



# Oak Meadow

K-12 CURRICULUM AND DISTANCE LEARNING

## Algebra II

*For enrollment only*

This course covers intermediate algebraic concepts to provide students with solid foundational skills to prepare them for success in PreCalculus and beyond. Topics include a review of real numbers and algebraic expressions, equations, inequalities, and problem-solving, systems of equations and inequalities in two and three variables, matrices, exponents, rational expressions and equations, radicals, complex numbers, functions and their graphs (quadratic, rational, exponential, logarithmic, and polynomial), conic sections, sequences, series, the Binomial Theorem, counting methods, and probability theory.

Students also have the opportunity to explore extension concepts including topics in statistics, as well as introductory precalculus skills including trigonometric functions, trigonometric identities, equations, and applications.

### Course Materials

- Algebra 2 by Elayn Martin-Gay (Pearson, 2016)
- MyMathLab (online resource)
- Oak Meadow Assessment Tests

### About MyMathLab

Students will have access to learning resources through MyMathLab® including an online textbook, an interactive lecture series of instructional videos aligned with the textbook, chapter test prep videos, student success tips videos, an online solution manual, and a student organizer to guide students through effective study skills including note-taking and practice exercises.

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# **Algebra 2**

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# Algebra 2 Course Syllabus

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## For Students Enrolled in Oak Meadow School

### Materials List

- *Algebra 2* by Elayn Martin-Gay (Pearson, 2016)
- MyMathLab (online resource)
- Oak Meadow Assessment Tests

### Course Organization

This course is arranged into 13 units. Your Algebra 2 textbook is organized into 13 chapters that correspond to these 13 units. In addition, there are 3 optional bonus units. The length of each chapter varies, and the suggested time to be spent on each unit is shown here and included in the syllabus below. Following this suggested schedule will allow you to successfully complete the course within your 10-month enrollment period.

Unit	Topics	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	Factoring Polynomials	3–4
8	Rational Exponents, Radicals, and Complex Numbers	4
9	Quadratic and Higher Degree Equations and Functions	2–3
10	Exponential and Logarithmic Functions	3–4
11	Graphing Quadratic Functions, Rational Functions, and Conic Sections	4
12	Sequences, Series, and the Binomial Theorem	2
13	Counting Methods and Probability	3

This syllabus includes regular submission points in the schedule that will allow you to get consistent and timely learning support from your Oak Meadow teacher. These submission checkpoints occur

approximately every two weeks: one halfway through each chapter, when you will submit the integrated review assignment, and the second at the end of each chapter, when you submit the chapter test as well as the Oak Meadow Assessment Test.

You are welcome to check in with your teacher more frequently, if needed. If you are unable to maintain this schedule, please discuss it with your teacher. Regular communication with your teacher is essential for a successful learning experience!

There are four main types of assignments. Exercise sets, integrated reviews, and chapter tests are all found in the textbook. Oak Meadow Assessment Tests are found in this syllabus.

Exercise sets help you develop necessary skills. You are encouraged to work on them daily and check your answers in the textbook answer key. **It is essential that you review and correct any problems you answered incorrectly before moving forward in the lesson.** If, after self-correction, you are still unsure of how to complete a problem, please reach out to your teacher for more guidance.

Integrated reviews are found midway through each chapter. Complete the required problems, check your answers, and make any necessary corrections. Let your teacher know if you have any questions about the material.

Chapter tests are found at the end of each chapter. After completing a chapter test, you or your home teacher should grade it and mark the score at the top (such as 18/20). Then, review any mistakes and make necessary corrections before taking the Oak Meadow Assessment Test.

Oak Meadow Assessment Tests, included in this syllabus, will be graded by your Oak Meadow teacher. Your final grade in the course will be primarily based on the average of your assessment test scores.

### Submitting Work to Your Teacher

The following work will be submitted to your teacher:

- ☐ **Exercise Sets** (with answers checked and corrections noted)
- ☐ **Integrated Reviews** (with answers checked and corrections noted)
- ☐ **Chapter Tests** (with answers checked, a score marked at the top, and corrections noted)
- ☐ **Oak Meadow Assessment Tests**

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

### Course Assignments and Requirements

- Please begin by reading the preface in your textbook. This will provide you with information about the resources available to you in this course (including the online resource MyMathLab) and how your textbook is organized.

