



# SUMMER

## Math Guide

### 3RD GRADE

#### BUILD FLUENCY

Quick activities to try at home to build fluency skills from a foundation of conceptual understanding

#### ENGAGE IN PROBLEM SOLVING

Real world math examples to support problem solving skills

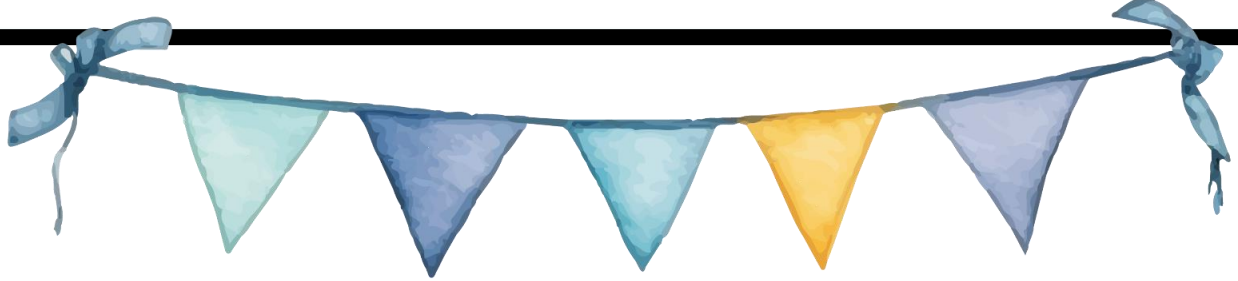
#### MAINTAIN SKILLS & PREVENT THE SUMMER SLIDE

Critical focus areas to prevent the summer slide and help children maintain their math skills

[www.mathcoachconnection.com](http://www.mathcoachconnection.com)



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# SUMMER

## Math Guide



### **This is the guide you've been waiting for!**

Finally, a way to support your child with math over the summer without spending a fortune on materials, private tutoring or other resources.

The Math Coach Connection Summer Math Guide was designed to help caregivers support their children with the core content areas of math over the summer, with activities that integrate into your daily routine!

This guide includes information about grade-level math expectations from 3<sup>rd</sup> grade, as well as the upcoming content covered in 4<sup>th</sup> grade math. It includes a page for each core focus area for the grade level as well as a bonus fluency page, goal setting page and additional resource page (with links to helpful podcast episodes)! A total of 12 concise, high-impact pages! Each page has ways to integrate math practice into your daily routine over the summer. **The 3<sup>rd</sup> Grade Summer Math Guide includes a page for each of the following categories:** Fluency Focus (multiplication and division within 100), addition within 1,000, subtraction within 1,000, multiplication within 100, division within 100, fractions, measurement & data and geometry. **Every page includes:**

- Math Skills Activities: Easy, no-prep ways to help your child practice 3<sup>rd</sup> grade math skills at home.
- Math Talk Moments: conversation starters to get your child talking about (and understanding) math
- Math Models: visual models of math concepts that 3<sup>rd</sup> graders use for problem solving
- Math At Mealtime: ways to seamlessly integrate math into cooking, baking or prepping a meal. Since this is already a part of the daily routine, it is a natural place to integrate real-world, hands-on mathematics.
- Math 'Did You Know' Facts: important tips and information about 3<sup>rd</sup> grade math skills
- Family Read Aloud & Game Ideas: a curated list of high-quality math books and games related to each focus area. These lists were designed specifically for third graders and their families.

**Check out the following pages for more information on how to use the Summer Math Guide.**

# HOW TO USE

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### Make Math Meaningful Over The Summer

This guide was created to make it easier for families to support their children with maintaining math skills over the summer. Practicing math skills over the summer is critical for preventing the summer slide. Integrating math practice into the daily routine, as well as spending some focused time on math practice will help set your child up for success as they start next school year. Time and resources are often a barrier to being able to practice math at home which is why the activities included in this guide are:

- **Integrated into everyday activities**, so they don't take much additional time and can often be done on the road, during mealtime or throughout the daily routine. This also helps children understand that math is part of the real world. These real-world examples make math more meaningful and build conceptual understanding.
- **Low cost:** The materials needed for all activities are materials you likely have around your home, or can be purchased at a low price, or borrowed. For example, playing cards, a dice, paper, pencil, various food items. *Most of the books included in the 'read aloud' section are available at local libraries.*
- **Low Prep, High Impact:** The conversation starters, activities, books and games listed in this guide are **high-interest** activities that will engage your child in meaningful math practice, while not taking much advanced time for you to prepare.

### A Few Notes

- This guide is **not intended to replace summer school programs**. It is meant to supplement summer school and/or provide a guide for families to support children who are not in summer school math programs.
- This guide covers the **core content of Third Grade**. However, it does not cover all skills. It focuses heavily on fluency and operations with whole numbers. *\*Note: Elapsed time is combined with Geometry, to allow more time to focus on area/perimeter concepts.*
- The activities in this guide are suggestions. You do not need to complete every activity and you can modify activities as needed to provide more support or make them more challenging.

