1

Preparing for Level 4

Start Here!

To prepare for teaching *All About Math* Level 4, you can either watch our short videos or follow the checklist on the subsequent pages. Do whichever works best for you!

Option 1: Watch the Videos

Go to www.aalp.tv/math-level-4 on your phone, tablet, computer, or scan the QR code to be taken directly to the videos.

Let us show you how to get set up for success!

After watching the videos, turn to page 33 of this teacher's manual to start teaching the first lesson.

Option 2: Read the Following Pages

Check off each as you complete it.

Is Your Student in the Right Level?

If your student did not complete *All About Math* Level 3, use this checklist and the *Swoop into Math!* activity book pages 391 to 399 to verify placement in Level 4. Your student should get all items in a question correct in order to checkmark that question.

☐ 1. Your student can read and write fractions. Have your student write and read the fraction represented by the shaded model on the student activity page.

Model 1: (*Answer:* $\frac{7}{8}$) **Model 2:** (*Answer:* $\frac{7}{3}$ *or* $2\frac{1}{3}$) **Model 3:** (*Answer:* $\frac{2}{6}$)

☐ 2. Your student can identify and name fractions on a number line. Have your student count the number of parts on each number line and label the tick marks with a fraction. He should also label each whole number as a fraction.

Number Line 1: (*Answer:* $\frac{1}{3}, \frac{2}{3}, \frac{3}{3}$)

Number Line 2: (*Answer:* $\frac{1}{4}, \frac{2}{4}, \frac{3}{4}, \frac{4}{4}, \frac{5}{4}, \frac{6}{4}, \frac{7}{4}, \frac{8}{4}$)

☐ 3. Your student can determine if two fractions are equivalent. To test this, have your student shade the models and then circle yes or no.

$\frac{2}{3}$ **and** $\frac{4}{6}$ (*Answer: yes*) $\frac{1}{2}$ **and** $\frac{3}{8}$ (*Answer: no*)

☐ 4. Your student can compare two fractions with the same numerator and two fractions with the same denominator using the correct comparison symbol. To test this, read the situations in question 5 aloud. Your student will use the models and then the number lines to determine the correct comparison symbol to make the statement true, and explain how he found the answer.

$\frac{3}{8}$ **and** $\frac{3}{4}$ (*Answers:* $\frac{3}{8} < \frac{3}{4}$*, The model for three-fourths has more of the rectangle shaded than the model for three-eighths.*)

$\frac{5}{6}$ **and** $\frac{1}{6}$ (*Answers:* $\frac{5}{6} > \frac{1}{6}$*, The number line shows that five-sixths is closer to one than one-sixth.)*

☐ 5. Your student can represent equal groups using a multiplication expression, a repeated addition expression, a tape diagram, and an array. Have your student complete the table on the student activity page.

Multiplication Expression: (*Answer:* 4×5)

Repeated Addition Expression: (*Answer:* $8 + 8 + 8$)

Tape Diagram: (*Answer: rectangle divided into four equal groups, and each section labeled with a five*)

Array: (*Answer: three rows with eight in each row*)

☐ 6. Your student can represent a multiplication story problem with an array and an equation. To test this, read the story problems in question 7 aloud. Have your student create an array and then write an equation that represents the problem. He will represent the unknown in the equation with a blank. Then, have him use the array to answer the question.

Peppers (*Answers: 6 rows with 5 in each row, ___ × 5 = 30, 6 boxes*)

Lettuce (*Answers: 7 rows with 7 in each row, 7 × 7 = ___, 49 lettuce plants*)

☐ 7. Your student can write two multiplication and division equations for an array. To test this, have your student write two multiplication equations and two division equations for the array shown on the student activity page.

Multiplication: (*Answers: 7 × 3 = 21, 3 × 7 = 21*)

Division: (*Answers: 21 ÷ 7 = 3, 21 ÷ 3 = 7*)

☐ 8. Your student can identify multiplication facts and their related division facts. Have your student fill in the blank number sentences based on the given number sentence on the student activity page.

