Fifth Grade Math Overview

First Semester

Place value and rounding Measuring time Adding and subtracting time Borrowing across zero Borrowing from a borrowed digit Bar graphs and line graphs Roman numberals Squares and square roots Perimeter and area Two-digit divisors

Second Semester

Expanding and reducing fractions Rate and distance Lowest common demoninator Multiplying fractions and mixed numbers Dividing fractions and mixed numbers Adding and substracting decimals

Math

Grade 5 Math Coursebook



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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 (includes 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.

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 that 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.

For Enrolled Students: This section is for families who are enrolled in Oak Meadow School and sending their work to an Oak Meadow teacher. It provides information and reminders about how and when to submit work.

Every few lessons, you will find a Skills Review lesson. This lesson gives you time to review all that you've learned and brush up on any skills that need more practice. You can use the extra practice work-sheets to work on your skills at any time.

Study Tips to Help You Get the Most Out of This Course

- 1. Read the math instruction in each lesson even if it seems like something you already know. It will help to refresh your memory and perhaps give you new information or techniques that will help you in the long run.
- 2. In all your math work, **show your work**. This means you will show evidence of carrying, borrowing, and figuring multiplication and division step by step. Whatever process you use to

solve a problem, show this in your work. Even if you can figure out the problem in your head, write down how you reached the answer. Since the answer key is provided, **simply writing down the answer is not enough**—you have to show your calculations for each step. This not only proves that you know how to do the problem, but if mistakes are occurring, it shows your parent or teacher where help is needed.

- 3. When you are practicing new skills, refer to the information in the coursebook if you need help. If you are still confused, ask for help. You can use the extra practice worksheets in the math workbook if you need more time to learn a skill.
- 4. After you complete each worksheet, check your answers at the back of the book and rework any incorrect problems. Get an adult to help you if necessary. Make all the corrections before you move on to the next worksheet—this helps you avoid making the same mistakes over and over without realizing it.
- 5. Make sure to use the answer key AFTER you have completed each worksheet. Copying answers from the answer key won't help you 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 teacher 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 should **correct all tests so that you can spot any weaknesses or confusion and help clear it up immediately**. This instant feedback is essential. Circle any incorrect answers, put the test score at the top of the test, and then have your student make test corrections BEFORE moving on to the next lesson. Math skills are cumulative and an understanding of each concept or skill is necessary.

In the appendix of the math workbook, we have included many extra practice worksheets. These can be used if your student needs more time to work on a particular skill. The extra practice worksheets are organized by lesson, and listed in the table of contents. If you don't find what you are looking for, feel free to make up some extra practice problems of your own.

Many parents remember struggling with math as a child. This curriculum is designed to guide the student through increasingly complex skills one step at a time to alleviate any frustration or struggle. The review lessons built into the course provide extra time to solidify skills. Hopefully this course will build confidence in your child and foster an enjoyment of mathematics. Your interest in your student's work, and your eagerness to learn and share in the discovery of new math skills, will help your child face the challenges ahead with a willing heart and an open mind.

An Important Note about Workload

This course, like all Oak Meadow courses, offers plenty of practice and review for each skill. Some students benefit from completing every practice problem, while others work better with targeted practice. You might find that your student needs to do all the practice problems for a skill that is challenging but is able to grasp other concepts more quickly and easily, resulting in fewer practice problems needed.

Math is a subject in which repetition is extremely beneficial. That's why we have designed this course with a lot of opportunities to revisit previous skills and practice them. However, no student should be forced to do endless problem sets after they have already demonstrated mastery. **All the problems on the lesson tests must be completed**; however, you and your student can work together to determine the most useful number of problems to complete on the practice worksheets.

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 Oak Meadow Assessment Test. Lesson tests are found in the *Oak Meadow Grade 5 Math Workbook*. Oak Meadow Assessment Tests are in a separate booklet included with your materials.
- The lesson tests will be scored (by you) and corrected (by your student). Your teacher will check and score the Oak Meadow Assessment Test. Answers to all worksheets and tests are found in the *Oak Meadow Grade 5 Math Workbook*. Answers to Assessment 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 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 Assessment 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 teacher's welcome letter and in your Parent Handbook. If you have any questions, please contact your teacher.

