

Grade 8

Pre-Algebra Textbook

$3x+4=10$ Undo in
reverse order!

find
volume



PRE-ALGEBRA

ANSWER KEY & TEST BANK

$3x+4=10$ Undo in
reverse order!

find
volume



PRE-ALGEBRA

A TEACHING TEXTBOOK



2.0

1 gallon = 4 quarts

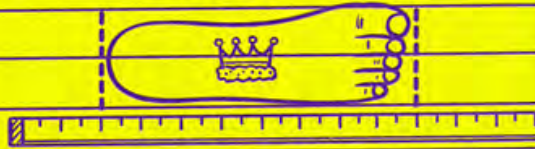
$$\begin{array}{r} 3.4 \\ 115 \overline{)400.0} \\ \underline{-345} \\ 550 \\ \underline{-460} \\ 90 \end{array}$$

$$\frac{5}{6} \times \frac{1}{3} = \frac{5}{18}$$

multiply tops
& bottoms

HEAR YE, HEAR YE.
THE KING'S FOOT SHALL
BECOME THE STANDARD
MEASURE!

$$7.36 \times 10 \text{ (17)}$$



old way $X \times 8 = 12$

algebra way $8X = 12$

Greg Sabouri
Shawn Sabouri

$$X \div 3 = 24$$

Grade 8 Pre-Algebra Teaching Textbook

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grade 8 MATH
PRE-ALGEBRA



oak meadow

INDEPENDENT LEARNING SINCE 1975

Oak Meadow Pre-Algebra Syllabus and B-Tests

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Item #b054120

Grade



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Grade Introduction

Course Instructions

There are many times in life when we face unknowns: a new job, a new place to live, traveling to a new place, searching for a missing piece of information. Algebra is all about defining unknowns. It shows us how to use symbols to represent unknown quantities, and apply a set of rules that lead us, step by step, through the problem-solving process. Learning to problem solve successfully—whether using numbers, ideas, words, concepts, or physical objects—is an essential and highly valuable life skill.

This pre-algebra course provides a solid foundation for learning to use algebra effectively. It also provides a transition between middle school math courses and high school math courses. You will find the work more challenging than your previous math courses. However, the textbook was written specially to guide independent learners. Working with your Oak Meadow teacher and a supportive adult at home, the course will help you develop strong math skills and habits that will prepare you well for high school work.

Please read this entire section of course instructions before you begin using the textbook. **Reading these course instructions is part of your first Oak Meadow lesson, and is required material.**

Course Materials

This course includes the following materials:

Oak Meadow Pre-Algebra Syllabus and B-tests (Oak Meadow 2017)

Pre-Algebra: A Teaching Textbook 2.0 Version (Teaching Textbooks 2011)

Pre-Algebra Answer Key and Test Blank 2.0 (Teaching Textbooks 2011)

Teaching Textbooks offers accompanying CDs that can be purchased separately, which include video lectures, interactive problems, and step-by-step solutions. These are not required to complete this course. If you find yourself needing extra support to understand the course



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material, you might consider purchasing the CDs. You can learn more at teachingtextbooks.com.

How the Course Is Organized

There are 36 lessons in a typical Oak Meadow course, one lesson per week. However, in this course, there are 18 lessons, and each one will take two weeks to complete. We will be following the structure of the textbook, which has 17 chapters. Each textbook chapter consists of 4 to 12 lessons. You will complete one textbook chapter every two weeks, and turn in work to your Oak Meadow teacher every two weeks (after each textbook chapter is complete).

The Oak Meadow (OM) lesson numbers match the Teaching Textbook (TT) chapter numbers. Since there are 139 TT lessons, there are many TT lessons in each OM lesson.

Notes about Your Teaching Textbook

Here are the topics covered in this course:

- OM Lesson 1/TT Chapter 1: Arithmetic Basics
- OM Lesson 2/TT Chapter 2: Rational Numbers
- OM Lesson 3/TT Chapter 3: Decimals
- OM Lesson 4/TT Chapter 4: Percents
- OM Lesson 5/TT Chapter 5: Measuring Length
- OM Lesson 6/TT Chapter 6: Measuring Area and Volume
- OM Lesson 7/TT Chapter 7: Simple Algebraic Equations
- OM Lesson 8/TT Chapter 8: Integers
- OM Lesson 9/TT Chapter 9: Longer Algebraic Equations
- OM Lesson 10/TT Chapter 10: Combining Like Terms
- OM Lesson 11/TT Chapter 11: Rational Expressions
- OM Lesson 12/TT Chapter 12: Powers, Polynomials, and Radicals
- OM Lesson 13/TT Chapter 13: Geometry