9 × 7 = 63 (*Answers: 7 × 9 = 63, 63 ÷ 7 = 9, and 63 ÷ 9 = 7*)

48 ÷ 6 = 8 (*Answers: 48 ÷ 8 = 6, 6 × 8 = 48, and 8 × 6 = 48*)

☐ 9. Your student can multiply a one-digit number by a two-digit number. On the student activity page, have your student find the product for each multiplication equation using a tape diagram, manipulatives, or another strategy.

3 × 24 = ___ (*Answer: 72*) **6 × 16 = ___** (*Answer: 96*)

☐ 10. Your student can divide within 100. Your student may use a model or a related multiplication fact to find the quotient in each equation on the student activity page.

84 ÷ 4 = ___ (*Answer: 21*) **98 ÷ 7 = ___** (*Answer: 14*)

☐ 11. Your student can represent and solve two-step story problems by using the four operations. To test this, read each story problem in question 11 aloud. Have your student create equations based on the information given in the story problem, using a letter for an unknown amount. Then, have him use the equation to solve the story problem on the student activity page.

Nature preserve (*Answers: 3 × 21 = w, 63 + 29 = t, 92 woodpeckers*)

Birdwatcher (*Answers: 5 × 8 = h, 40 - 14 = t, 26 hummingbirds*)

☐ 12. Your student can read and write a nine-digit whole number in standard form and identify the place and value of each digit. To test this, have your student read the number and then explain the place and value of each digit. Then, he will read another number (help read it aloud as needed) and write it in standard form on the line.

Answers: 513,462,891 is read aloud as five hundred thirteen million, four hundred sixty-two thousand, eight hundred ninety-one

For place and value, if your student is unsure, point to the 6 and say, "The 6 is in the ten thousands place and has the value of sixty thousand." Then, have your student provide the place and value of the rest of the digits.

5: hundred millions place, value is five hundred million

1: ten millions place, value of ten million

3: millions place, value of three million

4: hundred thousands place, value of four hundred thousand

6: ten thousands place, value of sixty thousand

2: thousands place, value of two thousand

8: hundreds place, value of eight hundred

9: tens place, value of ninety

1: ones place, value of one

Answer: 392,465,785

☐ 13. Your student can compare two multi-digit numbers within 1,000,000 by using comparison symbols (>, <, =) to show greater than, less than, or equal to. To test this, have your student compare each pair of numbers on the student activity page.

791,391 _____ 782,591 (*Answer:* >) **219,048 _____ 219,182** (*Answer:* <)

☐ 14. Your student can order a set of three multi-digit numbers within 1,000,000 from least to greatest or greatest to least. Have your student list the numbers in the correct order on the student activity page.

Least to Greatest: (*Answer: 311,745; 392,902; 421,310; 512,124*)

Greatest to Least: (*Answer: 791,458; 731,455; 722,031; 712,416*)

☐ 15. Your student can round numbers within 1,000,000 to the nearest thousands, ten thousands, and hundred thousands. Have your student complete the table on the student activity page. He can use a number line to solve these problems.

675,453: (*Answer: Rounded to the nearest thousands is 675,000; rounded to the nearest ten thousands is 680,000; rounded to the nearest hundred thousands: 700,000*)

392,794: (*Answer: Rounded to the nearest thousands is 393,000; rounded to the nearest ten thousands is 390,000; rounded to the nearest hundred thousands is 400,000*)

☐ 16. Your student can identify and name 2D and 3D shapes and features. To test this, have your student complete the table on the student activity page.

Answers: cone, angle, parallel, cylinder, quadrilateral

How did your student do?

- If your child could easily complete 14 or more of the 16 skills, begin Level 4.
- If just one or two areas were difficult, you can remediate in those areas as you start Level 4.
- If 13 or fewer boxes were checked, start with Level 3 to build a strong foundation for math.

If you have any questions about the program or would like to learn how to adapt certain aspects of the program to accommodate your child's needs, feel free to call us at 715-477-1976 or email us at support@allaboutlearningpress.com. And if you need ideas on how to help your child build skills, just let us know—we are always happy to help!

