

grade 5 MATH
COURSEBOOK
SAMPLE



oak meadow

INDEPENDENT LEARNING SINCE 1975

Grade 5 Math

Oak Meadow Coursebook

Oak Meadow, Inc.
Post Office Box 1346
Brattleboro, Vermont 05302-1346
oakmeadow.com

Item #b054110

v.0117

Grade



Contents

Introduction

Welcome to Grade 5 Math!	vii
Course Materials	vii
How the Course Is Organized	viii
Study Tips to Help You Get the Most Out of This Course	ix
For the Parent.....	x
An Important Note about Workload	xi
For Families Enrolled in Oak Meadow School	xii

Lessons

Lesson 1 Addition and Carrying	1
Adding Whole Numbers Using Carrying	
Solving Word Problems Using Addition	
Adding Columns of Whole Numbers	
Lesson 2 Place Value and Rounding	7
Place Value up to One Billion	
Translating between Numbers and Words	
Rounding Whole Numbers	
Lesson 3 Measuring Time	15
Measuring Units of Time	
Time Lines	
Adding and Subtracting Time	
Lesson 4 Subtraction and Regrouping	23
Regrouping (Borrowing) in Subtraction	
Regrouping across Zero	
Borrowing from a Renamed Digit	

Lesson 5 Skills Review	31
Lesson 6 Checking Addition and Subtraction	33
Checking Subtraction by Adding	
Checking Addition by Subtracting	
Lesson 7 Graphs	37
Bar Graphs	
Line Graphs	
Lesson 8 Roman Numerals	41
Roman Numerals	
Lesson 9 Multiplication	47
Multiplication with Carrying	
Multiplying with Large Numbers	
Multiplying by 10, 100, and 1,000	
Lesson 10 Skills Review	55
Lesson 11 Squares and Square Roots	57
Squaring a Number	
Square Roots	
Lesson 12 Perimeter and Area	63
Perimeter of Rectangles and Squares	
Area of Rectangles and Squares	
Lesson 13 Division	67
Long Division	
Fraction Remainders	
Lesson 14 Skills Review	75
Lesson 15 Two-Digit Divisors	77
Division with Two-digit Divisors	
Dividing by Multiples of 10	
Lesson 16 Money Math	83
Adding Money	
Subtracting Money	
Lesson 17 Adding and Subtracting Fractions	89
Adding and Subtracting Fractions with Common Denominators	
Locating Fractions on a Number Line	

Lesson 18 Skills Review	95
Lesson 19 Expanding and Reducing Fractions	97
Renaming Fractions	
Expanding Fractions by Multiplying	
Finding Specific Equivalent Fractions	
Reducing Fractions by Dividing	
Reducing Fractions to Lowest Terms	
Lesson 20 Units of Measure for Weight and Liquids ...	105
Measuring Weight	
Measuring Liquids	
Converting Between Different Units of Measure	
Lesson 21 Improper Fractions and Mixed Numbers	109
Improper Fractions and Mixed Numbers	
Adding and Subtracting Mixed Numbers	
Lesson 22 Rate and Distance	119
Measuring Distance	
Solving Rate and Distance Problems	
Lesson 23 Skills Review	123
Lesson 24 Common Denominators	125
Common Denominators	
Adding and Subtracting Fractions with Different Denominators	
Lesson 25 Lowest Common Denominator	133
Lowest Common Denominator (LCD)	
Lesson 26 LCS in Mixed Number Problems	137
LCDs in Mixed Number Addition	
LCDs in Mixed Number Subtraction	
Lesson 27 Skills Review	143
Lesson 28 Multiplying Fractions	145
Multiplying Fractions	
Multiplying Whole Numbers and Fractions	
Lesson 29 Multiplying Mixed Numbers	149
Multiplying Fractions and Mixed Numbers	

Lesson 30 Dividing Fractions 153
 Dividing Fractions
 Dividing Whole Numbers and Fractions

Lesson 31 Dividing Mixed Numbers..... 157
 Dividing with Fractions, Whole Numbers, and Mixed Numbers
 Dividing with Two Mixed Numbers

Lesson 32 Skills Review 161

Lesson 33 Decimal Fractions 163
 Decimal Fractions
 Decimal Fractions to Hundredths and Thousandths

Lesson 34 Adding and Subtracting Decimals..... 167
 Comparing Decimals
 Adding and Subtracting Decimals

Lesson 35 Skills Review 173

Lesson 36 Final Exam..... 177

Grade



Introduction

Welcome to Grade 5 Math!