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- OM Lesson 14/TT Chapter 14: Geometry
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- OM Lesson 16/TT Chapter 16: Statistics, Probability, and Inequalities
- OM Lesson 17/TT Chapter 17: Absolute Value, Formulas
- OM Lesson 18: Year-End Review and Final Exam

How many of these topics do you recognize from your previous math courses? Are there any that are completely unfamiliar to you? If so, look at the table of contents in the front of your textbook and turn to that chapter. Once you glance at the problems, does anything look familiar? You might find that you *have* worked with some of the unfamiliar concepts without knowing the correct terms. Take a few minutes to look over the textbook table of contents to get an idea of what's ahead. (**Remember, this is part of your first lesson's work, so don't skip this part!**) Getting a good sense of how your textbook is organized will save you time and help you avoid frustration in the coming months.

In your Teaching Textbooks text, highlighted text focuses your attention on key information. You will see small numbers in parentheses beneath each problem number. These show the lesson in which each skill was introduced, and make it easy for you to review previous material as needed.

Spend a few minutes looking through the appendices in the back of the textbook. You'll find lists of math rules, formulas, terms, unit conversions, etc., that you can use for reference throughout the year. Look at the answer key as well (which is in a separate booklet). The TT chapter tests are included with the answer key. Figure out where the answers are for the tests (hint: they aren't in the same place as the answers for practice and problem sets).

When you begin your lessons, you may find that the explanations and the way examples are done is different than what you are used to or what you've learned previously. Sometimes the new explanation will make more sense to you and make the skill easier for you, and other times you might want to stick with the way you already learned. With math, there are often many ways to get to the correct answer. However, the examples in this course are designed to prepare you for more complex math in the future. Take your time learning these new ideas and skills. Try to figure out how they relate to what you already know. While the "new" way may take

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longer at first, each skill is an important tool that will help you—and save you time—in the future.

Planning Your Work

You'll notice that the first chapter has fewer lessons than the others and reviews basic material that you may already know. Look at the different number of TT lessons in each TT chapter—how will you organize your time? Notice that two TT chapters have 12 lessons in them (chapters 8 and 12). When you reach those lessons, you'll need to plan extra time to get all the work done in the two weeks allotted for each chapter. At the beginning of each TT chapter, count the number of TT lessons in that chapter and then figure out how the work can be accomplished in two weeks.

Since the first textbook chapter has fewer lessons than most chapters, use the extra time in the first two weeks to get to know the materials and plan your workload for the year accordingly. Use a planner or write a weekly list of what needs to be done, and then check off each task when it is completed.

In general, you can expect to complete one TT lesson and problem set each day. You can expect to do about 16 problems for each TT lesson. You will also complete a TT chapter test and an OM B-test at the end of each TT chapter (every two weeks). Doing a little bit of math each day will help you build your skills steadily and keep you from becoming bored, exhausted, or frustrated.

Don't try to do everything in one day. If you do, you are likely to make more errors, and absorb and retain less information. It's best to stick to one TT lesson per day as a regular practice. If you choose to complete two lessons in one day, do one in the morning and then one in the afternoon, giving yourself a long break in between to focus on something else. When you are working, allow yourself time for short breaks, if needed, so that your brain stays sharp and your attention stays focused.

Here's what you'll find in each TT lesson:

Reading: The reading section explains the work and provides examples. Read the whole section, paying close attention to the examples, before doing the practice problems.



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Practice: In each practice section, there are five problems labeled *a* through *e*, which focus on the skills introduced in the lesson. Complete these problems to check your understanding of the new material. You can work the problems out on paper, work them out in your head, or talk through how the problem would be solved. These problems will not be submitted to your Oak Meadow teacher but they are a necessary part of the course and will solidify your understanding of the skills and concepts.

Problem Set: Each problem set includes all previous skills as well as the new skills in that lesson. You will be doing only the **even-numbered problems** in the problem sets and submitting these to your Oak Meadow teacher (approximately 12 problems from each problem set).