### Sample Schedule

*Every child is different, and everyone's summer break is different. That's why the activities in this guide can be modified and the schedule can be adjusted to meet the needs of your child. You can also choose to focus more on just the areas in which your child needs the most support. You can shorten the schedule or extend it as needed. If it is helpful, use this sample schedule to plan your summer math practice.*

#### Week 1

**Multiplication**  
Integrate fluency practice

#### Week 2

**Division**  
Spiral back to multiplication skills to support division

#### Week 3

**Addition**  
Connect repeated addition to multiplication

#### Week 4

**Subtraction**  
Integrate all 4 operations into problem solving

#### Week 5

**Fluency Review**  
Focus fluency on multiplication and division facts within 100. Include some addition and subtraction

#### Week 6

**Fractions**  
Focus on using visual models. Pick a day to spiral back to one of the four operations with whole numbers.

#### Week 7

**Measurement & Data**  
Connect the area model to multiplication and division strategies

#### Week 8

**Geometry**  
Pick a day to spiral back to multiplication and division fluency

# HOW TO USE

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## Quick Skills Check

- ❑ *In this section, you will see a brief checklist of skills related to the math concept listed at the top of the page. This does not cover all grade level skills but focuses on core skills to support understanding and fluency. This is helpful to check in with your child's current level of understanding.*

## Math Talk Moments

*Some conversation starters for engaging your child in math talk.*

*This section includes short conversation starters to engage your child in conversations about math. These are helpful for building mental math skills and thinking about math in the real world. The questions are designed to be modified as needed, or to be used more than once but with different numbers/topics.*

## Activities to Build MATH SKILLS

- ❑ *This section includes brief activities that you can do with your child to help them build understanding and fluency skills within the topic area. Some activities require materials, but most materials are ones that you can easily find at home (or can be borrowed or purchased at a low cost).*
- ❑ *Helpful materials to have on hand are*
  - ❑ *A dice*
  - ❑ *A deck of cards*
  - ❑ *Pencil and paper*
- ❑ *These activities are easily modified to provide more of a challenge or to provide more support. You can keep track of the activities you try on the checklist to hold your child accountable for math practice.*
- ❑ *These activities can be done independently, or one-on-one with a parent/teacher/supporter. They are family friendly and can be done with the whole family too.*

## Math Models

*This section will show visual models that are frequently used within the focus area. These are not all the grade level strategies that children learn, but provide a helpful visual so you know more about the strategies they might be using for problem solving.*

## Math at Mealtime

*Mealtime is a perfect time to integrate math into the conversation. It also has many great examples of real-world math application. This section includes easy ways to integrate math skills into snack time, cooking, baking, planning and eating a meal.*

## Did You Know?

*This section includes important information for families to know regarding the specific skills and strategies for the focus area. It shows how this grade-level math fits into the progression of K-5 math.*

## Family Read Aloud Books & Games

*In this section you will find a list of books and/or games that support the skills needed for the mathematical focus area. These high-quality books and games integrate perfectly into family game night or read aloud time and help children apply their math skills to real-world situations and games.*

# GOAL SETTING

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## Set Yourself Up For Success!

Use the space below to set some goals for the summer. Whether your goals are gaining new understanding of difficult math concepts, building fluency with your math facts, maintaining your math skills or anything in between, this goal setting sheet can help hold you accountable. Write down 3 goals you have for yourself this summer and then 3 things you can do to help you be successful. Set yourself up for success by trying your best!

### My Summer MATH GOALS

1

2

3

### Steps to SUCCESS

1

2

3



# SUMMER

## Math Guide

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### HERE'S AN OVERVIEW OF WHAT 3<sup>RD</sup> GRADERS LEARNED IN MATH THIS YEAR

#### Operations & Algebraic Thinking <sup>3<sup>rd</sup></sup>

Fluently multiply and divide within 100

- Solve story problems with multiplication and division within 100
- Use relationship between multiplication and division to **fluently multiply and divide within 100**
- Find the unknown number in a multiplication or division equation (within 100)
- Use properties of operations to multiply and divide
- Solve two-step story problems using addition, subtraction, multiplication and/or division

#### Numbers & Operations in Base Ten <sup>3<sup>rd</sup></sup>

Fluently add and subtract within 1,000

- Round whole numbers to the nearest 10 or 100
- Use strategies and algorithms based on place value, to **fluently add and subtract within 1,000**
- Multiply one-digit whole numbers by multiples of 10 (in the range of 10-90)

#### Numbers & Operations Fractions <sup>3<sup>rd</sup></sup>

Understand & compare fractions with the same numerator or same denominator

- Understand the meaning of the numerator and the meaning of the denominator in a fraction
- Use models to represent fractional parts of a whole
- Represent fractions on a number line
- Recognize and generate equivalent fractions
- Express whole numbers as fractions and recognize the fraction that is equivalent to a whole number
- Compare two fractions with the same numerator or same denominator