We wish you and your student an engaging year of math challenges and successes!



Addition and Carrying

Mental Math

Mental math games are simple to do and provide a great mental workout that will get your brain all warmed up for learning something new. The only rule is to **do the math in your head**, without writing it down. (If you want to use your fingers and talk aloud while you are figuring out the answer, that's fine.) After you arrive at your answer, you might want to write it down and then do the problem on paper to check your answer. It's fun to do mental math games with other people—you can take turns challenging each other.

Here's the mental math game for this lesson. There are two different versions so you can play the game several times this week, whenever you sit down to do your math work.

ASSIGNMENT SUMMARY

- Play mental math games.
- Read New Skills instruction.
- Complete Lesson 1 New Skills Practice.
- Complete Lesson 1 Test and Learning Checklist.

Version 1: Play a card game where each person draws two cards at a time and adds them up. The player with the highest pair collects all four cards and sets them aside. Keep going until the whole deck is used up. See who ends up with the most cards.

Version 2: Draw two cards at a time from a deck and double each card before adding the two numbers together. For instance, if you draw a 3 and a 5, you will first double them (resulting in 6 and 10), and then add the two numbers together (16). For a bigger challenge, triple each card before adding the numbers together.

New Skills

Adding Whole Numbers Using Carrying

We'll start the year with some skills you'll probably remember from last year. When we add numbers with digits that total more than nine, we need to move or "carry" one digit over to the next place value column.

Example: Add 79 and 156.

	1	1	
		7	9
+	1	5	6
	2	3	5

Write both numbers so the place value columns are lined up, then start from the right and add each column. Add 6 and 9, which gives you 15. Write the 5 below the line and carry the 1 to the next column, writing it above the 7. Then add 7 and 5, which gives you 12, and add the 1 you carried, and this gives you 13. Write the 3 below the line and carry the 1, writing it at the top of the next column. Next, add the 1 in the bottom row to the 1 you carried, and you get 2. Write that down below the line, for a final answer of 235.

Example: Add 408 and 604.

		4	1 0	8
+		6	0	4
	1	, 0	1	2

Add 8 and 4, which gives you 12. Write the 2 below the line and carry the 1 to the next column, writing it above the 0. Add 1, 0, and 0 and you get 1, which you write below the line. Finally, add 6 and 4 to get 10. Write it below the line. Since the answer is larger than three digits, you'll need to include a comma, so count three digits from the right and add a comma.

Solving Word Problems Using Addition

Word problems give you a chance to use your math skills in a practical way to practice solving problems that arise in the world around you.

When problems arise in your everyday life that require you to use math, these problems don't come with labels that say, "addition problem" or "subtraction problem." You have to be able to look at the problem and figure out what skill you'll need to use to solve the problem. To do this, you have to look for certain clues.

Addition problems always involve finding the total amount of several items. These problems can take a variety of forms, but there are common words that are used, such as *all, together*, and *total*. Whenever you see words such as these, you know you'll use addition to solve the problem.

Example: John has 24 books in his room and Mary has 33 books. How many books do they have together?

$$24 + 33 = 57$$

When solving a word problem, you translate your numeric answer (57) into words, writing a complete sentence: *They have 57 books together*. Always include the unit you are measuring in your answer (in this case, books).

Notice that question could have been, "How many books do they have in all?" or "What is the total number of books they have?" and the solution would have been the same.

Another kind of addition problem involves an item that is increased by more items of the same kind, and you must find out the new total. These are *then and now* problems, because they involve a change between the way something used to be and the way it is now.

Example: Crystal's puppy used to weigh 19 pounds. In the past week, the puppy has gained 2 more pounds. How much does she weigh now?

The answer is written in a complete sentence: Crystal's puppy now weighs 21 pounds.

Adding Columns of Whole Numbers

Often you have to add more than two numbers. To do this, you have to add the numbers in a column.

