Algebra 2

Coursebook

Oak Meadow

Oak Meadow, Inc.
Post Office Box 615
Putney, Vermont 05346
oakmeadow.com

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Introduction

Welcome to *Algebra 2*!

This course is designed for independent learning, so hopefully you will find it easy to navigate. However, it is assumed you will have an adult (such as a parent, tutor, or school-based teacher) supervising your work and providing support and feedback. We'll refer to this person as "your teacher" throughout this course. If you have a question about your work, ask your teacher for help.

Please read this entire course introduction before beginning lesson 1. This information will help you be more successful and get the most out of this course.

Course Materials

The following textbook is required for this course:

- *Algebra 2* by Elayn Martin-Gay (Pearson, 2016)

This textbook is accompanied by an online resource called MyMathLab (MML) that contains many helpful tools, such as instructional videos, chapter test prep videos, a detailed solution manual, and the digital textbook. Using this resource is highly recommended. (Please note: The textbook refers to this resource as MyMathLab, but the website is now called MyLab Math. To match the textbook, in this course we'll use MyMathLab or MML to refer to this online resource.)

Note: MyMathLab is available for individual purchase for students using the course independently. Students who are enrolled can talk to their teacher about how to access MML.

This course draws from a wide variety of online resources, all of which can be accessed through the Oak Meadow website at the following link:

"Curriculum Links"

oakmeadow.com/curriculum-links

Bookmark this page for easy access to all the online resources mentioned in the activities.

Course Organization

This course is organized into 13 lessons that correspond to the chapters in the textbook. Each lesson is divided into two parts (with the exceptions of lessons 1 and 5), which allows you to submit work to your teacher and get regular feedback.

Chapter 5 has some flexibility. It can be completed in order, skipped entirely for timing purposes, or returned to at the end of the course if time allows. Please check in with your teacher when you get to chapter 5 to discuss which option is best for you. In addition, there are three optional bonus units. If time allows, you are encouraged to complete part or all of these units for extra enrichment at the end of the course. Please consult with your teacher before beginning any bonus unit.

When you begin each lesson, take a few minutes to look over all the assignments and activity options. This will help you plan your time accordingly. Use the assignment checklist at the beginning of each lesson to check off tasks as you complete them so you can see at a glance what you still need to do.

The length of each chapter varies. Most will take 2–4 weeks. Following the schedule suggested below will allow you to successfully complete the course within a ten-month school year.

Lesson and Textbook Chapter Title	Time to Complete (weeks)
1. Real Numbers and Algebraic Expressions	1
2. Equations, Inequalities, and Problem Solving	2
3. Graphs and Functions	2
4. Systems of Equations	3
5. More Work with Matrices	2
6. Exponents, Polynomials, and Polynomial Functions	4
7. Rational Expressions	3
8. Rational Exponents, Radicals, and Complex Numbers	4
9. Quadratic and Higher Degree Equations and Functions	2–3
10. Exponential and Logarithmic Functions	3
11. Graphing Quadratic Functions, Rational Functions, and Conic Sections	4
12. Sequences, Series, and the Binomial Theorem	2
13. Counting Methods and Probability	3

Lessons include the following components:

Exploratory activities appear at the beginning of each textbook chapter (part 1 of each lesson). These activities are a chance to assess what you already know and to play with the ideas in a

lesson before the textbook tells you much about them. Complete these activities first, and then check your answers in the appendix of this coursebook.

Exercise sets, found in the textbook, help you develop necessary skills. Please work on them daily, check your answers using the answer key at the back of the textbook or the online solution manual, and correct the problems where you made mistakes. **It is essential that you review and correct any problems you answered incorrectly before moving forward to the next exercise set.** Otherwise, you won't know whether or not you understand the ideas in the lesson. If you are not sure how to correct a mistake, please reach out to your teacher for help.

Chapter tests are found in the textbook at the end of each chapter. After completing a chapter test, you or a supervising adult will grade it and mark the score at the top, such as 18/20. Then, review any mistakes and make necessary corrections. (Students working with a school-based teacher may also be given a different test, which only the teacher will have the answers for.)