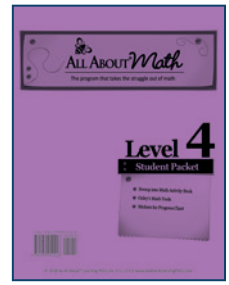
Gather the Materials

In addition to this teacher's manual, you will need the following items:

1 Student Packet

The Student Packet contains:

- *Swoop into Math!* activity book
- Stickers for the Progress Chart
- *Oxley's Math Tools* (See page 27, Preview *Oxley's Math Tools*, for more details)

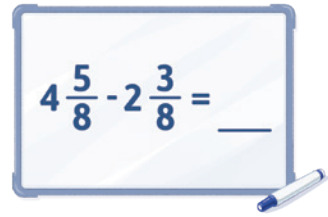


2 *All About Math* Manipulatives Kit

The manipulatives kit includes hands-on materials to support learning. See page 25, Learn about Manipulatives, for more details about the manipulatives for Level 4.

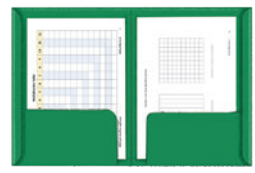
3 Dry-erase board and Markers

You can use any size. We recommend a hand-held dry-erase board for ease in demonstrating concepts. However, if you already have a dry-erase board for *All About Reading* or *All About Spelling*, you can also use your existing board.



4 Folders (Optional)

It's helpful to have a folder for storing *Oxley's Math Tools*. You may also want a folder for storing Oxley's Math Fun! games so they can be replayed.



The *All About Math* Method

First of all, you can do this! *All About Math* is a scripted, open-and-go program developed for busy parents, teachers, and tutors who want to teach mathematics in the most effective way possible. This program doesn't require long periods of study, you don't have to develop your own lesson plans, and you don't have to stress over what to teach next—because everything is laid out for you, step-by-step. You'll get a solid grounding in how to teach mathematics without being overwhelmed.

Your student will be actively involved in the learning process. This is a truly multisensory program; your student will learn through sight, sound, and touch. Everything is taught in context, and your student will apply what he has learned right away. Your student will be engaged in thinking, processing, comparing, and learning.

Students who use the *All About Math* method tend to feel a sense of excitement in learning. And they should! They are learning how to think, explore, and grow in their abilities. They will feel successful as they see continual progress.

There are no gaps in this program. *All About Math* teaches your student everything he needs to know to build a strong foundation of numeracy, operations, and algebraic thinking. Each concept builds upon the previous one, ensuring a comprehensive understanding that leverages existing knowledge.

All About Math acknowledges the diverse needs of learners and addresses the five key components of effective instruction:

1. Strong Conceptual Understanding: We connect mathematical concepts, fostering a deeper understanding that transcends memorization.

2. Procedural Fluency and Skills: Students master essential skills like multiplication, division, and fractions through practice and application.

3. Communication and Collaboration: We encourage students to explain their reasoning, fostering collaboration and clear communication through discussions and activities.

4. Assessment and Differentiation: Our program offers regular assessments so you can see how your student is doing. It allows you to cater to individual needs by offering differentiated instruction; instruction that allows you to adjust the pace, complexity, and activities to your student's needs.

5. Positive Learning Environment: We encourage students to believe in their ability to learn and grow through perseverance and effort.

***All About Math* is a mastery-based program.** As such, the levels don't necessarily correspond to grade levels. In mastery-based learning, students master foundational concepts before moving on to more advanced concepts, regardless of age or grade level. Some concepts will take many lessons to master. The instructions in each lesson help you know whether to move on, while the concept reminders on the *Daily Review Tracker* help you continue to work toward mastery.

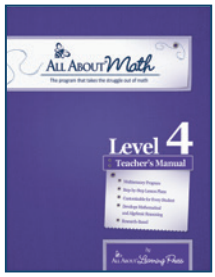
Most importantly, *All About Math* is committed to results. The *All About Math* program has a very focused mission: to enable you to teach your student mathematics while guaranteeing retention and enjoyment. Our approach to mathematics focuses on enabling students to become confident, fluent mathematicians who can absorb and retain new information.