This year, you will have the chance to learn new skills and become confident in your mastery of skills you learned last year. Before you begin, please take a few minutes to read this introduction to get an idea about what you will be doing this year.

Course Materials

This course includes the following materials:

Oak Meadow Grade 5 Math Coursebook

Oak Meadow Grade 5 Math Workbook and Answer Key

In this coursebook, you will find all the instructions for each lesson. In the workbook, you will find all the worksheets for practicing math skills, all the lesson tests, and the answer key for each worksheet and test. You'll also find a collection of extra practice worksheets in the math workbook. These can be used whenever you need more practice with a particular skill.

Having the answer key lets you check your answers after you have completed your practice worksheets. Circle any problems that you answered incorrectly, and then redo the problem. If you still have trouble getting the right answer, ask your parent or teacher for help. Your parent will use the answer key to check your answers after each test, circling any incorrect answers, and then giving you the opportunity to make test corrections.

In the workbook you'll also find B-tests, which are for students enrolled in Oak Meadow School (those who are sending their work to an Oak Meadow teacher). You will not find answers to the B-tests in the workbook.

Introduction

(continued)

Here are a few additional materials that will be used in this course:

- Deck of cards
- 4 or more dice
- Various coins (pennies, nickels, dimes, and quarters, or the local currency)

How the Course Is Organized

This coursebook is divided into 36 lessons. Each lesson is designed to be done in one week. You can expect to spend about three to four hours on each lesson. It's best to divide up the work throughout the week rather than trying to do it all in one day.

In the lessons, you will find the following:

Assignment Summary: A checklist of assignments is included at the beginning of each lesson. This lets you check off assignments as you complete them and see at a glance what still needs to be done.

Mental Math: Mental math games are math problems that you do in your head. You won't write anything down (or turn in anything to your teacher). These mental math exercises will get your brain all warmed up and ready to learn new material.

Skills Check: In each lesson, you'll have a chance to practice the skills you've already learned.

New Skills: Each new skill is explained fully with examples that show you the step-by-step process.

New Skills Practice: Worksheets are provided to give you a chance to practice each new skill.

Lesson Test: At the end of each lesson, you will find a lesson test which gives you a chance to demonstrate your skills.

Learning Checklist: On each test, you'll find a learning checklist to fill out. This checklist lets you see which skills are easy for you and which need more work, and lets you as well as your parent and teacher keep track of your progress.

Introduction

(continued)

succeed. Not only is that considered cheating, but it prevents you from learning to think for yourself and persevere in your efforts to learn.

6. For the lesson tests, solve all the problems on your own, without looking at the coursebook or asking for help. Once you have done your best, ask a parent to check your answers in the answer key. They will circle any wrong answers (and put your test score at the top of the test), and then you can make test corrections, using the coursebook to review any skills you need help with.
7. When you are making corrections, talk through the problem aloud. This helps you focus on each step of the process and lets your parent or tutor hear where you may be having trouble. Being able to talk your way through a math problem is an important skill and will reinforce your learning and memory.

Moving Forward with Confidence

Learning math can be a very satisfying process. It encourages a flexibility of thinking and an appreciation for the beauty of patterns, shapes, logic, and much more. We hope this course helps you develop a strong foundation and gives you the confidence for more advanced skills while opening your mind to the enjoyment and practical importance of mathematics.

For the Parent

Fifth grade students are often ready for the challenges of learning independently, and many students will find this course well-suited to their ability to pace themselves and work autonomously. Other students, however, may need extra support from you. Taking the time to sit with your child at the beginning of each lesson until new skills are clarified can go a long way toward helping your child feel confident and successful.

In addition to providing support in learning new skills, it is important that you look over your child's work on lesson tests and check the answers against the answer key in the workbook. You are encouraged to have your student self-correct the practice worksheets using the answer key, but you

Introduction

(continued)

For Families Enrolled in Oak Meadow School

At the end of most lessons, you will find a “For Enrolled Students” section that contains information about what to send to your teacher. You are expected to submit work to your teacher after every two lessons, and communicate any time there are questions or concerns about your student’s learning.

