Math Coach
CONNECTION

SUMMER
Math Guide
1ST GRADE

BUILD FLUENCY

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

ENGAGE IN PROBLEM SOLVING

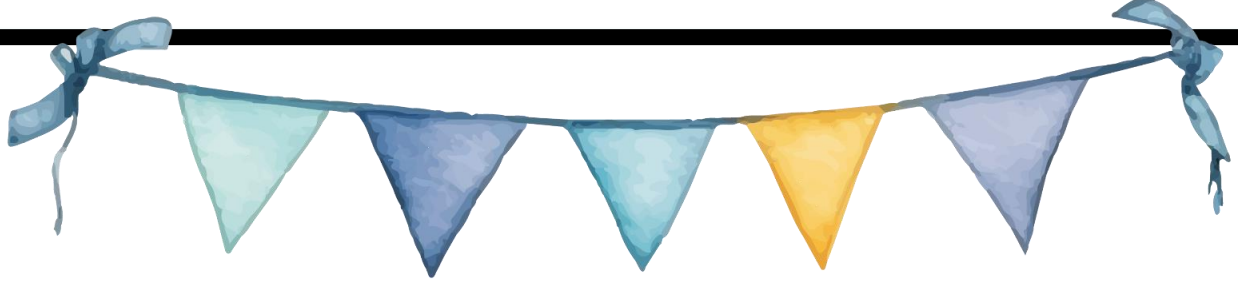Real world math examples to support problem solving skills

MAINTAIN SKILLS & PREVENT THE SUMMER SLIDE

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

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SUMMER
Math Guide

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CONNECTION

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 1st grade, as well as the upcoming content covered in 2nd 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 13 concise, high-impact pages! Each page has ways to integrate math practice into your daily routine over the summer. The 1st Grade Summer Math Guide includes a page for each of the following categories: Fluency Focus (addition and subtraction within 10), addition within 20, subtraction within 20, base ten basics (understanding the number system), addition within 100, subtraction within 100, measurement and data and geometry.

Every page includes:

❑ Math Skills Activities: Easy, no-prep ways to help your child practice 1st 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 1st 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 1st 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 first graders and their families.

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

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 First Grade.** However, it does not cover all skills. It focuses heavily on counting, addition and subtraction fluency and strategies.
- 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
Fluency Focus (Addition/Subtraction within 10)

Week 2
Addition (within 20)
Spiral back to use facts within 10

Week 3
Subtraction (within 20)
Spiral back to use facts within 10

Week 4
Base Ten & Place Value

Week 5
Addition (within 100)
Use addition within 20 and place value understanding

Week 6
Subtraction (Within 100)
Use subtraction within 20 and place value

Week 7
Measurement & Data
Use addition and subtraction skills to support problem solving

Week 8
Geometry
Spiral back for additional fluency practice

HOW TO USE

1ST GRADE

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.

Math Models

This section will show visual models that are frequently used within the focus area. These are not <u>all</u> 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.

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 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.

Math Guide

GOAL SETTING

1ST GRADE

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

1ST GRADE

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HERE'S AN OVERVIEW OF WHAT 1ST GRADERS LEARNED IN MATH THIS YEAR

Operations & Algebraic Thinking 1st

Fluently add and subtract within 10

- Use addition and subtraction within 20 to solve word problems involving adding to, taking from, putting together, taking apart and comparing with the unknown in all positions
- Solve word problems that call for addition of three whole numbers with sum less than 20
- Apply properties of operations as strategies to add and subtract
- Understand subtraction as an unknown-addend problem
- Relate counting to addition and subtraction
- Add and subtract within 20 **demonstrating fluency of addition and subtraction within 10.** *Note: some states expect fluency within 20 at this grade level.*
- Understand the meaning of the equal sign
- Determine the unknown whole number in addition and subtraction equations relating three whole numbers