#### Measurement & Data <sup>3<sup>rd</sup></sup>

Relate area of rectangles to the operations of multiplication and division

- Recognize that plane figures have an area (and understand concept of area)
- Measure area by counting unit squares
- Find area of rectangles by multiplying side lengths
- Solve real-world problems involving area of rectangles and perimeters of polygons
- Use area models to represent the distributive property
- Recognize area as additive and find the area of larger figures by decomposing the into non-overlapping rectangles
- Tell and write time to the nearest minute and solve problems related to time
- Generate measurement data by measuring lengths
- Draw a pictograph and a bar graph to represent data
- Measure and estimate mass and liquid volume

#### Geometry <sup>3<sup>rd</sup></sup>

Categorize shapes based on attributes

- Determine if a figure is a polygon
- Partition shapes into parts with equal areas (represent each part as a unit fraction)
- Recognize shapes that belong in a category (ex: quadrilaterals) and shapes that do not



# SUMMER

## Math Guide

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HERE'S WHERE 3<sup>RD</sup> GRADERS ARE HEADED IN THEIR  
LEARNING NEXT YEAR IN 3<sup>RD</sup> GRADE

### Operations & Algebraic Thinking <sup>4<sup>th</sup></sup>

Interpret multiplication as a comparison

- Interpret a multiplication equation as a comparison
- Solve contextual problems involving multiplicative comparison
- Solve multi-step contextual problems with whole numbers using the four operations, including problems in which remainders must be interpreted
- Find all factor pairs for a whole number in the range of 1-100
- Generate a number or shape pattern that follows a given rule

### Numbers & Operations in Base Ten <sup>4<sup>th</sup></sup>

Fluently add and subtract within 1,000,000 and multiply and divide larger numbers

- Recognize that in a multi-digit whole number, a digit in one place represents 10 times as much as the digit to its right.
- Read and write whole numbers using standard, word and expanded forms
- Compare two multi-digit numbers based on the meaning of the digits in each place
- Round multi-digit whole numbers to any place
- **Fluently add and subtract within 1,000,000**
- Multiply a whole number of up to 4-digits by a 1-digit whole number
- Multiply two 2-digit numbers
- Find whole-number quotients and remainders with up to 4-digit dividends and 1-digit divisors

### Measurement & Data <sup>4<sup>th</sup></sup>

Apply area/perimeter and lines/angles to the real world

- Solve two-step real-world problems involving whole number measurements with all four operations
- Know and apply the area and perimeter formulas to real world problems
- Make a line plot to display a set of measurement data (in fractions)
- Understand and measure angles using a protractor
- Recognize angle measure as additive and find unknown angle measurements

### Numbers & Operations Fractions <sup>4<sup>th</sup></sup>

Operations with fractions with unlike denominators and basic decimal understanding

- Compare two fractions with different numerators or different denominators by creating a common denominator or common denominator (or by comparing to a benchmark fraction)
- Understand a fraction as a sum of unit fractions
- Decompose a fraction into a sum of fractions with the same denominator
- Add and subtract mixed numbers with like denominators
- Solve contextual problems involving addition and subtraction of fractions
- Solve contextual problems involving multiplication of a whole number by a fraction
- Express fractions with the denominator 10 as an equivalent fraction with the denominator 100
- Read and write decimal notation for fractions with denominators 10 or 100. Locate these decimals on a number line
- Compare two decimals to hundredths

### Geometry <sup>4<sup>th</sup></sup>

Understand how lines create angles

- Draw points, lines, line segments, rays, angles (right, acute, obtuse, straight, reflex), perpendicular and parallel lines and identify these in 2-D figures
- Classify 2-D figures based on presence or absence of various angles or lines
- Recognize and draw lines of symmetry

# FLUENCY FOCUS

## 3RD GRADE

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### Quick Skills Check

- I can fluently multiply within 100
- I can fluently divide within 100
- I can fluently add within 1,000
- I can fluently subtract within 1,000

### What Does FLUENCY Mean

Being able to solve a problem both **quickly and accurately**. Children who are fluent in a particular skill, can think **flexibly** about how to solve the problem. Fluency **does not mean memorization**. Although fluency often leads to memorization of math facts.

