Lesson 6.5 The Amount and Present Value of an Annuity

Goal: ***Calculate the amount (future value) of a simple ordinary annuity***
Calculate the present value of a simple ordinary annuity

- An ***annuity*** is a series of ***equal*** payments paid ***in to our out of*** an account at ***regular*** intervals
- In an ***ordinary simple annuity***, payments are made at the ***end*** of each ***compounding*** period
- The ***AMOUNT*** of an annuity (***future value***) is the sum of regular deposits plus ***interest***

Compound Periods ***(# times per year)***

Annually:	Semi-Annually:
Monthly:	Semi-Monthly:
Weekly:	Bi-weekly:
Quarterly:	Daily:

The ***AMOUNT*** of an ordinary simple annuity is given by the formula $A = \frac{R\left[(1+i)^n - 1\right]}{i}$, where

A = i =

R = n =

This formula can only be used when the ***payment interval is the same as the compounding period***

Example Suppose $450 were deposited at the end of each quarter for 1.5 years into an annuity that earns 10% per year compounded quarterly

a) What is the amount of the annuity?

A = ***?***

R =

i =

n =

The ***INTEREST*** of an ordinary simple annuity is given by the formula $I = A - Rn$, where I is interest amount

b) How much interest did the annuity earn?

The ***present value*** of an annuity is the ***principal*** that must be invested ***TODAY*** to provide regular payments

The ***PRESENT VALUE*** of an ordinary simple annuity is given by the formula $PV = \frac{R\left[1-(1+i)^{-n}\right]}{i}$, where

PV = i =

R = n =

This formula can only be used when the ***payment interval is the same as the compounding period***

Example Victor wants to withdraw $700 at the end of each month for 8 months, starting 1 month from now. His bank account earns 5.4% per year compounded monthly.

a) How much must Victor deposit in his account TODAY to pay for the withdrawals?

PV = ***?***

R =

i =

n =

The ***INTEREST*** of an ordinary simple annuity is given by the formula $I = Rn - PV$, where I is interest

b) How much interest did the annuity earn?

Practice: Page 415 #3b, 6bc, 7bc, 9
Page 423 #2ab, 4ad, 9