Here is a brief explanation of what you will submit:

- At the end of every two lessons, you will send two lesson tests, and one B-test. All tests are found in the *Oak Meadow Grade 5 Math Workbook and Answer Key*.
- The lesson tests will be scored (by you) and corrected (by your student). Your teacher will check and score the B-test. Answers to all worksheets and tests are found in the *Oak Meadow Grade 5 Math Workbook and Answer Key*. Answers to B-tests are not provided.
- To score a test, use the answer key to check each answer and circle any incorrect answers. At the top of the page write the number correct over the total number of problems. For instance, if there are 25 problems in the test and your student gets two wrong, you would write $\frac{23}{25}$ at the top.
- After you score the test, have your student redo any incorrect problems (the ones that are circled). Encourage your child to talk through the problem aloud so you can see where the error occurred and help your child fix it.
- Do not include any practice worksheets (Skills Check and New Skills Practice) when you submit work to your Oak Meadow teacher. Only the lesson tests and B-tests are sent to the teacher. Although the practice worksheets are not being submitted, these are important elements of this course and your student will gain valuable skills and confidence from doing them.

When submitting work to your teacher, **always keep a copy of what you are sending**. Work can be submitted digitally or through the postal mail. You will find detailed instructions about how to submit your work in your

Grade 5



Subtraction and Regrouping

Mental Math

Version 1: Play a board game that uses two or more dice (so you have to add the numbers). Yahtzee is a great game to play because you have to use multiplication or addition to write down your points each turn.

Version 2: Roll a pair of dice and add up the total. Keep this number in mind as you roll again. Add the numbers on the two dice, and then add that to the previous total. Keep rolling the dice, adding them together, and adding it to your running total. See if you can keep doing this, all in your head, until you reach 100.

Skills Check

In the last lesson, you worked on measuring units of time, time lines, and adding and subtracting time. Do the following worksheet to practice what you've learned.

- Lesson 4 Skills Check

New Skills

Regrouping (Borrowing) in Subtraction

When we subtract one number from another, sometimes we must rename one of the numbers before we can subtract. This renaming process is called regrouping or borrowing.

Example: Subtract 193 from 358.

$$\begin{array}{r} 2 \ 15 \\ \cancel{3} \ \cancel{5} \ 8 \\ - 193 \\ \hline 165 \end{array}$$

ASSIGNMENT SUMMARY

- Play mental math games.
- Do the Skills Check worksheet.
- Read New Skills instruction.
- Complete New Skills Practice.
- Complete Lesson 4 Test and Learning Checklist.

Lesson 4

(continued)

We begin, as always, with the column on the right. We say, “8 minus 3 is 5,” and we write the 5 below the line. Then we go to the next column, and say, “5 minus 9 is” but we can’t answer, because 9 is larger than 5, so we can’t subtract it. This is where we have to regroup or rename, so we look at the next digit to the left, which is a 3. We’re going to borrow 1 from that digit, so we draw a line through the 3, subtract 1 from it, and write the result, 2, above the digit. Then we take the 1 that we borrowed (which is really 100 or 10 tens) and add it to the 5 (which is really 5 tens) to get 15; cross out the 5 and write 15 above it in the tens place. Since 15 is larger than 9, we can subtract, so we say, “15 minus 9 is 6,” and we write the 6 below the line. Finally, we move to the next column, and since that number is now a 2, we say, “2 minus 1 is 1,” and we write the 1 below the line, for a final answer of 165.

At first, this may seem like we’re just juggling numbers around, but there’s actually a good reason behind it. If we look at the original number in terms of place values, it looks like this:

Hundreds	Tens	Ones
3	5	8

$$300 + 50 + 8 = 358$$

When we borrow 1 from the 3 and move that amount to the tens column to add to the 5, we’re not really changing the value of the number, we’re just renaming it and writing it in a different form. Let’s look again at our place value chart.

Hundreds	Tens	Ones
2	15	8

$$200 + 150 + 8 = 358$$

Regrouping is just renaming a number to make subtraction easier.

Solving Word Problems with Subtraction

One common type of problem that uses subtraction is a comparison between two amounts. Subtraction problems always tell us the difference between two amounts, so one of the words you will commonly see in

Lesson 4 **Example:** Subtract 367 from 804.