### Activities to Build FLUENCY

- Use 'think' problems (or anchor facts) to help you solve larger problems
- Try solving a problem two ways. Use this to check your work to make sure your answer was the same both times. Decide which way was the most efficient/fastest.
- Play a fluency game: any game that requires you to solve a problem with accuracy, quickly. An example is 'Roll and Say': Roll two dice, and the two numbers rolled become the factors. Say the product and record the equation. *For an extension, you can play against someone and the first person to say the product gets a point.*
- Practice solving a set of problems mentally. Visualize how to solve the problem in your head to build mental math skills
- Focus on doubles facts to develop a set of fluent facts to build on
- Model Math: Use a hands-on math manipulative or draw a model to build deeper understanding of the value of an equation
- Share your thinking aloud by talking to a family member or teacher about your answer
- Make fact families: Knowing that  $3 \times 4 = 12$  can help a child know that  $12 \div 3 = 4$

$$6 \times 8$$

Think:  $(6 \times 4) + (6 \times 4)$

The goal of a 'think' problem is to use a smaller problem that a child knows (or has memorized) to support them in solving larger problems. In this case, if they know that  $6 \times 4 = 24$ , they can start with that and then double it. They could also start with  $6 \times 5$  or any other smaller problem that they know fluently.

### Did You Know?

Fluency cards & flash cards don't have to be boring! You can 'build a road' with fluency cards, or play 'clear the table' or 'memory.' For more ideas: listen to Episode 16 of The Dog Ate My Homework Podcast.

### Track Your Progress

Make a chart of 'math facts I know' and 'math facts I'm working on' to keep track of your progress. Update your chart regularly to keep track of your growth!



# MULTIPLICATION

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## Quick Skills Check

- I can fluently multiply within 100
- I can solve multiplication story problems
- I can use the properties of operations to multiply

## Math Talk Moments

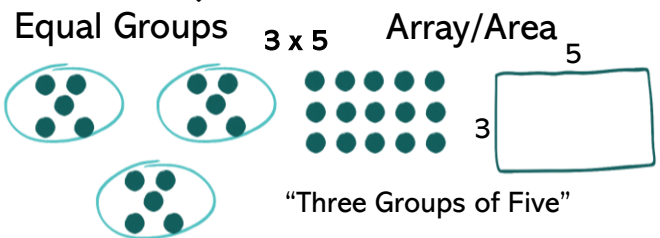
Some conversation starters for engaging your child in math talk.

- What are some ways you can make the number 24 using multiplication? (Try with other numbers too)
- What multiplication facts do you feel most confident in?
- Pick a spot to look (outside, in your kitchen etc.). What examples of multiplication do you see? Ex: 'I see 7 clovers, each has 3 leaves.' Or 'the numbers on the microwave are in an array.'

## Activities to Build MULTIPLICATION SKILLS

- Practice skip counting by numbers 1-10. Do this verbally and on a number line. Relate skip counting to multiplication.
- Incorporate math into mealtime. Find examples of multiplication problems while cooking, baking or serving a meal.
- Play 'Rolling Choice.' Roll two dice, use those two numbers as the factors to multiply. Practice commutative property by multiplying them in either order. Draw a visual model to prove your thinking.
- Make a nametag for yourself and your child with a difficult multiplication fact on it. For example:  $7 \times 8$ . Then for the rest of the day you and your child call each other by 'name' and the name is the product/answer to that multiplication fact. *In this case: Mrs. 56.*
- Use hands-on manipulatives (counters such as Cheerios, blueberries, cubes etc.) whenever possible for equal groups problem solving.
- Multiplication in the real world: look for examples of multiplication in the real world. Ex: you're buying 5 shirts and each shirt costs \$6. Or you put 8 apples in each of 4 baskets.
- Play games with fact fluency cards to build multiplication fluency.

## Multiplication Models



## Math at Mealtime

- Use egg cartons to model arrays
- Bake muffins or cookies and put an even number of blueberries or chocolate chips in each one
- Give everyone in your family the same number of a food (Ex: orange slices, chicken nuggets, raspberries etc.) and figure out how many total you used.

## Did You Know?

In third grade, children typically do not learn the standard algorithm for multiplication. The focus is more on visual models and building mental math skills and fluency of multiplication combinations up to  $12 \times 12$

## Family Read Aloud Books & Games

- **The Grapes of Math** by Greg Tang
- **The Best of Times: Math Strategies that Multiply** by Greg Tang
- **Carnival Counting** by Melanie Doppler
- **Multiplying Menace: The Revenge of Rumpelstiltskin** by Pam Calvert

# DIVISION

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### Quick Skills Check

- I can fluently divide within 100
- I can solve division story problems
- I can use multiplication to help me solve a division problem
- I can find the missing value in a multiplication or division equation relating 3 whole numbers within 100

### Math Talk Moments

*Some conversation starters for engaging your child in math talk.*

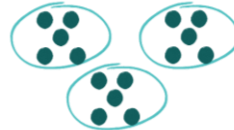
- If I want to share these (pick a food or item and determine the starting number) 16 blueberries evenly between everyone in our family, how many blueberries will each person get?
- What is your favorite strategy to use for division? Why?
- What tools help you solve division problems?
- How could you show division on a number line?