Activities are designed to help you apply your learning in new ways and to promote critical and creative thinking. You will be given opportunities to explore real-world applications, dive deeper into concepts with technology, analyze concepts from a historical and cultural perspective, apply math concepts artistically, look at issues in society through a mathematical lens, explore financial applications of the concepts you have learned, and more. Most importantly, you get to choose the activity that is most appealing to you. Whether that means investigating a concept you enjoy, challenging yourself with something outside your comfort zone, or exploring your creative side, activities let you take ownership over the direction of your learning!

Share Your Work provides a reminder of what to share with your teacher at the end of each lesson.

It is important that you always show your work and/or explain your thinking, wherever relevant, so your teacher can see where you are having difficulty and better support your learning.

Note: In order to be considered complete, math assignments need to include handwritten computations showing how you arrived at your final answer.

Information About Exercise Sets

- The exercise sets listed are suggestions. More or fewer problems can be done as needed. The textbook includes answers to odd-numbered problems in the exercise sets. You can do even-numbered problems for extra practice, but you will not be able to check your answers.
- If you have access to MyMathLab, you are strongly encouraged to check your work using the online solution manual, which has fully worked out solutions for each problem.
- Primarily, odd-numbered problems are assigned. Note that many assignments suggest completing every other odd (abbreviated "EO odd"), which refers to problems 1, 5, 9, 13, and so on. You may want to circle these problems in the textbook to make sure you are completing the correct ones.

- Concept Extensions can be found at the end of each problem set in the textbook for additional learning and challenges. There are some extension problems included in the assignment list, but you are encouraged to explore as many of these problems as you wish.
- There is a Standardized Test Practice section at the end of each chapter that provides practice for standardized testing. You might consider completing a few of these throughout the course.

Information About Activities and Exploratory Activities

- When submitting your work for each activity, clearly indicate which activity you have completed. Be sure to include all relevant work.
- Many of the activities ask you to answer some reflection questions. You may choose to answer these questions in writing, as an audio recording, or as a video recording. Any method is acceptable as long as you thoroughly explain your answers and submit them in a format your teacher can access.
- Many of the exploratory exercises and activities in this course are open-ended. This means they do not necessarily have a "right" answer or they have more than one correct solution. There could be multiple ways to approach these problems and multiple ways to answer them correctly.
- In the case of the exploratory exercises, many are meant to probe your thinking and pique your curiosity about the learning in that lesson. You will not always be able to come up with a definitive answer to those exercises, and that is fine! Math is about making observations, asking questions, exploring your curiosity, stretching your thinking, and keeping a flexible and open mind.

Activities will be assessed according to the following criteria.

Problem-Solving and Precision Work is clear, organized, and detailed. Appropriate symbols, labels, units, and terminology are used.
Reasoning and Explaining Symbols, words, and diagrams are interpreted with mathematical meaning. Prior knowledge is integrated into reasoning.
Modeling and Using Tools Models, tools, and strategies are used to simplify, explain, give structure, and/or communicate a problem-solving strategy and a solution.
Seeing Structure and Generalizing Structures and patterns are identified and extended to make generalizations and/or connections to prior learning.

Academic Expectations

You are expected to complete your work with integrity and always submit your own original work. The appendix contains important material that you will need to read and incorporate into your work throughout the year.

A Note About the Workload

Students vary greatly in terms of reading speed, reading comprehension, and computational abilities. Some may find the reading in this course takes longer than expected; others may find the math problems or activities take a great deal of time. In general, you can expect to spend about 5–7 hours per week on this course. If you need more time to complete the work, you can modify some lessons to focus on fewer assignments or skip activities in some lessons to spend more time on other assignments. Modifications like these will allow you to produce work of a higher quality. Each lesson in this course can be customized to suit your needs.

Keep an eye on the workload as you progress through the course. Make adjustments so you have time for meaningful learning experiences rather than rushing to try to get everything done. Always consult with your teacher when making adjustments to the workload.

We wish you a challenging and successful year of *Algebra 2*!