Example: Add 34, 205, and 19.

$$\begin{array}{r}
1 \\
3 \\
2 \\
0 \\
5 \\
+ \\
1 \\
9 \\
2 \\
5 \\
8 \\
\end{array}$$

The most important point to remember when you're adding columns of numbers is to **keep the numbers lined up properly** according to place value. This means to keep all the ones places, tens places, and hundreds places in a straight line. Once all the digits are lined up properly, just add and carry each column of digits as you would normally.

Example: Add 19, 97, 351, 209, and 55.

	2	3 1	0
		9	7
	3	5	1
	2	0	9
+		5	5
	7	3	1

New Skills Practice

Complete the following worksheets in your math workbook:

- Lesson 1 New Skills Practice: Adding, Carrying, and Columns of Numbers
- Lesson 1 Test

Show all your work and write a complete sentence for each word problem. Remember to include the label of what you are measuring (pounds, years, miles, apples, etc.).

When you complete the Lesson 1 New Skills Practice, **check your answers** in the back of the workbook. Circle any incorrect answers on your worksheet, and then redo these problems to try to get the correct answer. If you need help, please ask an adult or go back over the instructions in this lesson. Once you understand the material, complete the Lesson 1 Test (also found in the math workbook). Your parent will check your answers for the test and have you redo any incorrect problems.

If you need more practice with any of these skills, you will find additional practice worksheets in the back of the workbook. Each extra practice worksheet is also listed in the table of contents so you can easily find the one you need. These extra practice worksheets are not required assignments; they are only there if you want more practice.

FOR ENROLLED FAMILIES

You will be sending the Lesson 1 Test to your Oak Meadow teacher at the end of the next lesson. Please score the Lesson 1 Test, and write the number correct over the total number at the top of the page. 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. Circle any incorrect problems, and have your student redo them. Encourage your child to talk through the problem aloud so you can see where the error occurred and help your child fix it.

Please have your child check the answers and make corrections on any practice worksheets. These are not being sent to your teacher, but your student will gain valuable skills and confidence from doing them. **All math work must be checked and corrected** so that your student learns how to perform each skill accurately and consistently. You should always check the answers and score the lesson tests so that you can help your child with any skills that are problematic.

In the meantime, feel free to contact your teacher if you have any questions about the assignments or the learning process. You can use the Learning Checklist that your student fills out at the end of each lesson test to keep track of your child's progress.



Place Value and Rounding

Mental Math

Here are some mental math games for this week. Remember, **do all the math in your head**. These games don't take long but they really help spark your brain activity. Do a quick mental math game to get your brain firing before every math session. Feel free to make up games of your own and get others involved.

Version 1: Add up the ages of everyone in your family. Feel free to include pets, friends, grandparents, and neighbors. See how high you can get.

Version 2: Start with the age of the oldest person in your family. Subtract your age from that number. Then subtract your age from the age of the second oldest person in the family. See how many

ASSIGNMENT SUMMARY

- □ Play mental math games.
- Do the Lesson 2 Skills Check worksheet.
- Read New Skills instruction.
- Complete Lesson 2 New Skills Practice.
- Complete Lesson 2 Test and Learning Checklist.

ways you can play with the ages of family members. For instance, if you add up all the children's ages (you can include pets' ages, too, if you'd like), do they add up to more or less than the age of one parent?

Skills Check

In the last lesson, you worked on adding, carrying, and columns of numbers. Do the following worksheet (found in your math workbook) to keep your skills sharp and clear up any areas of confusion.

• Lesson 2 Skills Check

New Skills

Adding Larger Whole Numbers

The addition process that we used with 2- and 3-digit numbers is the same process that's used with larger numbers. In fact, there's no limit to the size of numbers you can add using this same process. You just align each number according to place value (making sure the ones line up, the tens line up, etc.), and then add one column at a time (starting with the last digit on the right). Carry any necessary digits over to the next place value column. If the answer is more than three digits, always remember to count three places from the right and insert a comma. **Example:** Add 798 and 3,476

$$\begin{array}{r}
 1 & 1 & 1 \\
 7 & 9 & 8 \\
 + & 3 & 4 & 7 & 6 \\
 \hline
 4 & 2 & 7 & 4
 \end{array}$$

If problems are presented in a horizontal format (beside each other), instead of in a vertical format (above each other), simply convert the problem to a vertical format and solve as usual. Remember to align the last digits and keep all the other digits aligned.