Numbers & Operations in Base Ten 1st

Understand the Base Ten System and Add within 100

- Count to 120 starting at any number less than 120.
- Read and write numbers to 120 and represent a number of objects with a written number
- Understand that the two digits of a two-digit number represent amounts of tens and ones
- Understand that 10 can be thought of as ten ones
- Understand that the numbers between 11-19 are composed of a ten and a set number of ones
- Understand that the numbers 10,20,30,40,50,60,70,80,90 refer to a set number of tens and zero ones
- Compare 2 two-digit numbers based on the meaning of the tens and ones-digit
- Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of ten.
- Given a two-digit number, mentally find 10 more or 10 less than the number without having to count
- Subtract multiples of ten in the range 10-90 from multiples of ten in the range 10-90 using concrete models.

Measurement & Data 1st

Use linear measurement tools to measure objects and collect data

- Order three objects by length; compare the lengths of two objects directly by using a third object
- Express the length of an object as a whole number of unit lengths by laying multiple copies of a shorter object (length unit) end to end.
- Tell and write time in hours and half-hours using analog and digital clocks
- Organize, represent and interpret data with up to three categories. Ask and answer questions about the data set

Geometry 1st

Identify and partition shapes

- Distinguish between defining attributes (ex: triangles are closed and 3-sided) vs. non-defining attributes (color, orientation, overall size).
- Build and draw shapes with defining attributes
- Compose two-dimensional shapes or three-dimensional shapes to create a composite shapes
- Partition circles and rectangles into two and four equal shares. Use the words halves, fourths and quarters. Understand decomposing into more shares creates smaller shares.

SUMMER Math Guide

2ND GRADE

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HERE'S WHERE 1ST GRADERS ARE HEADED IN THEIR LEARNING NEXT YEAR IN 2ND GRADE

Operations & Algebraic Thinking — 2nd

Fluently add and subtract within 20

- Add and subtract within 100 to solve one and two-step problems involving situations of adding to, taking from, putting together, taking apart and comparing, with unknowns in all positions
- <u>Fluently add and subtract within 20 using mental strategies.</u> *By the end of 2nd grade, know from memory all sums of two one-digit numbers.*
- Determine whether a group of objects (up to 20) has an odd or even number of members
- Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and 5 columns

Measurement & Data — 2nd

Use linear measurement tools to measure objects and collect data

- Measure the length of an object by selecting appropriate tools to use such as rulers, yard sticks, measuring tapes etc.
- Measure the length of an object twice using different measurement units
- Estimate lengths using inches, feet, centimeters and meters
- Measure to determine how much longer one object is than another
- Use addition and subtraction within 100 to solve word problems involving lengths in the same units
- Represent whole numbers as lengths from 0 on a number line
- Tell and write time from analog and digital clocks to the nearest five minutes using a.m. and p.m.
- Solve word problems involving dollar bills, quarters, dimes, nickels and pennies and use dollar and cent signs appropriately
- Generate measurement data and draw a picture graph or bar graph to represent the data

Numbers & Operations in Base Ten — 2nd

Fluently add and subtract within 100

- Understand that the three digits of a three-digit number represent amounts of hundreds, tens and ones
- Count within 1,000; skip-count by 5s, 10s and 100s
- Read and write numbers to 1,000, using number names and expanded form
- Compare two three-digit numbers based on meanings of digits
- <u>Fluently add and subtract within 100 using strategies based on place value and properties of operations</u>
- Add and subtract within 1,000 using concrete models, drawings, strategies based on place value, properties of operations and the relationship between addition and subtraction Relate a visual strategy to a written method
- Mentally add 10 or 100 to a given number 100-900
- Mentally subtract 10 or 100 from a given number 100-900
- Explain why addition and subtraction strategies work

Geometry — 2nd

Identify and partition shapes

- Recognize and draw shapes with specific attributes
- Identify triangles, quadrilaterals, pentagons, hexagons and cubes
- Partition a rectangle into rows and columns
- Partition rectangles and circles into two, three or four equal shares and use fraction language to describe the shares.