(continued)

$$\begin{array}{r} 7 \ 10 \\ \cancel{8} \ \cancel{0} \ 4 \\ - 3 \ 6 \ 7 \\ \hline \end{array}$$

As usual, we begin with the column at the right. We say, “4 minus 7 is,” but we can’t subtract because 7 is larger than 4. We go to the next column to borrow, but the next digit is 0, so we can’t borrow from that. So we go to the next digit, the 8, and borrow from that to make it 7. Remember, when we borrow 1 from the 8, we are really borrowing 100 or 10 tens. So we cross out the 0 and put 10 above it (to show the 10 tens we borrowed). Now we have 10 in the tens place, so we can borrow from that. To do that, we have to regroup again: we borrow 1 from the 10, crossing it out and putting 9 above it. Then we move the 1 that we borrowed from the tens place (which is really one group of ten) and we add that to the ones place by crossing out the 4 and making it 14. Then we solve our subtraction problem.

$$\begin{array}{r} 9 \\ 7 \ 10 \ 14 \\ \cancel{8} \ \cancel{0} \ \cancel{4} \\ - 3 \ 6 \ 7 \\ \hline 4 \ 3 \ 7 \end{array}$$

This takes several steps, but as you complete several problems, you’ll find that when you borrow across zero, the 0 always becomes a 9. So the easy way to borrow across zero is to borrow from the first digit to the left, cancel the 0 and make it a 9, and move the borrowed 1 to the next digit.

Example: Subtract 485 from 602.

$$\begin{array}{r} 9 \\ 5 \ 10 \ 12 \\ \cancel{6} \ \cancel{0} \ \cancel{2} \\ - 4 \ 8 \ 5 \\ \hline 1 \ 1 \ 7 \end{array}$$

Lesson 4 **Example:** Subtract 487 from 3,753.*(continued)*

$$\begin{array}{r}
 7\overset{4}{\cancel{5}}\overset{13}{\cancel{3}} \\
 - 487 \\
 \hline
 6
 \end{array}$$

You try to subtract 7 from 3, but you can't, so you borrow from the 5. You change the 5 into a 4, and move the 1 you borrowed over to the 3 to make it 13. Then you subtract 7 from 13 to get 6, and you write this below the line. This is the normal process. But when you get to the next column you discover that you can't subtract 8 from 4. This seems like it might be a problem, because you've already borrowed from that column once, when you changed it from a 5 to a 4. But that doesn't matter; just proceed as usual. Borrow from the 7 and make it a 6. Next put the 1 you borrowed in front of the 4 to make it 14 (or you can cross out the 4 and write 14 above it). Then continue subtracting.

$$\begin{array}{r}
 6\overset{14}{\cancel{4}}\overset{13}{\cancel{3}} \\
 - 487 \\
 \hline
 266
 \end{array}$$

Example: Subtract 986 from 6,522

$$\begin{array}{r}
 5\overset{14}{\cancel{4}}\overset{11}{\cancel{2}}\overset{12}{\cancel{2}} \\
 - 986 \\
 \hline
 536
 \end{array}$$

New Skills Practice

Complete the following worksheets in your math workbook:

- Lesson 4 New Skills Practice: Regrouping (Borrowing) in Subtraction, Regrouping across Zero, Borrowing from a Renamed Digit
- Lesson 4 Test

Grade 5



Skills Review

This is the first Skills Review lesson—you will find these throughout the course. This lesson gives you the chance to brush up on skills you still need to practice. The test is a *cumulative* test; that means that it includes a collection of all the skills you've worked on so far this year. Here is a list of those skills:

Lesson 1

Adding Whole Numbers Using Carrying
Solving Word Problems Using Addition
Adding Columns of Whole Numbers

Lesson 2

Place Value up to One Billion
Translating between Numbers and Words
Rounding Whole Numbers

Lesson 3

Measuring Units of Time
Time Lines
Adding and Subtracting Time

Lesson 4

Regrouping (Borrowing) in Subtraction
Regrouping across Zero
Borrowing from a Renamed Digit

Look over this list carefully. Is there any topic that you have some questions or confusion about? If so, use the extra practice worksheet on that topic to practice it (all the extra practice worksheets are in the appendix of the math workbook). You might also want to reread the lesson instruction on that topic or ask someone to help you understand it better.

ASSIGNMENT SUMMARY

- Practice skills learned so far.
- Complete Lesson 5 Test and Learning Checklist.