Example: 5,927 + 163

$$\begin{array}{r}
1 & 1 \\
5, 9 & 2 & 7 \\
+ & 1 & 6 & 3 \\
\hline
6, 0 & 9 & 0
\end{array}$$

Identifying Place Value

In any whole number, each digit occupies a certain place in the number, and this place has a particular value. So we say that each digit in a number has a certain place value. With whole numbers, we count place value from the digit at the right and move to the left. For example, in the number 248,967 the place value of each digit is as follows:

Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones
2	4	8,	9	6	7

What does a place value mean? It tells us the value of any particular digit in that number. For example, the 7 in the number above is in the ones place, so it is worth 7 ones, or just 7. The digit 6 is in the tens place, so it's worth 6 tens, or 60. The digit 9 is in the hundreds place. This means that it is worth 9 hundreds, or 900. The 8 is in the thousands place, so it's worth 8 thousands, or 8,000. The 4 is in the ten thousands place, so it is worth 4 ten thousands, or 40,000. Finally, the 2 is in the hundred thousands place, so it is worth 2 hundred thousands, or 200,000. Notice that the comma always separates the hundreds place from the thousands place.

Why is place value important? First, it enables us to read numbers correctly, so that when we see a number like the one above, we can correctly name it *two hundred forty-eight thousand, nine hundred sixty-seven*. Also, it helps us to complete basic operations in math. For example, when we are adding and have to carry digits from one column to another, we are using place value. Look at the following example:

	1	1	
	1	9	6
+		4	7
	2	4	3

When we add 6 and 7 to get 13, we bring down the 3 and carry the 1 to the next column. When we do this, what we're actually doing is separating the tens digit from the ones digit in the number 13 and putting each digit where it belongs, with other digits that have the same place value. In the number 13 above, the 3 is in the ones place, so we bring it down below the line and leave it in the ones place. Since the 1 in the number 13 is in the tens place, we move it to the top of the tens place so we can add it to the other digits that are there. Although we put a 1 there, we're actually carrying 1 ten, or 10. We continue to add and carry in this same way with the other digits in the number.

Example: What is the value of the 7 in 579?

The 7 is in the tens place, so the value is 7 tens, or 70.

Example: What is the value of the 5 in 563,248?

The 5 is in the hundred thousands place, so the value is 5 hundred thousands, or 500,000.

Writing Large Numbers in Words

When we want to write a large number using words instead of numerals, there are a few rules that can help. The first rule is to **write it like you would say it**.

For a three-digit number, like 317, you would say or write *three hundred seventeen*. Note that there is no "and" in this number—the number is **not** *three hundred and seventeen*.

For a four-digit number, you'd first say or write the number in the thousands place and then the threedigit number that follows. So 4,317 would be *four thousand, three hundred seventeen*. Again, note that there is no "and" in this number—the number is **not** *four thousand and three hundred seventeen*.

For a five-digit or six-digit number, you'd follow the same rules:

54,317 fifty-four thousand, three hundred seventeen

154,317 one hundred fifty-four thousand, three hundred seventeen

Notice that the comma is ALWAYS in the same place whether you are writing in words or in numbers, and the word "and" is not used in any whole number.

Many people get confused about when to use a hyphen when writing numbers. You only need a hyphen if you have a compound number—a number that is made up of two words, like fifty-four or thirty-seven. Hyphens are not needed to attach number words to place value words like *million, thousand,* or *hundred.* You wouldn't write *three-hundred-fifty* for 350, but instead write *three hundred fifty.*

So that's it! That's all the rules. You can apply these three rules to any number, no matter how large.

- 1. Write it like you would say it.
- 2. Only use a hyphen for compound numbers from twenty-one to ninety-nine.
- 3. Put a comma where the comma goes in the number itself.

Example: Write 395,264 in words.

Three hundred ninety-five thousand, two hundred sixty-four

Example: Write 208,501 in words.

