

Annuities

Vocabulary

amortization
annuity
consolidation loan
fixed-rate mortgage
mortgage
ordinary annuity
simple annuity

Curriculum Expectations**Exponential Functions**

By the end of this course, students will:

3.5 explain the meaning of the term *annuity*, through investigation of numeric and graphical representations using technology

3.6 determine, through investigation using technology, the effects of changing the conditions (i.e., the payments, the frequency of the payments, the interest rate, the compounding period) of ordinary simple annuities (i.e., annuities in which payments are made at the *end* of each period, and the compounding period and the payment period are the same)

3.7 solve problems, using technology, that involve the amount, the present value, and the regular payment of an ordinary simple annuity

Chapter 8 Planning Chart

Section	Suggested Timing	Student Text Page(s)	Materials and Technology Tools
Chapter 8 Opener	10–15 min	378–379	
Prerequisite Skills	40–70 min	380–381	<ul style="list-style-type: none"> • calculator • graphing calculator • TVM solver • grid paper (optional)
8.1 Future Value of an Ordinary Simple Annuity	75–150 min	382–389	<ul style="list-style-type: none"> • computer with Internet access • TVM solver • spreadsheet software
8.2 Present Value of an Ordinary Simple Annuity	75–110 min	390–396	<ul style="list-style-type: none"> • computer with Internet access • TVM solver
8.3 Payments and Total Interest	75 min	397–404	<ul style="list-style-type: none"> • computer with Internet access • TVM solver
8.4 Effects of Changing the Conditions on an Ordinary Simple Annuity	75–150 min	405–411	<ul style="list-style-type: none"> • computer with Internet access • TVM solver
Chapter 8 Review	75 min	412–413	<ul style="list-style-type: none"> • TVM solver • computer with Internet access (optional)
Chapter 8 Problem Wrap-Up	45 min	413	<ul style="list-style-type: none"> • computer with Internet access (optional) • TVM solver (optional)
Chapter 8 Practice Test	45–75 min	414–415	<ul style="list-style-type: none"> • TVM solver • computer with Internet access (optional)
Chapter 8 Task: Planning for Post Secondary Education	45–75 min	416–417	<ul style="list-style-type: none"> • TVM solver • computer with Internet access (optional)
Chapters 6 to 8 Review	45–75 min	418–419	<ul style="list-style-type: none"> • TVM solver • computer with Internet access (optional)

Chapter 8 Blackline Masters Checklist

	BLM	Title	Purpose
Prerequisite Skills			
	BLM G-1	Grid Paper	Student Support
	BLM 8-1	Prerequisite Skills	Practice
	BLM 8-2	Prerequisite Skills Self-Assessment Checklist	Student Self-Assessment
8.1 Future Value of an Ordinary Simple Annuity			
	BLM 8-3	Section 8.1 Future Value of an Ordinary Simple Annuity	Practice
	BLM 8-4	Section 8.1 Achievement Check Rubric	Assessment
8.2 Present Value of an Ordinary Simple Annuity			
	BLM A-9	Communication General Scoring Rubric	Assessment
	BLM 8-5	Section 8.2 Present Value of an Ordinary Simple Annuity	Practice
8.3 Payments and Total Interest			
	BLM 8-6	Section 8.3 Payments and Total Interest	Practice
8.4 Effects of Changing the Conditions of an Ordinary Simple Annuity			
	BLM A-13	Self-Assessment Recording Sheet	Student Self-Assessment
	BLM 8-7	Section 8.4 Effects of Changing the Conditions of an Ordinary Simple Annuity	Practice
	BLM 8-8	Section 8.4 Achievement Check Rubric	Assessment
Chapter 8 Review			
	BLM 8-9	Chapter 8 Review	Practice
	BLM A-13	Self-Assessment Recording Sheet	Student Self-Assessment
Chapter 8 Problem Wrap-Up			
	BLM 8-10	Chapter 8 Problem Wrap-Up Rubric	Summative Assessment
Chapter 8 Practice Test			
	BLM 8-11	Chapter 8 Practice Test	Diagnostic Assessment
	BLM 8-12	Chapter 8 Test	Summative Assessment
	BLM 8-13	Chapter 8 Practice Test Achievement Check Rubric	Assessment
Chapter 8 Task: Planning for Post-Secondary Education			
	BLM A-17	Learning Skills Checklist	Assessment
	BLM 8-14	Chapter 8 Task Rubric	Assessment
Chapters 6 to 8 Review			
	BLM A-13	Self-Assessment Recording Sheet	Student Self-Assessment
	BLM A-14	Self-Assessment Checklist	Student Self-Assessment
	BLM 8-15	Chapter 8 BLM Answers	Answers

Prerequisite Skills

Student Text Pages

380–381

Suggested Timing

40–70 min

Materials and Technology Tools

- calculator
- graphing calculator
- TVM solver
- grid paper (optional)

Related Resources

- BLM G–1 Grid Paper
- BLM 8–1 Prerequisite Skills
- BLM 8–2 Prerequisite Skills Self-Assessment Checklist

Common Errors

- Some students may make errors entering values into a calculator.
- R_x** Have students check their answers twice using a calculator or with a classmate.
- Some students may have difficulty understanding the meaning of negative exponents.
- R_x** Have students create a table of values showing the pattern in a power with a descending order of exponents, such as 2^{+3} to 2^{-3} .
- Some students may have difficulty calculating simple and compound interest.
- R_x** Have students write the appropriate formulas in their notebooks with the given values substituted for the variables.

Accommodations

Visual—post the formulas for calculating simple and compound interest in the classroom

Motor—encourage students to use a graphing calculator to graph exponential functions

Teaching Suggestions

- Make graphing calculators available to students, if possible.
- Have students estimate their answers before using a calculator. Students should reflect on the reasonableness of their calculated answers.
- Solve part a) of some questions for the class to help students get started.
- For stronger students, assign every other question or all questions but only some parts. Weaker students may require more practice.
- Use **BLM 8–1 Prerequisite Skills** for remediation or extra practice. To further reinforce the concepts, you may wish to refer students to specific skills in the **Prerequisite Skills Appendix** on student text pages 420–435.

Assessment

- Assess student readiness to proceed by informal observation as students are working on the questions. A formal test is inappropriate since this material is not part of the curriculum to be covered by this chapter.
- Student self-assessment is also an effective technique; students can place a checkmark beside topics in the Prerequisite Skills in which they feel confident with the necessary skills. Use **BLM 8-2 Prerequisite Skills Self-Assessment Checklist** as a self-assessment for students.
- Remedial action can be taken in small groups or in a whole-class skills review.

Chapter Problem

- The Chapter Problem is introduced in the Chapter 8 opener. Have students discuss their understanding of the topic. You may wish to have students complete the Chapter Problem revisits that occur throughout the chapter. These questions are designed to help students move toward the Chapter 8 Problem Wrap-Up at the end of the Chapter 8 Review.
- Students may wish to keep their solutions to the Chapter Problem revisits and then present their solution as a large completed assignment. By keeping notes separate, students can readily view how the new concepts are integrated into the original problem.
- Alternatively, you may wish to assign the Chapter Problem when students have completed the chapter. The Chapter Problem can be used as a summative assessment tool.