If you ever have a question as you are teaching, please feel free to contact us at support@allaboutlearningpress.com or 715-477-1976.

We're here to help!

Preview the Teacher's Manual

As you flip through the teacher's manual, you'll notice that all the lessons are laid out for you step-by-step. You'll also find two types of lessons:



• **New Concept Lessons:** In these lessons, your student will learn new skills and concepts. You can see an example of a typical "New Concept" lesson in Lesson 3 on page 53.

• **Progress Monitoring Lessons:** In the Show What You Know! lessons, your student will review and practice the new concepts taught in the previous lessons. You can see an example of a typical Progress Monitoring lesson in Lesson 12 on page 159.

Each new concept lesson consists of six parts:

1. **Before You Begin:** This cream-colored box contains an overview of the lesson and is meant only for you, the teacher. Reading it takes only a few minutes, after which you'll be well-equipped to teach the lesson confidently.

2. **Review:** You will begin the lesson by reviewing concepts learned previously, giving your student a quick review of skills or concepts essential to the new learning. Starting in lesson 7, you will need your student's *Daily Review Tracker* for this part of the lesson.

3. **New Teaching:** This is the hands-on, multisensory portion of the lesson. Your student will work with the manipulatives as you gradually introduce new concepts. Scaffolding techniques such as modeling, guided practice, and feedback help students progress at their own pace and achieve a deeper understanding.

   Then, your student will use activity sheets as she continues to practice the new concepts. The activities encourage teachers to highlight connections, helping students see the bigger picture and develop a more coherent understanding of mathematical concepts.

   Finally, Math Reflections encourages your student to ask questions and express her understanding. This allows the teacher to identify any misconceptions and address them directly.

   (See page 19, Math Reflections and Dialogue, for more details)

4. **Extended Practice:** Optional activities are included for students who need more practice. By revisiting and practicing the skills in different ways if needed, students develop fluency and automaticity, allowing them to solve problems and perform calculations with greater accuracy and speed.

5. **Oxley's Math Fun!:** Fun and engaging activities provide opportunities for students to use and apply the new concepts they have learned in a meaningful context. This helps them move the information from short-term to long-term memory, strengthening their understanding

and improving their ability to recall and apply concepts later. These activities are designed to encourage playing more than once to reinforce concepts and skills.

6. **Track Your Progress:** At the end of each lesson, record your student's progress on the Progress Chart.

Take a few minutes to flip through the Appendices section starting on page 521. The Appendices include a few extra resources to help you and your student get the most out of your math lessons.

Math Reflections and Dialogue

It's incredibly important for children to talk about what they are learning in math. Verbalizing their thinking helps deepen their understanding, build critical reasoning skills, and strengthen their ability to communicate complex ideas. That is why you will find "Math Reflection" sections in every *All About Math* Lesson, and you will also see dialogue encouraged throughout. Here are some key benefits of encouraging math discussions:

Math Reflection

"Let's Reflect!"

Ask some questions to guide your student's reflection:

- "How can you represent a decimal on the hundredths grid?"
- "How does place value help you read a decimal number?"
- "What is something you would like to practice more?"

This section is located after the Complete Activity Sheet section in each New Concept Lesson and after the last question in each Progress Monitoring Lesson.

Deepens Understanding: When your student talks through a problem, he is forced to clarify his thinking. Explaining his reasoning helps solidify the concepts in his own mind, making it easier for him to understand and retain the material. Talking through math problems can also reveal misunderstandings or gaps in knowledge. If he is unable to explain his thinking, it may highlight areas where he will need further instruction or support.

Encourages Active Engagement: Math discussions help your student move from passively receiving information to actively engaging with the material. When he verbalizes his thought processes, he is more likely to take ownership of his learning and develop a deeper connection to the content.

Promotes Critical Thinking and Problem Solving: Talking about math encourages your student to reason logically and justify his thinking. Discussing different strategies and approaches fosters critical thinking and can lead to deeper insights and a broader range of strategies for solving problems.