### Activities to Build DIVISION SKILLS

- Practice skip counting backwards by numbers 1-10. Play 'Zoom to Zero' on a number line. Choose a number (ex: 36) as the quotient and another number that is a factor of that number to be the divisor (ex: 4). Take turns skip counting backwards from the quotient by that number. '36, 32, 28, 24...'
- Incorporate math into mealtime. Find examples of division problems while cooking, baking or serving a meal.
- Play 'The Dealer': Count out a specified number of playing cards (Ex: 28) and deal the cards out to a number of players (ex: 4 players) to find out how many cards each player gets. Try to start by using numbers that are evenly divisible by the number of players.
- Use hands-on manipulatives (counters such as Cheerios, blueberries, cubes etc.) whenever possible for modeling division.
- Division in the real world: look for examples of division in the real world. Ex: at dinner you ordered edamame and there were 20 pods in the bowl. You shared it evenly with 5 people.
- Make fact families with familiar multiplication facts to build division fluency. Ex:  $3 \times 4 = 12$  so  $12 \div 3 = 4$

### Division Models

Partitive Division



15 marbles divided into  
3 bags

Measurement/  
Quotative Division



15 marbles divided into  
bags with 3 marbles in each

### Math at Mealtime

- Use a set number of ounces of liquid (water, milk, juice) and share it evenly with a set number of cups for each family member (use a measuring cup for accuracy).
- Share a set amount of a food (blueberries, grapes, apple slice, raisins, carrots etc.) evenly between everyone in your family.
- Use the total number of calories (or grams of sugar) in box/bag of a food and divide by the number of servings to find amount per serving.

### Did You Know?

In third grade, children typically do not learn long division. The focus is more on visual models building conceptual understanding of division and developing fluency and mental math division skills.

### Family Read Aloud Books & Games

- **Divide and Ride** by Stuart J. Murphy
- **A Remainder of One** by Elinor Pinczes
- **The Multiplying Menace Divides** by Pam Calvert
- **The Doorbell Rang** by Pat Hutchins
- **Go Fish** *practice dealing out cards*
- **Proof!** *A family game to practice mental math*
- **Missing Factor Division Dash** *Available in my TPT Store*

# ADDITION

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## Quick Skills Check

- I can round whole numbers to the nearest 10 or 100
- I can fluently add within 1,000
- I can solve two-step contextual problems using the four operations (addition, subtraction, multiplication, division)

## Math Talk Moments

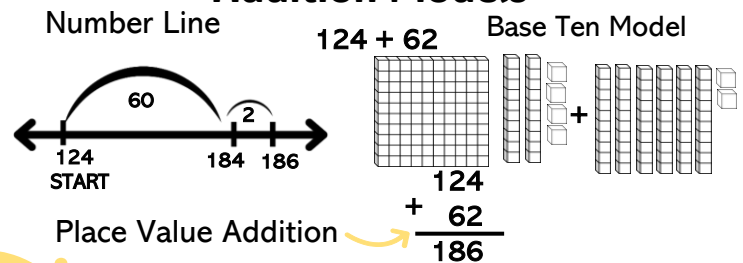
Some conversation starters for engaging your child in math talk.

- About how much money do you think I've spent grocery shopping today if I spent \$128 on fresh produce and \$73 on other food (*change this as needed for various shopping trips*).
- Find a number in the real world (ex: a price tag, a speed limit sign, a number of calories on a box). Ask questions such as: How many tens are in that number? What is that number rounded to the nearest ten or hundred. If you add that number to itself (or double it), what is the sum?

## Activities to Build ADDITION SKILLS

- Make a place value chart to keep track of the hundreds, tens and ones while adding. You can also use grid or graph paper to keep your work organized.
- Incorporate math into mealtime. Find examples of addition problems while cooking, baking or serving a meal.
- Play 'Largest Sum': Using 3 dice, take turns rolling all 3 dice twice. Each time you roll, the 3 numbers rolled become the digits for a 3-digit number. Arrange the dice so it becomes the largest possible number. For example if 4, 2 and 6 are rolled, make the number 642. Repeat this process to get a second number. Add your numbers together. The player with the larger sum wins. You can also model the number with base ten blocks. Or play with 2 dice and keep track of your total sum over time.
- Use hands-on manipulatives (base-ten blocks or homemade base-ten block models) whenever possible for modeling addition.
- Addition in the real world: look for examples of addition in the real world. Ex: add the total points of a basketball team over the course of multiple games, or add miles on a road trip, or money in various accounts or categories of a budget.

## Addition Models



## Math at Mealtime

- Keep track of what you spend on groceries throughout the week on a chart with a running total of money spent.
- Make s'mores base ten blocks. Use graham crackers for hundreds, one rectangle of chocolate for tens, and marshmallows for ones. Model problem solving of addition with two- and three-digit numbers with this model. *Alternatively, you can use graham crackers, pretzel rods and Cheerios.* After solving a problem, you can eat the model for snack!

## Did You Know?

In third grade, children should be able to use the 'standard algorithm' for addition (otherwise known as a place value model). Children should be able to use this strategy to regroup/rename ten ones for one ten and ten tens for one hundred and prove their thinking using base ten blocks.