Lesson

1

Real Numbers and Algebraic Expressions

ASSIGNMENT CHECKLIST

- ☐ Complete the exploratory activity.
- ☐ Read the preface and sections 1.1–1.4 and complete the assigned problems.
- ☐ Complete the chapter 1 test.
- ☐ Choose an activity to complete:
  - Activity A: Integrated Review
  - Activity B: The Cost of Minimum Payments
  - Activity C: Which One Doesn't Fit? Simplifying Expressions
  - Activity D: Explore Sets
  - Activity E: Fill in the Blank—Algebraic Properties

Exploratory Activity

Four people simplified the following expression in four different ways. Who did it correctly?

$$12 - 6 \div 2 \cdot 3 + 1$$

1. $12 - 6 \div 2 \cdot 3 + 1$
   $6 \div 2 \cdot 3 + 1$
   $3 \cdot 3 + 1$
   $9 + 1$
   10

2. $12 - 6 \div 2 \cdot 3 + 1$
   $6 \div 2 \cdot 3 + 1$
   $6 \div 6 + 1$
   $1 + 1$
   2

3. $12 - 6 \div 2 \cdot 3 + 1$

   $12 - 6 \div 6 + 1$

   $12 - 1 + 1$

   $11 + 1$

   12

4. $12 - 6 \div 2 \cdot 3 + 1$

   $12 - 3 \cdot 3 + 1$

   $12 - 9 + 1$

   $3 + 1$

   4

Lesson Introduction

Suggested time: 1 week

In this course, you will revisit concepts you learned in *Algebra 1*, explore them more in depth, and expand your learning to new topics as well. You will begin in this first lesson by reestablishing some of the basic **foundational skills** that help us solve all kinds of problems. From using the order of operation to simplifying expressions to classifying different types of numbers, these skills will set you up for success in this course and beyond. Let's get started!

Learning Objectives

Use the checklist below to track how your skills are developing over time, and identify skills that need more practice as you work through this lesson.

Skills	Notes
Perform arithmetic with rational numbers	
Apply the order of operations to simplify expressions	
Apply the order of operations to evaluate expressions for given values	
Translate mathematical sentences into equations or inequalities using appropriate symbols	
Identify and use identity, inverse, associative, commutative, and distributive properties	

Exercise Sets

Read the following sections, and then complete the accompanying problem sets. Plan to complete a portion each day. If you have online access to MyMathLab, you can watch the instructional videos as well.

As you complete each set of problems, check your answers using the answer key at the back of the textbook. Correct any problems where you made mistakes. If you need help, let your teacher know.

1. Read the preface (x) and section 1.1, "Tips for Success in Mathematics" (1).
2. Read section 1.2, "Algebraic Expressions and Sets of Numbers" (15), and then complete the following problems in Exercise Set 1.2.
    - 1–21 every other (EO) odd
    - 29, 31–75 EO odd
    - 79, 89, 93
3. Read section 1.3, "Operations on Real Numbers" (27), and then complete the following problems in Exercise Set 1.3.
    - 43–95 EO odd
4. Read section 1.4, "Properties of Real Numbers" (38), and then complete the following problems in Exercise Set 1.4.
    - 1–33 EO odd
    - 35, 37, 43, 47, 51, 55, 57
    - 61–71 odd
    - 75, 83–103 EO odd
5. Optional: If you would like more practice, you have the option of completing the following, doing as many problems as needed.
    - Chapter 1 Review and Vocabulary Check (41)
    - Chapter 1 Standardized Test Practice (44)

Chapter Test

In your textbook, complete the chapter 1 test on page 44. After completing the test, you or a supervising adult will grade it and mark the score at the top (for instance, 18/20). Then, review any mistakes and make necessary corrections.

Activities

Choose one of the following activities to complete.

- Activity A: Integrated Review
- Activity B: The Cost of Minimum Payments
- Activity C: Which One Doesn't Fit? Simplifying Expressions
- Activity D: Explore Sets
- Activity E: Fill in the Blank—Algebraic Properties

Note: Many of the activities in this course contain reflection questions. You may choose to answer these questions in writing, as an audio recording, or as a video recording. Regardless of the method, make sure you thoroughly explain your answers. Please consult with your teacher if you have questions about how to submit audio or video recordings.

Activities can be assessed according to the criteria found in the rubric below.

	Notes
Problem-Solving and Precision Work is clear, organized, and detailed. Appropriate symbols, labels, units, and terminology are used.	
Reasoning and Explaining Symbols, words, and diagrams are interpreted with mathematical meaning. Prior knowledge is integrated into reasoning.	
Modeling and Using Tools Models, tools, and strategies are used to simplify, explain, give structure, and/or communicate a problem-solving strategy and a solution.	
Seeing Structure and Generalizing Structures and patterns are identified and extended to make generalizations and/or connections to prior learning.	