Enhances Mathematical Vocabulary: Talking about math helps your student develop and expand his mathematical vocabulary and encourages him to use specific, accurate language, which reinforces his understanding of the terms and concepts involved.

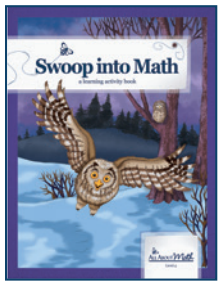
Improves Memory and Retention: When your student talks about math, he is engaging both the verbal and cognitive centers of the brain, which enhances memory and understanding. Explaining concepts to others forces him to organize and articulate his knowledge in a coherent way, and reinforces learning and retention.

Encourages a Positive Attitude Toward Math: By encouraging your student to talk about his learning, you help him see math as a subject he can engage with and discuss, rather than a subject that is difficult or intimidating. Positive discussions about math help develop a healthy attitude toward the subject and can reduce math anxiety.

Talking about math in real-world contexts or through stories can help him see the relevance and practical applications of what he is learning, making math more engaging and meaningful.

Preview the Activity Book

The *Swoop into Math!* activity book contains:

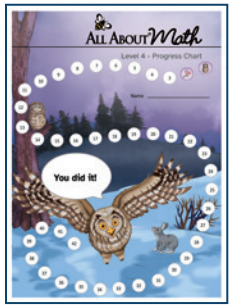


- Progress Chart
- *Daily Review Tracker*
- Activity Sheets
- Oxley's Math Fun!
- Math Practice
- Story Problems and Situations
- Certificate of Achievement

The lesson plans in the teacher's manual will tell you which pages you need for each lesson. The pages in the activity book are perforated for easy removal.

Let's take a quick look at each part of the activity book.

Progress Chart



The *Progress Chart* can be found on page 5 of the activity book.

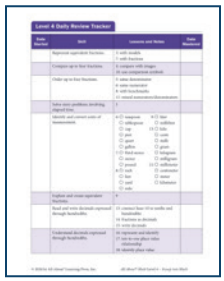
This chart is a fun and encouraging way to help students see their progress as they work toward understanding mathematics.

Remove the chart along the perforation and find a special spot to display it. You might choose a bulletin board, the refrigerator, a folder, or any other place that is easy to access and see.

After finishing each lesson, have your student color in or place a sticker over the corresponding circle on the chart. It is a great way to celebrate her hard work!

Daily Review Tracker

The Daily Review Tracker can be found on page 7 of the activity book.



This *Daily Review Tracker* is a tool for you to use with your student during the review section of each lesson. It helps build a strong foundation in mathematics by supporting concept retention and reinforcing understanding, while also tracking mastery of each skill.

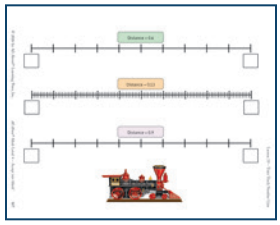
Starting in Lesson 6, you will be prompted to enter the date next to skills that have been introduced. This will help you track which skills have been taught and should be included as part of your daily review.

In Lesson 7, you will begin using the tracker to identify areas where your student may need more practice to reach mastery. You will know she has achieved mastery when she can perform the skill consistently without assistance. Once she has demonstrated mastery, record the date in the 'Date Mastered' column.

As always, you are welcome to revisit any skill marked as mastered for a refresher or extra practice as needed.

Activity Sheets

The activity sheets are highly motivating for most students, offering a variety of ways to practice the new concepts introduced in each lesson. They include engaging themes and colorful visuals that make learning both fun and meaningful.



Take a look at the activity called Train Track Number Line on page 167 of the activity book. In this activity, your student will mark the location of each train along the provided number line.

Oxley's Math Fun!

Math games make learning math exciting by turning practice into play, allowing students to explore concepts in a fun and interactive way. They will build confidence and fluency with math concepts while keeping your student engaged and motivated.

Oxley's Math Fun! can be found at the end of each new concept lesson. You can choose to play these games directly after the lesson or at another time. These games are designed to be played multiple times and are a great way to practice skills that are still developing.