Two hundred eight thousand, five hundred one

When writing numbers in words, sometimes people will add "and" in place of a zero when they are writing or speaking (such as *two hundred and eight thousand, five hundred and one*) but this is not correct. Just refer to the three rules above if you get confused.

Place Value up to One Billion

So far you've explored place values from ones to hundred thousands, but numbers, of course, can go much higher than that. The range of numbers extends into millions, billions, trillions, quadrillions, and far beyond. In this course, however, we will only explore place value as far as billions. To understand the place relationship of these larger numbers, look at the following example of the place values for the number 3,258,961,470:

(one) Billions	Hundred Millions	Ten Millions	(one) Millions	Hundred Thousands	Ten Thousands	(one) Thousands	Hundreds	Tens	Ones
3,	2	5	8,	9	6	1,	4	7	0

If we were to say this number aloud, we would say three billion, two hundred fifty-eight million, nine hundred sixty-one thousand, four hundred seventy. At first, this may just look like a lot of confusing numbers, but if you look closely you can see that there is a pattern to it.

Each major place is a thousand times as large as the last (three zeros more), so if we write out the major divisions, they look like this:

One	1
One thousand	1,000
One million	1,000,000
One billion	1,000,000,000

After the ones place, each major place has a comma. There is a comma after thousands, a comma after millions, and a comma after billions. In between the commas, there are three places, and these places also form a pattern. Each major place is really the ones place of that value, so there is one, then one thousands, then one millions, then one billions. The ones place is always to the right of the tens place of that number, which is to the right of the hundreds place. For example, the (one) thousands place is followed by the ten thousands then the hundred thousands. Next follows (one) millions, then ten millions, then hundred millions. This pattern is always the same for every three digits.

We show this pattern when we add commas to large numbers. We start from the ones place, count 3 places and insert a comma. Then we count 3 more places and insert a comma, 3 more places and insert a comma, and so forth. The commas indicate the major places and make it easier to read the number.

Example: Write 5,693,009 in words.

Five million, six hundred ninety-three thousand, nine

Translating from words to numbers is easy because all you have to do is write the first number and a comma, then the next number and a comma, and keep going until all the words and commas are used up.

Example: Write seventeen billion, three hundred nine million, nine hundred thirty-two thousand, five hundred twelve.

17,309,932,512

Rounding Whole Numbers

Many times we don't need an exact answer to a question we have; we only need an approximate answer, especially when we are working with very large numbers. When this is the case, we often round a number to the nearest hundred, thousand, million, or other place value. When we round a number, we look one digit to the right of the place value that we want to round to. If this digit is 5 or more, we round up. If it's less than 5, we keep the present value. This sounds confusing, but the following examples will make this clearer.

Example: Round 12,763 to the nearest thousand.

The digit that is in the thousands place is 2, so we look one digit to the right of that place, which is 7 (in the hundreds place). Since 7 is more than 5, we round up. This means we add 1 to the 2 and make it 3, for a final answer of 13,000. Notice that the remaining digits following the rounded digit become zeros.

Rounding tells us that this number (12, 763) is closer to 13,000 than it is to 12,000, so we round up to 13,000.

Example: Round 14,251 to the nearest thousand.

Since we want to round to the nearest thousand, we look one digit to the right, which is the hundreds place. The digit in the hundreds place is a 2. Since this is less than 5, we keep the present value of the digit in the thousands place. So the final answer is 14,000. Rounding shows that 14,241 is closer to 14,000 than to 15,000, so we round down to 14,000.

Example: Round 1,850 to the nearest hundred.

This time we are rounding up or down to the nearest hundred. The digit in the hundreds place is 8, so we look one digit to the right to see what number is in the tens place. Since it is a 5, we round up (remember, if it's 5 or more, we round up), so the final answer is 1,900.

Example: Round 1,935,649 to the nearest million.

To round to the nearest million, we look at the 1 in the millions place and see that 9 is the next digit to the right. Since 9 is more than 5, we round the 1 up to a 2. The answer is 2,000,000.