Activity A: Integrated Review

In your textbook, complete the integrated review on page 29, problems 1–16 all. Show all your work. Check your answers in the textbook appendix, and make corrections to any problems you missed.

Activity B: The Cost of Minimum Payments

Complete the following activity to explore the order of operations and translating word problems in real-world personal finance. This activity covers credit cards, minimum payments, and compound interest.

1. On the following worksheet, read the introduction, and watch the two videos linked on the first page. You can either print this document and complete your work directly on it or use a separate sheet of paper to answer the questions.

   "Math: The Cost of Minimum Payments"

   (All online resources can be accessed through the Oak Meadow website at oakmeadow.com/curriculum-links.)

2. Study the example problem in Part I, and then complete the practice problems in Part II and the reflection questions in Part III. Show all your work.

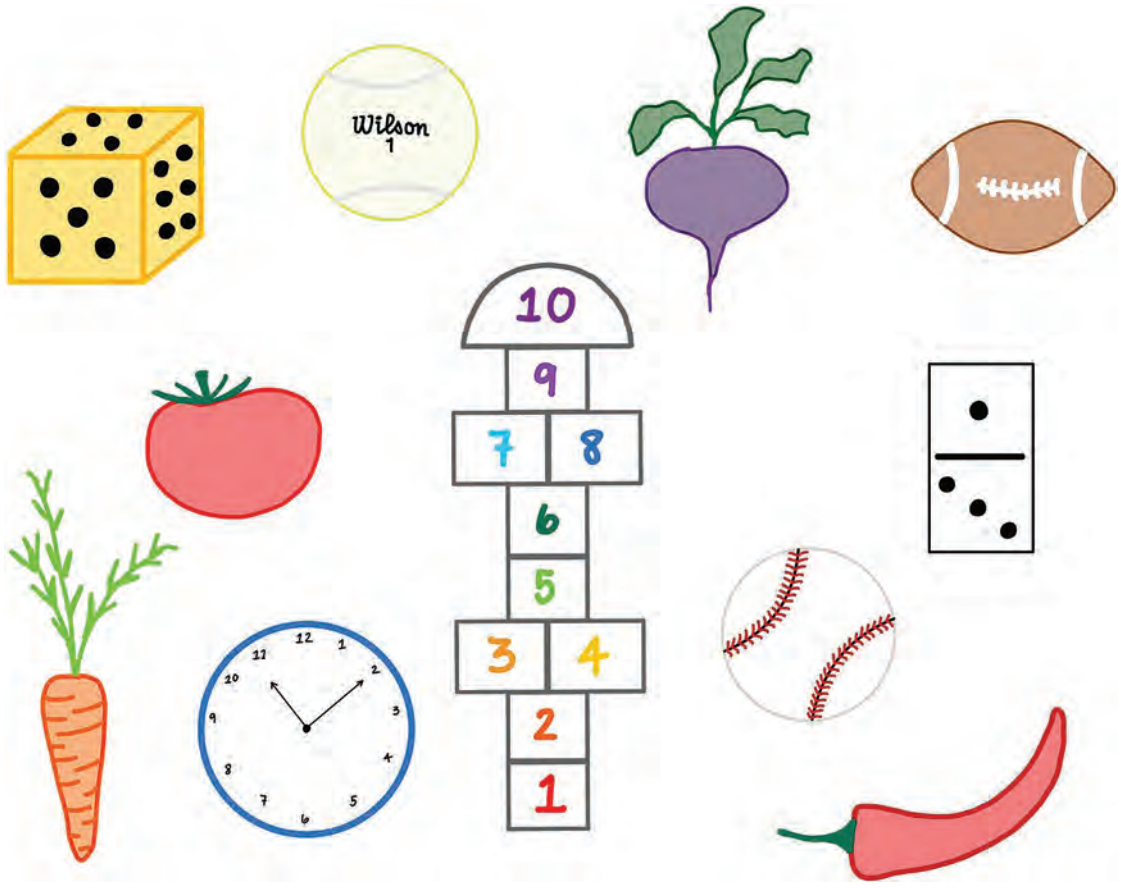
Activity C: Which One Doesn't Fit? Simplifying Expressions

A	B	C	D
$\frac{\lvert -3 \rvert^2 + 5}{\sqrt{9} - 3}$	$\frac{2\sqrt{11} - 3\sqrt{11}}{-4 + \sqrt{9}}$	$\frac{-2\sqrt{16+9} + 10}{\lvert -2 - 3 \rvert}$	$\frac{5^2 - 2 \cdot 9 - 6}{\lvert -3 + \sqrt{16} \rvert}$

Which one doesn't fit? Explain your answer.