Remove the Oxley's Math Fun! games along the perforation. Once you have completed a game, place it in a safe spot or folder for easy access for later play.

Math Practice

Starting in Lesson 3, your student will complete short Math Practice pages to review and reinforce what they have already learned. These pages include practice problems that are designed to be quick and focused. Math Practice pages allow your student to keep important skills fresh without feeling overwhelmed, helping build confidence and strengthen understanding over time.

Story Problems and Situations

Story Problem and Situation pages give your student a chance to engage with real-world math in a meaningful way. These pages list story problems or situations used throughout the lesson, allowing your student to read along or read aloud. She can use the page to underline important numbers, highlight the question being asked, and mark anything else that helps her make sense of the problem.

Certificate of Achievement

The *Certificate of Achievement* can be found on page 389 of the activity book.

Presenting your student with a certificate upon completing the Level 4 program is a wonderful way to celebrate her hard work and achievements. It will boost her confidence and give her a sense of pride in reaching an important milestone.

Learn about the Manipulatives

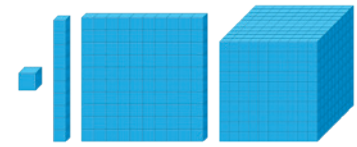
We will be using several types of manipulatives. Below is an introduction to some of their uses.

Connecting Cubes can be snapped together to form longer chains or structures. They can be used for:

- **Multiplication and Division:** Connecting cubes can be used to model multiplication and division by creating equal groups or arrays. The cubes make it easier to see how multiplication works as repeated addition and how division works as sharing or grouping.
- **Fractions:** Different colored connecting cubes can show parts of a whole, compare fractions, or build fraction bars.

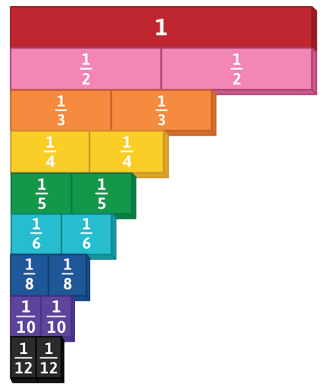
Two-Color Counters are small, circular discs that are red on one side and yellow on the other side. They can be used for basic addition and subtraction, making equal groups and arrays to demonstrate multiplication and division concepts, and as game markers.

Base-10 Blocks also known as **place value blocks**, represent units of 1, 10, 100, and 1000. They can be used for:



- **Understanding Place Value:** Base-10 blocks are commonly used to help understand place value. Students can see how numbers and decimals are made by grouping the blocks together. Each type of block represents a different place value:
  - **Unit (ones):** Small cubes that represent the number 1 or 0.01.
  - **Rod (tens):** Long rods that represent groups of 10 or 0.1.
  - **Flat (hundreds):** Square flats that represent groups of 100 or one whole.
  - **Cube (thousands):** A cube that represents a group of 1000 or 10.
- **Multiplication and Division:** Using base-10 blocks helps students visualize the process of multiplication and division. Students can build arrays with the blocks to show how many groups there are and how many are in each group. The blocks help students break apart larger numbers into equal groups for division.

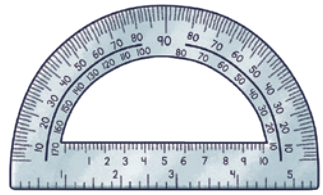
Fraction Tiles are colorful, rectangular pieces of different sizes that visually represent how parts make up a whole. They can be used for:



- **Reading and Writing Fractions:** Fraction tiles provide a visual representation of fractions as parts of a whole. For example, students can use the tiles to see that one out of four equal parts is written as 1/4 and read as "one-fourth."
- **Comparing Fractions:** Fraction tiles help students visually compare the sizes of different fractions. By lining up tiles representing parts of a whole, they can easily see which fractions are larger, smaller, or equal. For example, placing a 1/2 tile above two 1/4 tiles shows they are the same size.