FLUENCY FOCUS

Math Guide

1ST GRADE

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Quick Skills Check

☐ I can add within 20 **demonstrating fluency of addition within 10.**

☐ I can subtract within 20 **demonstrating fluency of subtraction within 10.**

☐ *Note: some states expect fluency within 20 at this grade level.*

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 addends. (Or for larger one-digit numbers, play 'draw and say' and use two playing cards—no face cards) Try to use mental math to find the sum of those two numbers. *For an extension, within 100, the first two numbers you roll or draw become the digits in a two-digit number. Then draw one or two more cards to create the second addend. 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 making five. Try to break apart one addend so you can get to the nearest 5. For example: in 2 + 4, think "2 + 3 is 5, and then just add one more." For problems within 20, focus on making ten (for example: in 6 + 8, think 6 + 4 and then add 4 more).

☐ Share your thinking aloud by talking to a family member or teacher about your strategy

☐ Utilize the commutative property. If it is challenging to solve 3 + 6, switch the order of the addends to add it as 6 + 3 instead.

☐ Make fact families: Knowing that 3 + 4 = 7 can help a child know that 7 − 3 = 4.

4 + 3

Think: (4 + 1) add 2 more

The goal of a 'think' problem is to a use smaller problem that a child knows (or has memorized) to support them in solving larger problems. In this case, if they know how to make five by adding 4 + 1 more, they can start with that and then add 2 more (breaking the 3 apart into 1 + 2). They could also start with 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.

Also, fluency within 10 looks different from fluency within 20. Fluency within 10 should be quick mental math (and sometimes memorization), while fluency within 20 might require longer think time or more strategy usage.

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!

ADDITION

WITHIN 20

1ST GRADE

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Quick Skills Check

- ☐ I can solve word problems that call for addition of three whole numbers with sum less than 20
- ☐ I can apply properties of operations as strategies to add
- ☐ I can relate counting to addition and subtraction
- ☐ I can add within 20 **demonstrating fluency of addition within 10.**
- ☐ I understand the meaning of the equal sign

Math Talk Moments

Some conversation starters for engaging your child in math talk.

- If I wanted to add the numbers 6 + 3 + 4, what order should I add the numbers in? How would you solve this problem? *Emphasize looking for ways to make ten such as 6 + 4*
- What does the equal sign mean? Can I write an equation like this: 6 = 2 + 4? *Emphasize that the equal sign means 'the same value'*
- If I ate 6 apple slices for lunch and the same number for lunch as I had for dinner, how many apple slices did I eat all together today? *Try with other doubles.*

Activities to Build ADDITION SKILLS

- ☐ Practice ways to make ten. Start at a number (Ex: 6) and say what number you would need to add to it to get to ten. "6 + 4 is 10." This supports efficient problem solving when breaking apart one addend with larger problems.
- ☐ Incorporate math into mealtime. Find examples of addition problems while cooking, baking or serving a meal.
- ☐ Play 'Largest Sum': Each player rolls two dice (or draws two cards from a deck with no tens or face cards). Each player adds together the two numbers rolled to get their sum. The person with the largest sum gets a point for that round.
- ☐ Play 'Balanced Equations': Draw a picture of a balance scale on a piece of paper (or ideally a whiteboard). Write an addition expression on one side and an equal sign in the middle. Then have your child find the sum of the two numbers and then write their own expression on the other side that has the same value as that expression. Ex: 4 + 5 = _____ (and they could write 7 + 2 or 6 + 3 or 8 + 1 etc.)
- ☐ Use hands-on manipulatives and visual models whenever possible for problem solving.
- ☐ Play games with fact fluency cards to build addition fluency and mental math skills within 20.
- ☐ Make a nametag for yourself and your child with a difficult addition fact on it. For example: 3 + 5. Then for the rest of the day you and your child call each other by 'name' and the name is the sum. *In this case, Mrs. 8.*
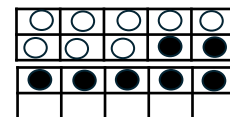
8 + 7 Addition Models & Strategies