Activity D: Explore Sets

Observe the following objects and think about how you would group them.



1. What groups can you create?
2. Can you categorize any subgroups within any of the groups? Can you represent one with a diagram?
3. Are there any objects that belong to more than one group? Can you create a diagram that represents this?
4. Can you think of a group that none of these objects belong to?
5. What you have essentially done above is created sets, subsets, intersections, and the empty (or null) set. Review the following definitions and notation.

   Set: A collection of elements (objects, numbers, etc.).

   Example: The set of all elements that are multiples of 5 between 1 and 20 is $A = \{5, 10, 15, 20\}$.

   Cardinality: The number of elements a set contains.

   Example: If $A = \{5, 10, 15, 20\}$, then the cardinality of A is 4.

Empty (null) set: A set that contains no elements.

Example: If $A = \{\ \}$, we say $A = \{\ \}$ or $A = \emptyset$. We don't say $A = \{\emptyset\}$ because that set contains an element.

Subset: Part of a given set (B is a subset of A if all the elements of B are contained within A).

Example. $B = \{10, 20\}$ is a subset of $A = \{5, 10, 15, 20\}$. We say $B \subset A$ if it is a subset and $B \not\subset A$ if it is not a subset.

Power set: The set of all subsets of a given set, including the empty set.

Example: If $A = \{5, 10, 15\}$, its power set would be $\{\ \}, \{5\}, \{10\}, \{15\}, \{5, 10\}, \{5, 15\}, \{10, 15\}, \{5, 10, 15\}$. We say $P(A) = \{\{\ \}, \{5\}, \{10\}, \{15\}, \{5, 10\}, \{5, 15\}, \{10, 15\}, \{5, 10, 15\}\}$.

Intersection: The elements that two sets share in common (as in the overlap in a Venn diagram).

Example: If $A = \{2, 4, 6, 8, 10\}$ and $B = \{1, 2, 3, 4, 5\}$, their intersection would be the elements 2 and 4. We say $A \cap B = \{2, 4\}$.

Union: All the elements contained within two sets (as in the entire Venn diagram).

Example: If $A = \{2, 4, 6, 8, 10\}$ and $B = \{1, 2, 3, 4, 5\}$, their union would be every element in both sets. We say $A \cup B = \{1, 2, 3, 4, 5, 6, 8, 10\}$.

With this information in mind, answer the following questions.

a. Set A is the set of all odd integers between 20 and 30. Set B is the set of all multiples of 3 between 9 and 33. Set C is the set of all multiples of 4 between 16 and 30. D is the set of all multiples of 9 between 1 and 20. Define these sets and state their cardinality.

b. Name any subsets using the appropriate notation.

c. Define the following:

   $A \cap B$

   $B \cap C$

   $C \cap D$

d. Define the following:

   $A \cup C$

   $B \cup C$

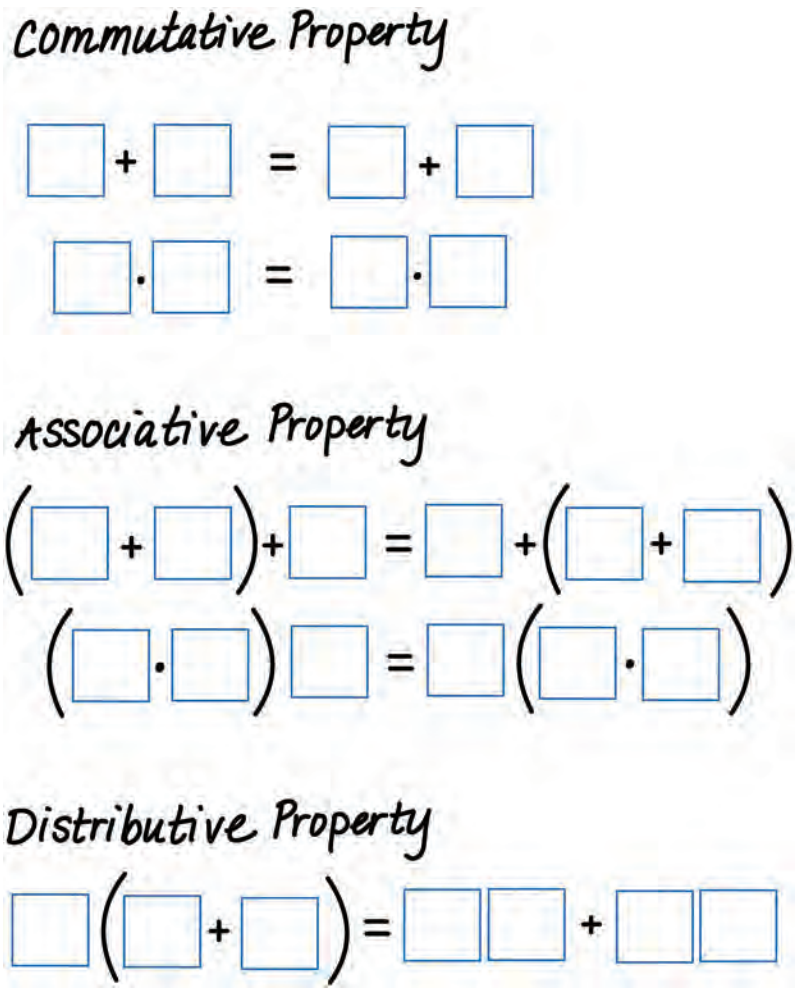
   $B \cup D$

e. Define $P(C)$ and state its cardinality

Activity E: Fill in the Blank—Algebraic Properties

Using the digits 0 through 9, fill in the blue squares to demonstrate each of the following properties for the given number. You should not use the same digit twice on one side of any equation.

Rewrite the number 16 according to each property:



SHARE YOUR WORK

When you have completed this portion of the lesson, please share the following work with your teacher.

- Exercise sets 1.2–1.4 (showing handwritten computations and corrections)
- Chapter 1 test
- Choice of activity (labeled with the title of the activity):
  - Activity A: Integrated Review
  - Activity B: The Cost of Minimum Payments

- Activity C: Which One Doesn't Fit? Simplifying Expressions
- Activity D: Explore Sets
- Activity E: Fill in the Blank—Algebraic Properties

Make sure everything is labeled and you've included all your handwritten computations. If you have any questions about the work or how to share it, contact your teacher.

Lesson

2

Part 1: Equations, Inequalities, and Problem Solving

Exploratory Activity

Compare the following statements.

$\frac{3}{4}(x+2) \leq x-3$ $\frac{3}{4}x+\frac{3}{2}=x-3$

How are they the same?

How are they different?

Lesson Introduction

Suggested time: 1 week

Solving **equations** and **inequalities** is one of the most fundamental skills required in mathematics. You have likely solved some fairly complex equations before, and you will continue to build on those skills as we explore various types of equations and inequalities throughout this course. However, it is important to make sure you have the fundamentals of solving them down first! In this lesson, you will learn critical problem-solving skills that will help you throughout the remainder of this course and beyond.

ASSIGNMENT CHECKLIST

- ☐ Complete the exploratory activity.
- ☐ Read sections 2.1–2.4 and complete the assigned problems.
- ☐ Choose an activity to complete:
  - Activity A: Integrated Review
  - Activity B: Compound Interest Pitfalls
  - Activity C: Puzzles—Equations and Problem-Solving

Learning Objectives

Use the checklist below to track how your skills are developing over time, and identify skills that need more practice as you work through part 1 and part 2 of this lesson.

Skills	Notes
Solve multistep equations involving the distributive property	
Solve multistep equations involving rational expressions	

Skills	Notes
Solve multistep equations involving absolute value	
Manipulate equations to isolate a specified variable	
Solve and graph inequalities on a number line	
Interpret and solve application problems involving equations and inequalities	

Exercise Sets

Read the following sections, and then complete the accompanying problem sets. Plan to complete a portion each day. If you have online access to MyMathLab, you can watch the instructional videos as well.

As you complete each set of problems, check your answers using the answer key at the back of the textbook. Correct any problems where you made mistakes. If you need help, let your teacher know.