## Family Read Aloud Books & Games

- The 512 Ants on Sullivan Street by Carol A. Losi
- A Million Dots by Andrew Clements
- A Million Dots by Sven Völker
- Shut the Box Board Game

# SUBTRACTION

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## Quick Skills Check

- I can round whole numbers to the nearest 10 or 100
- I can fluently subtract within 1,000
- I can solve two-step contextual problems using the four operations (addition, subtraction, multiplication, division)

## Math Talk Moments

Some conversation starters for engaging your child in math talk.

- Which problem would be more challenging for you to solve.  $999-124$  or  $1,000-124$ . Why? *You can repeat this with other numbers that require regrouping or no regrouping.* What tools can you use to help you solve that problem?
- How can you use addition to help you solve a challenging subtraction problem?
- About how much taller do you think a giraffe is than a cat? *Ask questions to estimate the difference between various animal heights, lengths and weights. Then look up the real answer to calculate.*

## Activities to Build SUBTRACTION SKILLS

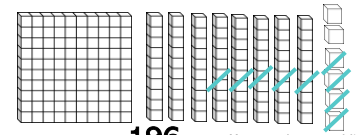
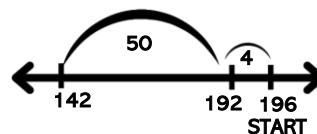
- Make a place value chart to keep track of the hundreds, tens and ones while subtracting. You can also use grid or graph paper to keep your work organized.
- Incorporate math into mealtime. Find examples of subtraction problems while cooking, baking or serving a meal.
- Play 'Zero Race': All players start at 1,000. Each player rolls 3 dice, to create the largest 3-digit number they can. The player subtracts that number from 1,000. This process continues, subtracting each number from the remaining difference and keeping track of each player's new number as you race to zero. The first person to get closest to zero wins. As you get closer to zero, you can switch to using 2 dice for a 2-digit number, or just one dice to try to get exactly to zero.
- Use hands-on manipulatives (base-ten blocks or homemade base-ten block models) whenever possible for modeling subtraction.
- Subtraction in the real world: look for examples of subtraction in the real world. Ex: subtract the money spent throughout the week, from the total weekly budget. Or calculate miles remaining on a road trip, or estimate minutes left in the day or class. Use various contexts such as comparison (To find the difference) and take away (to find what's left).

## Subtraction Models

Number Line

$$196 - 54$$

Base Ten Model



You can also use addition to support subtraction by adding up from the smaller number to the larger number

Place Value Subtraction

$$\begin{array}{r} 196 \\ - 54 \\ \hline 142 \end{array}$$

## Math at Mealtime

- Set a grocery budget for the week and try to stick to it while shopping. Every time you spend money, work together to subtract that from the budget.
- Calculate the amount of milk remaining in the carton, or cereal in the box.
- Make s'mores base ten blocks. Use graham crackers for hundreds, one rectangle of chocolate for tens, and marshmallows for ones. Model problem solving of subtraction with two- and three-digit numbers with this model. *Alternatively, you can use graham crackers, pretzel rods and Cheerios. After solving a problem, you can eat the model for snack!*

## Did You Know?

In third grade, children should be able to check their work using a base ten block model. If you don't have base ten blocks, you can use a quick picture to prove why your strategy works and your answer is correct.

## Family Read Aloud Books & Games

- **Shark Swimathon** by Stuart J. Murphy
- **Monopoly Junior**: *Keep track of total amount of money on a separate sheet of paper*
- **Adsumundi**: *A family game to practice fluency with all four operations*
- **Math Blast**: *Practices all four operations*

# FRACTIONS

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## Quick Skills Check

- I understand the meaning of the numerator and denominator in a fraction.
- I can represent a fraction on a number line.
- I can recognize and generate simple equivalent fractions.
- I can compare two fractions with the same numerator or the same denominator.

## Math Talk Moments

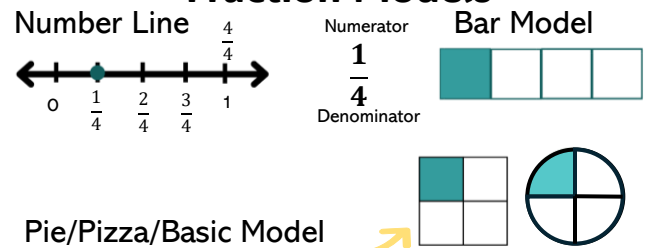
*Some conversation starters for engaging your child in math talk.*

- What tools do you use to help you understand fractions?
- Choose two fractions to compare with the same numerator and same denominator (even better if you can find an example in the real world). For example:  $1/3$  and  $1/4$  or  $3/6$  and  $4/6$ . Which fraction is bigger? Prove your answer by drawing a picture or making a model.
- Would you rather have one third or one fourth of a pizza? Why? (Repeat this with other fractions or other foods or distances, like run  $1/2$  mile or  $1/8$  mile).