Here's what you'll do for each OM lesson:

1. **Read the TT lesson instruction.** Pay careful attention to the examples.
2. **Complete the Practice** (problems *a–e*) to check your understanding of the concepts. You should be able to answer these questions (if not, reread the section or ask for help). Check your answers using the TT answer key.
3. **Complete the even-numbered problems in the Problem Set.** Circle the numbers of the even-numbered problems first (2, 4, 6, 8, etc.) so it's easy to see which ones you need to do, otherwise you'll probably end up doing more than you need to (which is not a bad thing but will just take more time!).
4. **Check your answers** using the TT answer key. Circle any answers that are incorrect, and rework the problem to get the correct answer. If you are having trouble getting the correct answer, reread the lesson explanation or ask for help. You can use the odd-numbered problems in the Problem Set if you need more practice.
5. **Complete all the problems in the TT chapter test** when you have completed all the TT lessons in the chapter.
6. **Ask an adult to check your test answers** using the TT answer key. The adult will circle any incorrect answers and then write your score at the top of the page (for instance, if you answer 20 correct out of 23 problems, your score is 20/23).



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7. **Make test corrections** after the test has been scored. Show your work so that your teacher can spot any areas needing more attention. As always, ask for help if you need it.
8. **Complete all the problems in the OM B-test.** This test will be checked and scored by your Oak Meadow teacher (you will not have access to B-test answers). Your grade for each OM lesson is based on your B-test score so make sure you understand the material before taking each B-test.

Show all your work when solving problems. Since you have access to the answer key, it is not enough to simply write down the answer. Work submitted must show your calculations as well as the answer to receive credit.

Here's what you'll submit to your Oak Meadow teacher at the end of each TT chapter:

- Problem sets (even-numbered problems only) for each TT lesson in that chapter
- TT chapter test
- OM B-test

All answers in the problem sets and chapter tests should be checked and any corrections should be made. For tests, place a score at the top of the page showing the number of correct answers over the total number of problems.

The submission schedule shows this in more detail. Following the submission schedule closely, and submitting work every two weeks, will ensure you complete the course by your end date.

When you have finished looking over your materials and the submission schedule, let your Oak Meadow teacher know if you have any questions. After that, you can begin your work with TT chapter 1, lesson 1. We wish you a satisfying and productive year of learning!





Submission Schedule

Use this submission schedule throughout the year, checking off each submission after it is completed and noting the date it was sent to your teacher.

SEMESTER 1

OM LESSON	TT CHAPTER	TT LESSONS AND PROBLEM SETS (EVEN-NUMBERED PROBLEMS ONLY)	TT CHAPTER TEST (ALL PROBLEMS)	OM B-TEST (ALL PROBLEMS)	SUBMISSION COMPLETE	DATE SENT
1	Chapter 1 Arithmetic Basics	1-5	Chapter 1 Test	Lesson 1 B-test	<input checked="" type="checkbox"/>	
2	Chapter 2 Rational Numbers	6-14	Chapter 2 Test	Lesson 2 B-test		
3	Chapter 3 Decimals	15-24	Chapter 3 Test	Lesson 3 B-test		
4	Chapter 4 Percents	25-31	Chapter 4 Test	Lesson 4 B-test		
5	Chapter 5 Measuring Length	32-39	Chapter 5 Test	Lesson 5 B-test		
6	Chapter 6 Measuring Area and Volume	40-46	Chapter 6 Test	Lesson 6 B-test		
7	Chapter 7 Simple Algebraic Equations	47-55	Chapter 7 Test	Lesson 7 B-test		
8	Chapter 8 Integers	56-67	Chapter 8 Test	Lesson 8 B-test		
9	Chapter 9 Longer Algebraic Equations	68-75	Chapter 9 Test	Lesson 9 B-test		

SEMESTER 2

OM LESSON	TT CHAPTER	TT LESSONS AND PROBLEM SETS (EVEN-NUMBERED PROBLEMS ONLY)	TT CHAPTER TEST (ALL PROBLEMS)	OM B-TEST (ALL PROBLEMS)	SUBMISSION COMPLETE <input checked="" type="checkbox"/>	DATE SENT
10	Chapter 10 Combining Like Terms	76-82	Chapter 10 Test	Lesson 10 B-test		
11	Chapter 11 Rational Expressions	83-90	Chapter 11 Test	Lesson 11 B-test		
12	Chapter 12 Powers, Polynomials, and Radicals	91-102	Chapter 12 Test	Lesson 12 B-test		
13	Chapter 13 Geometry	103-110	Chapter 13 Test	Lesson 13 B-test		
14	Chapter 14 Geometry	111-117	Chapter 14 Test	Lesson 14 B-test		
15	Chapter 15 Relations, Functions, and Graphing	118-126	Chapter 15 Test	Lesson 15 B-test		
16	Chapter 16 Statistics, Probability, and Inequalities	127-135	Chapter 16 Test	Lesson 16 B-test		
17	Chapter 17 Absolute Value, Formulas	136-139	Chapter 17 Test	Lesson 17 B-test		
18	Year-End Review and Final Exam			Lesson 18 B-test		