1. Read section 2.1, "Linear Equations in One Variable" (54), and then complete the following problems in Exercise Set 2.1.
    - 1–65 EO odd
2. Read section 2.2, "An Introduction to Problem Solving" (62), and then complete the following problems in Exercise Set 2.2.
    - 1–69 EO odd
3. Read section 2.3, "Formulas and Problem Solving" (71), and then complete the following problems in Exercise Set 2.3.
    - 1–53 EO odd
4. Read section 2.4, "Linear Inequalities and Problem Solving" (82), and then complete the following problems in Exercise Set 2.4.
    - 1–33 odd
    - 59–67 odd
    - 71–87 odd

Activities

Choose one of the following activities to complete.

- Activity A: Integrated Review
- Activity B: Compound Interest Pitfalls
- Activity C: Puzzles—Equations and Problem-Solving

Note: Many of the activities in this course contain reflection questions. You may choose to answer these questions in writing, as an audio recording, or as a video recording. Regardless of the method, make sure you thoroughly explain your answers. Please consult with your teacher if you have questions about how to submit audio or video recordings.

Activities can be assessed according to the criteria found in the rubric below.

	Notes
Problem-Solving and Precision Work is clear, organized, and detailed. Appropriate symbols, labels, units, and terminology are used.	
Reasoning and Explaining Symbols, words, and diagrams are interpreted with mathematical meaning. Prior knowledge is integrated into reasoning.	
Modeling and Using Tools Models, tools, and strategies are used to simplify, explain, give structure, and/or communicate a problem-solving strategy and a solution.	
Seeing Structure and Generalizing Structures and patterns are identified and extended to make generalizations and/or connections to prior learning.	

Activity A: Integrated Review

In your textbook, complete the integrated review on page 85, problems 1–27 odd. Show all your work. Check your answers in the textbook appendix, and make corrections to any problems you missed.

Activity B: Compound Interest Pitfalls

Complete the following activity to explore the compound interest formula in real-world behavioral finance. This activity covers credit card debt, payday loans, compound interest, and the order of operations.

1. On the following worksheet, read the introduction, and watch the video linked in the upper right corner. You can either print this document and complete your work directly on it or use a separate sheet of paper to answer the questions.

   "Math: Compound Interest Pitfalls"

   (All online resources can be accessed through the Oak Meadow website at oakmeadow.com/curriculum-links.)

2. Study the example problem in Part I, and then complete the practice problems in Part II and the reflection questions in Part III. Show all your work.

Activity C: Puzzles—Equations and Problem-Solving

Complete one of the following puzzles. Show all your work supporting your answers.

1. Given the following equation where a, b, c, d, and e are all integers, find the value of $a + b + c + d + e$.

   $$(2x + ay + b)(cx + dy + 9) = 6x^2 + exy + 3y^2 - 12x + 17y - 90$$

   Hint: at some point during the problem-solving process, you need to factor a quadratic trinomial.

2. Points P and Q are between A and B and trisect line segment A and B (that is, they cut it in three equal parts). If $AQ = 7x + 6$ and $PQ = 3x + 5$, find the length of AB.

   Hint: there are two possible answers depending on the arrangement of P and Q.

SHARE YOUR WORK

When you have completed this portion of the lesson, please share the following work with your teacher.

- Exercise sets 2.1–2.4 (showing handwritten computations and corrections)
- Choice of activity (labeled with the title of the activity):
  - Activity A: Integrated Review
  - Activity B: Compound Interest Pitfalls
  - Activity C: Puzzles—Equations and Problem-Solving

Make sure everything is labeled and you've included all your handwritten computations. If you have any questions about the work or how to share it, contact your teacher.

Lesson

2

Part 2: Equations, Inequalities, and Problem Solving

Lesson Introduction

Suggested time: 1 week

Lesson 2 continues with part 2. Refer to part 1 for learning objectives.

Exercise Sets

Read the following sections, and then complete the accompanying problem sets. Plan to complete a portion each day. If you have online access to MyMathLab, you can watch the instructional videos as well.

As you complete each set of problems, check your answers using the answer key at the back of the textbook. Correct any problems where you made mistakes. If you need help, let your teacher know.