## Activities to Build FRACTION UNDERSTANDING

- Find something to measure (a table, a chair, a wall, a pencil etc.). Measure the item using a ruler/measuring tape and look for the fractional measurements on the ruler.
- Incorporate math into mealtime. Find examples of fractions while cooking, baking or serving a meal.
- Play 'Roll a Fraction': Choose either Denominator Roll or Numerator Roll. For Denominator Roll: All players use 1 as their numerator. Players take turns rolling a dice. The number rolled becomes the denominator. Ex: if you roll a 4, the fraction is  $1/4$ . For Numerator Roll, all players agree on a denominator (Ex: 2, 3, 4, 6 or 12). Take turns rolling the dice. The number rolled becomes the numerator. For both games, players draw a picture to represent their fraction and then compare who has the larger fraction. The player with the larger fraction wins a point.
- Use hands-on manipulatives (fraction tiles, folded paper strips, a chocolate bar, fraction stackers etc.) whenever possible for modeling fraction problem solving.
- Fractions: look for examples of fractions in the real world. Ex: a chocolate bar broken into equal sized pieces, ingredients in a recipe, equal sized slices of pizza, fractions on a sign at a gas station, sale signs at stores etc.

## Fraction Models



## Math at Mealtime

- Find a recipe in a cookbook or online that you want to make together. Look for fractional amounts of various ingredients in the recipe. Discuss what the fractions mean, and compare them (ex:  $1/2$  cup flour and  $1/4$  cup sugar. Is there more flour or more sugar?)
- Find a food (cake, pizza, pie, donut, chocolate bar, celery stalk) to cut into equal pieces, what fraction represents one of the pieces? You can also do this with cutting something to equally share with everyone in the family, or everyone at the table.

## Did You Know?

In third grade, the focus of fractions is on building conceptual understanding using visual models. Operations with fractions are not learned until later grades. Third grade focuses on halves, fourths, eights, thirds, sixths and twelfths.

## Family Read Aloud Books & Games

- **The Lion's Share** by Matthew McElligott
- **If You Were a Fraction** by Trisha Speed Shaskan
- **A Fraction's Goal—Parts of a Whole** by Brian P. Cleary
- **Sir Cumference and the Fracton Faire** by Cindy Neuschwander
- **Fraction Formula Game** By Educational Insights
- **Fraction Dominoes** By Junior Learning

# MEASUREMENT & DATA

3RD GRADE

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## Quick Skills Check

- I can multiply side lengths to find the area of rectangles with whole number side lengths
- I recognize area as additive and can find area of figures by decomposing them into non-overlapping rectangles
- I can solve real-world problems involving perimeter of polygons

## Math Talk Moments

*Some conversation starters for engaging your child in math talk.*

- If I wanted to find the area of this room, what measurements would I need? How would I calculate area?
- Why would someone want to find the perimeter of something (ex: bulletin board, room, backyard, notebook). *Some reasons might include, to decorate, to add a border, to put tile on etc.*
- If I wanted to find the area of this piece of paper, what unit should I use? *Inches, feet, yards, meters, centimeters?* Why? What about the area of the park?

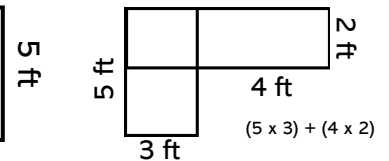
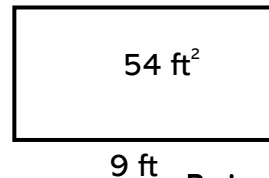
## Activities to Build MEASUREMENT SKILLS

- Choose a room in your home and draw a scale model. Measure the dimensions of the room using a ruler, measuring tape or yard/meter stick. Then draw a scale model. Find the area and perimeter of the actual room and of the scale model drawing. Extension: Use this to design a room remodel, or to plan for wallpaper on a wall.
- Incorporate math into mealtime. Find examples of area problems while cooking, baking or in the kitchen.
- Play 'Room Remodel': Find a deck of cards and a piece of paper (preferably grid/graph paper) and a pencil. On a player's turn, draw two cards from the deck. Those are the dimensions of your starting room. Give face cards a value of 12 in this game and Aces a value of 11. Players then calculate the area and perimeter of their 'room' and record it on a piece of paper. Next, players each draw one card. Choose one dimension of your room to change to the number on the card. Record the new area and perimeter. Notice how the area and perimeter of the room changes throughout the game. There is no official end of the game, but one you stop, take the room design each player ended with and draw a design of what you would put in the room.
- Area and perimeter in the real world: look for examples of area and perimeter in the real world. Ex: putting a new fence around a yard, painting/tiling around the edges of a swimming pool, buying a new area rug and measuring dimensions etc.

