# Compound Interest Formula

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

$B$  = ending balance

$p$  = principal or original balance

$r$  = interest rate (converted)

$n$  = number of compounds annually

$t$  = number of years

Marie deposits \$1,650 for three years at 1% interest, compounded daily. What is her **ending balance**?

Which formula on the formula cheat sheet? **2a**

Q1) One or multiple? One: Top

Q2) Which key word? Neither: 2

Q3) What are you looking for? Ending Balance: a

Marie deposits \$1,650 for three years at 1% interest, compounded daily. What is her **ending balance**?

Variables:

Formula:

$$B = B$$

$$p = 1,650$$

$$r = .01$$

$$n = 365$$

$$t = 3$$

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

$$B = 1650 \left( 1 + \frac{.01}{365} \right)^{(365)(3)}$$

$$B = \$1,700.25$$

Her ending balance will be \$1,700.25

## Example 3A – Now You Try It!

Kate deposits \$2,350 in an account that earns interest at a rate of 1.1%, compounded monthly. What is her **ending balance** after five years?

## Example 3A – Now You Try It!

Kate deposits \$2,350 in an account that earns interest at a rate of 1.1%, compounded monthly. What is her **ending balance** after five years?

Variables:

$$B = B$$

$$p = 2,350$$

$$r = .011$$

$$n = 12$$

$$t = 5$$

Formula:

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

$$B = 2350 \left( 1 + \frac{.011}{12} \right)^{(12)(5)}$$

$$B = \$2,482.81$$

Her ending balance will be \$\$2,482.81

Marie deposits \$1,650 for three years at 1% interest, compounded daily. How much **interest** does she earn?

Which formula on the formula cheat sheet? **2b**

Q1) One or multiple?    One: Top

Q2) Which key word?    Neither: 2

Q3) What are you looking for?    Interest: b



## Example 3B

Marie deposits \$1,650 for three years at 1% interest, compounded daily. How much **interest** does she earn?

Variables:

Formula:

$$I = I$$

$$p = 1,650$$

$$r = .01$$

$$n = 365$$

$$t = 3$$

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

$$I = 1650 \left( 1 + \frac{.01}{365} \right)^{(365)(3)} - 1650$$

$$I = \$50.25$$

Her interest is \$50.25

## Example 3B – Now You Try It!

Kate deposits \$2,350 in an account that earns interest at a rate of 1.1%, compounded monthly. How much interest does she earn?

## Example 3B – Now You Try It!

Kate deposits \$2,350 in an account that earns interest at a rate of 1.1%, compounded monthly. How much interest does she earn?

Variables:

$$I = ?$$

$$P = 2,350$$

$$r = .011$$

$$n = 12$$

$$t = 5$$

Formula:

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

$$I = 2350 \left( 1 + \frac{.011}{12} \right)^{(12)(5)} - 2350$$

$$I = \$132.81$$

Her interest is \$132.81

Please work on you assignment.  
It is due at the end of next class.

Grade goes here	Read Pg: 95 to 99 Do Pg 100: #2-8 (skip 5c and 7b), 10, 11, 15, 16a-c	Last First P__ A:2-5