New Skills Practice

Complete the following worksheets in your math workbook:

- Lesson 2 New Skills Practice: Place Value, Rounding
- Lesson 2 Test

The New Skills Practice worksheet lets you practice what you've just learned, and the test will cover all the skills covered so far. Remember to show all your work and write a complete sentence for each word problem, including the label of what you are measuring (pounds, years, miles, apples, etc.). If you need more practice with any of these skills, you can use the additional practice worksheets in the back of the workbook.

When you complete the New Skills Practice, **check your answers** in the back of the workbook. Circle any incorrect answers on your worksheet, and then redo these problems to try to get the correct answer. Ask for help if you need it, or go back over the instructions in this lesson. Once you understand the material, complete the Lesson 2 Test. Your parent will check your answers for the test and have you redo any incorrect problems.

FOR ENROLLED FAMILIES

After your student completes the Skills Check, New Skills Practice, and Lesson 2 Test, please have your student complete the Lesson 2 Assessment Test. Make sure the skills worksheets and the Lesson 2 Test have been corrected and your student has fixed any errors BEFORE taking the Assessment Test. All lesson tests should be scored (by you) and corrected (by your student) before being submitted to the teacher along with the Assessment Test. If you have any questions about this, please let your teacher know.

At the end of this lesson, submit the following three items to your Oak Meadow teacher:

- Lesson 1 Test
- Lesson 2 Test
- Lesson 2 Assessment Test

Do not include any of the practice worksheets (Skills Check, New Skills Practice, or extra practice worksheets).

Include any additional notes about the lesson work or anything you'd like your teacher to know. Feel free to include questions with your documentation—your teacher is eager to help.

If you have any questions about what to send or how to send it, please refer to your Parent Handbook and your teacher's welcome letter. Your teacher will respond to each submission of student work with detailed comments and individualized guidance. In the meantime, your student should proceed to lesson 3 and continue working.

Checking Addition and Subtraction

Mental Math

Lesson

Version 1: Using a deck of cards, draw two cards at once and subtract the smaller from the larger. The ace is worth 1 and each face card is worth 10. See how quickly you can get through the deck.

Version 2: Draw two cards and add them up. Then draw another two cards and add them together. Now subtract the smaller number from the larger. Keep going until the deck is finished.

Skills Check

You have been working on many different skills so far. Do the following worksheet and check your answers to keep your skills sharp.

• Lesson 6 Skills Check

New Skills

Checking Subtraction by Adding

When we have to do a lot of regrouping while subtracting, sometimes it can get very confusing, and when we're finished we're not sure if we have the correct answer. Fortunately, there is an easy way to check subtraction answers, so we can be sure that we have the correct answer.

Example: Subtract 489 from 7,012 and check your answer.



- Play mental math games.
- Do the Skills Check worksheet.
- Read New Skills instruction.
- Complete New Skills Practice.
- Complete Lesson 6 Test and Learning Checklist.

$$\begin{array}{r}
10\\
6 & 9 & 0 & 12\\
7 & 0 & 1 & 2\\
- & 4 & 8 & 9\\
\hline
6 & 5 & 2 & 3
\end{array}$$

First we solve the problem as usual, and we get the answer of 6,523. To check this answer, we add the answer, 6,523, to the number directly above it, 489. If we're correct, we should get 7,012, the original number on top.

$$\begin{array}{r}
 1 & 1 & 1 \\
 4 & 8 & 9 \\
 + & 6 & 5 & 2 & 3 \\
 \hline
 7 & 0 & 1 & 2
 \end{array}$$

When you are checking your answer, begin by drawing a line below the answer (in this case, below 6,523), add a plus sign, and then do the math. If you end up with the same number that is at the top of the original problem (in this case, 7,012), you know your answer is correct.

Checking Addition by Subtracting

You can use the same technique to check addition problems; simply subtract one of the two numbers in the original problem from the answer. If your original answer is correct, the result should be the second number. For instance, if you added 18 and 12, your answer would be 30. If you subtract 12 from 30, you end up with 18—this lets you know that your original answer (30) is correct. Or you could subtract 18 from 30, and your answer would be 12, again letting you know that your original answer is correct.