Ruler a straight tool with two sides: one marked in centimeters and the other in inches. While it's used to measure length and draw straight lines, it can also help students understand fractions. The inch side is divided into equal parts, like halves, fourths, and eighths, making it a useful tool for showing how fractions work on a number line.

Protractor a half-circle-shaped tool with numbers along the curved edge from 0° to 180°. There are numbers on the straight edge that can also be used as a ruler or straight edge. In the middle, it has a small hole that you line up with the point, or vertex, of an angle. A protractor is used to measure how wide an angle is in degrees.



The *All About Math* Manipulatives Kit also includes:

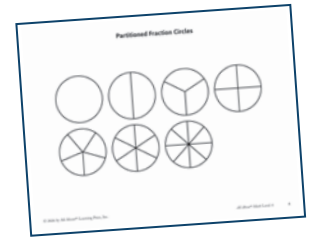
- **Dry Erase Pocket:** a transparent-plastic pocket that turns any Math Tool into a dry-erase board.
- **Counting Bears:** The Counting Bears were used in lower levels. However, kids who still enjoy them can use them for counting, addition, subtraction, creating patterns, multiplicative comparisons, or game markers.

The *All About Math* Manipulatives Kit comes in a plastic Storage Bin for ease and convenience.

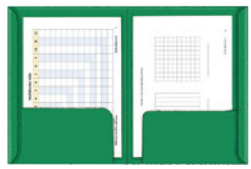
Preview *Oxley's Math Tools*

Math Tools are printed resources that can be used in numerous ways to support student learning. In Level 4, Math Tools are primarily used to support operations and algebraic thinking. These tools include:

- Nine-Digit Place Value Chart
- Fraction Shapes
- Open Number Line
- Partitioned Fraction Circles
- Multiplication Table
- Fraction Models
- Number Cards
- Elapsed Time Clock
- Units of Measurement Cards
- Partitioned Fraction Rectangles
- Equivalent Fractions Mat
- Tenths and Hundredths Grids
- Fractions and Decimals Mat
- Decimal Place Value Chart
- Types of Angles Mat
- Dot Paper
- Classifying Shapes Cards
- Tenths and Hundredths Number Lines
- Partial Quotient Division Mat
- Pattern Cards



Math Tools are reused for many lessons, so once you use them, be sure to save them for future use.



Consider keeping the materials in a folder and storing them in a binder or in the manipulatives storage bin.

How Much Time Should I Spend on Math?

All About Math lessons are designed so that you can work at your student's pace. Here are some general guidelines.

Spend 20 minutes per day teaching math.

We recommend spending about 20 minutes per day, five days a week, on math instruction, but you can adjust this to meet your particular student's needs.

It can be helpful to set a timer. When 20 minutes are up, consider whether you have reached a logical stopping point in the lesson; you may want to complete the task or part of the task before stopping. Then, mark the spot in the lesson where you stopped. If your student is still engaged at the end of 20 minutes, feel free to extend the time if you wish.

When you begin teaching the next day, start with 1 or 2 items from the *Daily Review Tracker*, briefly review the New Teaching from the previous day, and then pick up in the teacher's manual where you left off previously. If your student struggles to remember previous learning, you can begin from an earlier point in the lesson.

Short daily lessons are much more effective than longer, less frequent lessons. Your student's attention is less likely to wander, and you can accomplish more when your student is actively engaged in the lesson.

If you aren't done with the lesson when the 20 minutes are up, don't worry! The next tip is for you.

Lessons often take more than one day to complete.

Please know that the lessons in *All About Math* are **not** meant to be completed in one day.

A number of variables, including your student's age, attention span, prior experience, the difficulty of the concept being taught, and the length of the lesson, all play a part in how quickly a lesson can be completed.

Teaching your student can be a wonderful way to show him that he has great value in your eyes. You can view this as an opportunity to build him up and help him develop skills and character. Can you see yourself as a calm, uncritical coach with the worthy goal of helping this child fulfill his natural potential? Imagine the type of teacher you would want: friendly, supportive, with a you-can-do-it attitude. Smile. Point out what your student has done right more often than you point out his mistakes. Treat lesson time as a special time between the two of you.