1. Read section 2.5, "Compound Inequalities" (90), and then complete the following problems in Exercise Set 2.5.
    - ☐ 1–45 EO odd
    - ☐ 63–71 odd
2. Read section 2.6, "Absolute Value Equations" (96), and then complete the following problems in Exercise Set 2.6.
    - ☐ 1–73 EO odd
    - ☐ Extension 83–87 odd
3. Read section 2.7, "Absolute Value Inequalities" (101), and then complete the following problems in Exercise Set 2.7.
    - ☐ 29–81 EO odd
    - ☐ Extension 93–97 odd

ASSIGNMENT CHECKLIST

- ☐ Read sections 2.5–2.7 and complete the assigned problems.
- ☐ Complete the chapter 2 test.
- ☐ Choose an activity to complete:
    - Activity A: Fill in the Blank—Absolute Value Inequalities
    - Activity B: Which One Doesn't Fit? Compound Inequalities
    - Activity C: Error Analysis of Absolute Value Inequalities

4. Optional: If you would like more practice, you have the option of completing the following, doing as many problems as needed.
    - ☐ Chapter 2 Review and Vocabulary Check (103)
    - ☐ Chapter 2 Standardized Test Practice (108)

Chapter Test

In your textbook, complete the chapter 2 test on page 105. After completing the test, you or a supervising adult will grade it and mark the score at the top (for instance, 18/20). Then, review any mistakes and make necessary corrections.

Activities

Choose one of the following activities to complete.

- Activity A: Fill in the Blank—Absolute Value Inequalities
- Activity B: Which One Doesn't Fit? Compound Inequalities
- Activity C: Error Analysis of Absolute Value Inequalities

Note: Many of the activities in this course contain reflection questions. You may choose to answer these questions in writing, as an audio recording, or as a video recording. Regardless of the method, make sure you thoroughly explain your answers. Please consult with your teacher if you have questions about how to submit audio or video recordings.

Activities can be assessed according to the criteria found in the rubric below.

	Notes
Problem-Solving and Precision Work is clear, organized, and detailed. Appropriate symbols, labels, units, and terminology are used.	
Reasoning and Explaining Symbols, words, and diagrams are interpreted with mathematical meaning. Prior knowledge is integrated into reasoning.	
Modeling and Using Tools Models, tools, and strategies are used to simplify, explain, give structure, and/or communicate a problem-solving strategy and a solution.	

	Notes
Seeing Structure and Generalizing Structures and patterns are identified and extended to make generalizations and/or connections to prior learning.	

Activity A: Fill in the Blank—Absolute Value Inequalities

Fill in the blue squares with the integers –9 through 9, no more than once each, to meet the following conditions. Show all your work to verify your answer.

1. There is no solution.
2. The solution is "all real numbers."

Activity B: Which One Doesn't Fit? Compound Inequalities

A	B	C	D
$x < -9$ or $x > -9$	$x \leq -9$ and $x > -9$	$x \leq -9$ and $x \leq 9$	$x < -9$ or $x \leq 9$

Which one doesn't fit? Fully justify your answer.

Activity C: Error Analysis of Absolute Value Inequalities

A student solved the following problem and made several errors. Examine their work.

Problem: $2|5x - 3| + 4 \geq 22$

Student work: $2|5x - 3| + 4 \geq 22$

$$2(5x - 3) + 4 \geq 22 \qquad 2(5x - 3) + 4 \geq -22$$
$$10x - 6 + 4 \geq 22 \qquad 10x - 6 + 4 \geq -22$$
$$10x - 2 \geq 22 \qquad 10x - 2 \geq -22$$
$$10x \geq 24 \qquad 10x \geq -20$$
$$x \geq \frac{12}{5} \qquad x \geq -2$$

Answer: $-2 \leq x \geq \frac{12}{5}$

1. What errors did the student make?
2. Solve the problem correctly.
3. What advice would you give to help someone solve absolute value inequalities?

SHARE YOUR WORK

When you have completed this portion of the lesson, please share the following work with your teacher.

- Exercise sets 2.5–2.7 (showing handwritten computations and corrections)
- Chapter 2 test
- Choice of activity (labeled with the title of the activity):
  - Activity A: Fill in the Blank—Absolute Value Inequalities
  - Activity B: Which One Doesn't Fit? Compound Inequalities
  - Activity C: Error Analysis of Absolute Value Inequalities

Make sure everything is labeled and you've included all your handwritten computations. If you have any questions about the work or how to share it, contact your teacher.

Appendix