From now on, you should get into the habit of always checking your work. This helps you avoid simple errors that result in an incorrect answer. Yes, it is more work, but it is an important skill to learn. Checking your work only takes a few extra seconds and it will make a big difference in eliminating mistakes.

New Skills Practice

Complete the following worksheets in your math workbook:

- Lesson 6 New Skills Practice: Checking Subtraction by Adding, Checking Addition by Subtracting
- Lesson 6 Test

Remember to show all your work—in this lesson, that means you will **solve the problem and then use addition or subtraction to check your answer**. Check your answers in the answer key and circle any incorrect answers before reworking these problems.

Once you understand the material, complete the Lesson 6 Test. You do not have to show your work when checking your answers on the test, but you can if you'd like (or you can check your answers on a scrap piece of paper, which is how you will normally do it throughout the course). Your parent will check your answers for the test and have you redo any incorrect problems.

FOR ENROLLED FAMILIES

At the end of this lesson, submit the following three items to your Oak Meadow teacher:

- Lesson 5 Test
- Lesson 6 Test
- Lesson 6 Assessment Test

Make sure the two lesson tests have been graded (by you) and then corrected (by your child). Do not include any of the practice worksheets with your submission.



Adding and Subtracting Fractions

Mental Math

Version 1: Play a card game that requires adding up numbers in your head. Black Jack (also called 21) is a good one and it's easy to learn—if you don't know how to play, ask someone to teach you.

Version 2: Play a variation of Black Jack where your cards have to add up as close as possible to 31 (or 41, or 51—whatever you decide) without going over. Or you can make up any other variation of this game or any other card game that involves counting in your head.

Skills Check

Do the following worksheet to practice some of the skills you have learned.

Lesson 17 Skills Check

New Skills

Adding Fractions

In the previous lessons, we have been working with whole numbers. These include small numbers such as 1, 2, and 3, but they also include larger numbers such as 3,748 or 1,297,814. They are called whole numbers because each of these numbers represents one whole unit, whatever it may be. Whether it's stones, flowers, people, pizzas, cars, or bikes, each of these is one whole unit.

Fractions are numbers that are less than 1, so they represent parts of 1 whole unit. For example, if we have 1 whole pizza and we cut it into 8 pieces, each piece is a part of the pie. If there are 8 pieces, each piece is 1 part out of 8 parts of the pizza. We can write this relationship between the part and the whole like this:



ASSIGNMENT SUMMARY

- □ Play mental math games.
- Do the Skills Check worksheet.
- Read New Skills instruction.
- Complete New Skills Practice.
- Complete Lesson 17 Test and Learning Checklist.

This is called a *common fraction*. The number below the line is called the *denominator*, and it is the number of parts in the whole. In our example, there are 8 pieces in the whole pizza, so 8 is the denominator. The number above the line is called the *numerator*, and it is the number of parts that we are talking about in whatever problem we're discussing. In the example, we are talking about 1 piece of the pizza, so 1 is the numerator. If we were talking about 3 pieces of the pizza, we would call it $\frac{3}{8}$, and if we talked about 5 pieces, we'd call it $\frac{5}{8}$.

Sometimes common fractions are written on a slant, like 5/8, instead of above and below a horizontal bar as we've written it. If you use a slant line, the numerator is on the left and the denominator on the right. But however it's written, every common fraction has these two parts: a numerator and a denominator. Remember these names because we'll be referring to them often.

Explaining something is a great way to make sure you understand it. Explain to a parent, sibling, or friend how fractions work. Remember to use the correct terms, but use your own words to explain what they mean. Feel free to draw pictures to help you explain things.

Adding Common Fractions

Adding common fractions that have the same denominator is simple. We just add the numerators to get the total, as in the following example:

Example:	3 1 4	
	$\frac{1}{8} + \frac{1}{8} = \frac{1}{8}$	
Example:	$\frac{2}{7} + \frac{3}{7} = \frac{5}{7}$	
Example:	$\frac{1}{5} + \frac{2}{5} = \frac{3}{5}$	

Remember, you only add the numerators, leaving the common denominators alone.