- You do not have to do every problem in the textbook—a list of assignments is included in the chart starting on the next page. Check off assignments as you complete them.
- The exercise sets listed are suggestions. More or fewer problems can be done as needed. The textbook answer key 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 answer.
- Primarily odd-numbered problems are assigned. Note that many assignments suggest completing every other odd (“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 are included at the end of each problem set 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.
- This course contains 13 required units and 3 optional bonus units. If time allows, you are encouraged to complete part or all of the bonus units for extra enrichment at the end of the course. Please consult your teacher before starting any bonus unit.
- Your teacher will provide access information for MyMathLab, which includes online instructional videos. These videos are found in the Multimedia Library. From the CHAPTER drop-down menu, choose the chapter you are working on. Under MEDIA TYPE, select Section Video Lectures, then click Find Now. A library of video resources will appear. (You can also access chapter test prep videos, a digital copy of the textbook, and other resources from this menu.) MyMathLab also gives you digital access to a Video Organizer Notebook designed to be used while watching the instructional videos; you might find this resource particularly helpful.
- When checking your answers to exercise sets, you can find detailed solutions to odd-numbered problems on MyMathLab under Chapter Contents > Student Solutions Manual.

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

# Algebra 2 Assignments

## Chapter 1: Real Numbers and Algebraic Expressions

Suggested time: 1 week

Section	Page (textbook)	Problems
1.1 Tips for Success in Mathematics	x 1	<input type="checkbox"/> read the preface <input type="checkbox"/> read section 1.1
1.2 Algebraic Expressions and Sets of Numbers	15	1.2 Exercise Set <input type="checkbox"/> 5–95 by 5s (5, 10, 15, etc.)
1.3 Operations on Real Numbers	27	1.3 Exercise Set <input type="checkbox"/> 5–95 by 5s (5, 10, 15, etc.)
Integrated Review: Algebraic Expressions and Operations on Whole Numbers	29	<input type="checkbox"/> 1–16 all
<b>Submit the above work (with answers checked and corrections noted) to your Oak Meadow teacher before continuing.</b>		

**Chapter 1: Real Numbers and Algebraic Expressions (*continued*)**

Suggested time: 1 week

Section	Page (textbook)	Problems
1.4 Properties of Real Numbers	38	1.4 Exercise Set □ 5–105 by 5s (5, 10, 15, etc.)
Optional: Chapter 1 Review and Vocabulary Check	41	□ complete problems as needed
Chapter 1 Test	44	□ all problems
Optional: Chapter 1 Standardized Test Practice	44	□ complete problems as needed
Oak Meadow Assessment Test 1		□ all problems
<b>Submit the above work to your teacher (with answers checked and corrections noted on everything but the Oak Meadow Assessment Test) before continuing to the next chapter.</b>		



## Chapter

# 1

# Assessment Test

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Please show all your work in the space provided.

**Determine whether each statement is true or false. Write T or F in the blank after each statement.**

1.  $-(-3)^2 = -(3)^2$  \_\_\_\_\_

2.  $1.99 > 1.9$  \_\_\_\_\_

3. All integers are natural numbers. \_\_\_\_\_

4.  $\frac{0}{12} = \frac{12}{0}$  \_\_\_\_\_

5. All integers are rational numbers. \_\_\_\_\_

6.  $-5 + 4 = -(-5 - 4)$  \_\_\_\_\_

**Simplify.**

7.  $\frac{\frac{4}{9}}{\frac{-8}{45}}$

8.  $6(7-10)^2$

9.  $|5^2 - 2^2| + |9 \div (-3)|$

10.  $\frac{\sqrt{64}}{24 - 8 \cdot 2}$

11.  $\frac{3 - 7 - (7 - 3)}{15 + 30 \div 6 \cdot 2}$

12.  $\frac{(2 + 4)^2 + (-1)^5}{12 \div 2 \cdot 3 - 3}$

**Evaluate each expression when  $x = 0$ ,  $y = 3$ , and  $z = -2$ .**

13.  $\frac{5x + z^2}{2y}$

14.  $(x - y + z)^2$

15. The algebraic expression  $\pi r^2$  represents the area of a circle with radius  $r$ .

a. Complete the table below.

Radius	$r$	2	3	7	10
Area	$\pi r^2$				

b. As the radius of the circle increases, does the area increase or decrease?

**Write each statement using mathematical symbols.**

16. Twelve is the product of  $x$  and negative four.
17. Four times the sum of  $y$  and three is negative one.
18. Seven subtracted from  $z$  is six.
19. The difference of  $x$  and 5 is at least 12.
20. Two-thirds is not equal to twice the sum of one-fourth and three.
21. The product of 6 and  $x$  divided by the absolute value of  $-8$  is at most 9.

**Name each property illustrated.**

22.  $(m + 5) + p = m + (5 + p)$  \_\_\_\_\_
23.  $(-4) + 4 = 0$  \_\_\_\_\_
24.  $T \cdot 0 = 0$  \_\_\_\_\_
25.  $A + 0 = A$  \_\_\_\_\_
26.  $3(2x + 9) = 6x + 27$  \_\_\_\_\_

***Simplify each expression.***

27.  $-2\left(5x + \frac{1}{2}\right) + 7$

28.  $-\frac{7}{11} - \left(-\frac{1}{11}\right)$

29.  $\left(-\frac{2}{3}\right)^3 \div \frac{10}{9}$

30.  $\frac{1}{3}(9x - 3y) - (4x - 1) + 4y$