## Area Models

Area = length x width

Area of a rectilinear figure



Perimeter: add all side lengths together

## Math at Mealtime

- Many snacks/cereals come in boxes. Find a measuring tool such as a ruler and discuss the measurable attributes of the box. Then focus on linear measurements: *Length, width, height*. Calculate the area of one of the sides of the box.
- Graham cracker (or other rectangular snack) model building: use this snack to build a larger rectangle, using the small square graham crackers. Then use the area of one square to determine the area of the whole figure.

## Did You Know?

Finding area connects directly to the multiplication strategies that third graders learned this year. It also serves as the foundation for operations they will do with measurement conversion and fraction/decimal operations in fourth and fifth grade. It is also a very helpful real-world skill!

## Family Read Aloud Books & Games

- **Perimeter Area and Volume: A Monster Book of Dimensions** by David A. Adler
- **Fence It In Exploring Area and Perimeter Game** by Learning Advantage

# GEOMETRY

3RD  
GRADE

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## Quick Skills Check

- I can tell and write time to the nearest minute and solve problems related to elapsed time
- I can determine if a figure is a polygon.
- I can categorize shapes into groups with similar attributes
- I can explain why a rectangle is a quadrilateral but why it is not a square.

## Math Talk Moments

*Some conversation starters for engaging your child in math talk.*

- Look at signs on the road while driving (safely) or while parked. What shape is that sign? How many sides does it have? Is it a polygon? Do you see any other signs that fit into the same category as that sign?
- How long do you think the game will last? (Ex: baseball, soccer game, dance recital etc.). Keep track of the start and end time to calculate elapsed time.
- How many different polygons can you find in your bedroom? How do you know they are polygons?

## Activities to Build GEOMETRY UNDERSTANDING

- Make a daily schedule. Write down the expected times of each activity throughout the day. Then record the actual times that things happened. Use this to calculate elapsed time
- Incorporate math into mealtime. Find examples of elapsed time and geometry problems while cooking, baking or serving a meal.
- Play 'Scavenger Hunt': Go on a scavenger hunt around your house, classroom, yard, favorite store etc. Look for polygons, or polygons in specific categories. Take pictures and make a Google Doc or other online document with the categories and pictures. Add to this doc throughout the day, week, month etc. You can also do a scavenger hunt to look for different types of clocks: digital, analog, and record what time each clock says.
- Make a number line (timeline) as often as possible for solving elapsed time problems. This is a very helpful, concrete way to problem solve with elapsed time.
- Play 'Find It, Time It' (or call it *Supermarket Sweep*): Go to a store with a specific list of items. Record the time you enter the store. Then record the time when you find each item on the list (or just the time you leave the store). Calculate elapsed time/total time it took to find each item or all the items.

## Geometry Models



*A plane figure with at least 3 straight sides and angles (no intersecting lines)*

## Math at Mealtime

- Use a recipe and look at the bake/cook time. Discuss the time you will start cooking, and use that time to determine when it should be finished. Or create a new recipe, and record when you start cooking and when you finish. Calculate total elapsed time for the recipe and record this on a recipe card or family cookbook.
- Food shapes: Eat a snack or meal with a variety of food shapes (ex: square bread, circular apple slice, rectangular graham cracker etc.) Discuss the shapes and how you could categorize them by attribute.

## Did You Know?

Third grade is the only year that officially covers elapsed time in the standards. This means that third grade is a critical year for building understanding of problem solving with elapsed time. In fourth and fifth grade (and beyond), it is assumed that children understand elapsed time since the concept is not revisited.

## Family Read Aloud Books & Games

- **Five Minutes** by Audrey Vernick & Liz Garton Scanlon
- **A Second, A Minute A Week With Days In It** by Brian P. Cleary
- **A Trapezoid is Not A Dinosaur** by Suzanne Morris
- **Which One Doesn't Belong?** By Christopher Danielson
- **Drop It A family game**
- **Any games with timers (Ex: Scattergories, Ka-Blab)** figure out how long the timer is for elapsed time practice

## ADDITIONAL RESOURCES

### 3RD GRADE

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### The Dog

### Ate My

### Homework

## PODCAST GUIDE

*The Dog Ate My Homework Podcast was designed to empower caregivers to support their children with math at home. It includes grade-level specific math information, tips, games and ideas to try! Check out these helpful episodes!*

- Episode 1: *Supporting Your Child's Growth Mindset in Math*
- Episode 2: *Homework Routines: Setting Your Child Up For Success on Math Homework*
- Episode 4: *What is this 'New Math' Anyway?*
- Episode 6: *Quick Homework Troubleshooting Tips*
- Episode 15: *Multiplication Part 1: How Third (And Fourth) Graders Build Multiplication Understanding*
- Episode 16: *Third Grade Multiplication Part 2: The Strategies and At-Home Tips*
- Episode 17: *Third Grade Division: Helping Your Child Build on What They Know to Make Sense of Division*
- Episode 18: *Fourth Grade Multiplication Part 1: The Major Shifts from Third to Fourth Grade*

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