Subtracting Common Fractions

Subtracting common fractions that have the same denominators is also easy. You just subtract numerators, as in the following example:

Example: $\frac{7}{9} - \frac{5}{9} = \frac{2}{9}$

Both denominators are the same, so you just subtract the numerators. Since 7-5 is 2, the answer is $\frac{2}{9}$. As with addition, remember that you **only subtract the numerators**. You don't subtract the denominators.

Example: $\frac{5}{7} - \frac{4}{7} = \frac{1}{7}$

Example: $\frac{9}{12} - \frac{6}{12} = \frac{3}{12}$

To help you better understand the concept of fractions, explain this to someone else, and teach them how to add and subtract fractions with common denominators.

Locating Fractions on a Number Line

You've already practiced placing and locating whole numbers on a time line; a time line is just another name for a number line. Fractions can also be placed on a number line. To do this, you have to decide what fractional divisions you will use between the whole numbers, as in the following example:

Example: Place the numbers 1 to 4 on a number line, showing divisions between whole numbers in fourths.



The number line above focuses in on just a portion of the line, from 1 to 4, but the arrows on both ends of the line indicate that the line continues on in both directions.

The position of the whole numbers on this number line are indicated by bold marks, and the position of the fractions are indicated by normal marks. The space between each whole number is divided into fourths. This means there are four equal spaces between whole numbers, so each space equals $\frac{1}{4}$. The first mark is $\frac{1}{4}$, the second is $\frac{2}{4}$, and the third is $\frac{3}{4}$. The fourth would be $\frac{4}{4}$, but since that equals 1, we mark that as the next whole number. When we place marks to show each space, all marks must be the same distance apart.

Example: Place the numbers 3 to 6 on a number line, showing three divisions between whole numbers.



On this number line, there are three spaces between each whole number, so each space equals $\frac{1}{3}$.

Now that you know how to divide a number line into fractions, you can locate fractions on a number line.

Example: What number does the arrow point to in the following illustration?



The arrow points to a location between two whole numbers, so we know that the answer must be a *mixed number*—that's a number and a fraction combined. Since the arrow points to a fraction after 6

but before 7, we know that the whole number is 6. There are 3 divisions between whole numbers, so each space equals $\frac{1}{3}$. The arrow points to the first mark after the 6, so it is $6\frac{1}{3}$.

Example: What number does the arrow point to in the following illustration?



The arrow points to a fraction after 7 but before 8, so we know that the whole number is 7. There are 4 divisions between whole numbers, so we know each space equals $\frac{1}{4}$. The arrow points to the second mark after the 7, so it is $7\frac{2}{4}$.

New Skills Practice

Complete the following worksheets in your math workbook:

- Lesson 17 New Skills Practice: Adding and Subtracting Fractions with Common Denominators, Locating Fractions on a Number Line
- Lesson 17 Test

Show all your work and check your answers, reworking any incorrect problems.



23 Skills Review

As in every Skills Review lesson, this lesson gives you the chance to brush up on skills you still need to practice. Here is a list of those skills you've learned so far in the second semester:

Lesson 19

- **Renaming Fractions**
- Fractions That Equal One
- Expanding Fractions by Multiplying
- Finding Specific Equivalent Fractions
- Reducing Fractions by Dividing
- Reducing Fractions to Lowest Terms

Lesson 20

- Measuring Weight
- Measuring Liquids

Lesson 21

Improper Fractions and Mixed Numbers Adding Mixed Numbers Improper Fractions in Mixed Numbers Subtracting Mixed Numbers

Lesson 22

Measuring Distance Rate and Distance Problems

ASSIGNMENT SUMMARY

- Practice skills learned so far.
- Complete Lesson 23 Test and Learning Checklist.

In addition to this list, you might want to check over the list of skills from the first semester (found in lesson 18). Use this week to practice any skills you still need to work on—there are lots of extra practice worksheets in the appendix of your math workbook—and ask a parent or teacher for help if you need it.

When you feel ready, complete the Lesson 23 Test and Learning Checklist.

FOR ENROLLED FAMILIES

You may want to review your student's previous Learning Checklists to make sure they get extra practice this week with the skills that need work. If you have any questions about how to support your student's learning, contact your teacher for information and ideas.