Number Line

8   10   15

Double Ten Frame
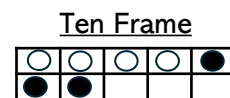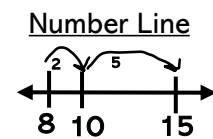
Ten Frame

Doubles
Ex: 4 + 4
Doubles Plus One
Ex: 4 + 5 (think 4 + 4 and one more)
Anchor to a 5 or 10
8 + 7 (think 8 + 2 and add 5 more)

Math at Mealtime

- Put two countable foods on your child's plate. Ex: 6 carrots and 8 green beans. Ask, how many total vegetables are on your plate? How do you know? If I give you 3 more beans how many will you have then?
- Make a fruit salad. Use a different number of each fruit (ranging from 1-10). Add two fruit totals at a time together to find out how much total fruit you have (ex: 8 blueberries + 3 orange slices)

Did You Know?

First grade is the only year where learning to understand the equal sign appears in the standards. This is a critical year for children to learn that the equal sign means 'the same value as.' For example: 5 = 3 + 2 is '5 is the same value as 3 + 2.' This is the foundation for algebraic understanding.

Family Read Aloud Books & Games

- **Ten For Me** by Barbara Mariconda
- **Spaghetti and Meatballs for All** by Marilyn Burns
- **Anno's Counting Book** by Mitsumasa Anno
- **Carnival Counting** by Melanie Doppler
- **Dominoes** *Any game with dominoes—Mexican Train Dominoes is fun for the whole family. Practice mentally adding the total number of dots on each domino.*

Quick Skills Check

- ☐ I can apply properties of operations as strategies to subtract
- ☐ I can relate counting to addition and subtraction
- ☐ I can subtract within 20 **demonstrating fluency of addition and subtraction within 10.**
- ☐ I understand the meaning of the equal sign
- ☐ I understand subtraction as an unknown-addend problem

Math Talk Moments
Some conversation starters for engaging your child in math talk.

- How could knowing that $5 + 7 = 12$ help you solve the problem $12 - 7$?
- There were 15 people at the park today and only 9 people at the park yesterday. How could we figure out how many more people are at the park today than yesterday?
- What is your favorite strategy to use for subtraction? Why?
- Notice subtraction situations to talk about as you drive or go somewhere new. For example: there were 14 cars in the parking lot when we got here, and I saw 4 drive away. How many cars are left?

Activities to Build
SUBTRACTION SKILLS

- ☐ Practice using addition to help support subtraction. Choose two problems (one that lends itself to adding up and one that lends itself to subtracting back). *For example: 19 – 17 and 18 - 4.* Have your child help you solve both problems using an 'add up' strategy and a 'subtract back' strategy and determine which was more efficient for each problem. *Notice, that for 19-17 it is much more efficient to just add up from 17, rather than subtracting 17 back.*
- ☐ Incorporate math into mealtime. Find examples of subtraction problems while cooking, baking or serving a meal.
- ☐ Play 'What's The Difference': Both players a card from a deck (face cards are worth 12 and Aces are worth 11). Find the difference between the cards you chose. Compare your solution strategies. *An extension would be to add up all the differences at the end of the game, or have one player create a two-digit number for more challenging subtraction by adding the value of both the cards they pulled to create their number.*
- ☐ Use hands-on manipulatives and visual models whenever possible for problem solving. Use ten frames and number lines whenever possible.
- ☐ Play games with fact fluency cards to build subtraction fluency and mental math skills within 10 and 20. If a child isn't fluent in $9 – 5$, then they will have trouble with $19 – 5$, so building fluency of the smaller problems is key.
- ☐ Make fact families with addition and subtraction within 20. For example: $6 + 8 = 14$ so $14 – 6 = 8$.

Subtraction Models

$15 – 7$

__Number Line__

8 10   15

__Double Ten Frame__
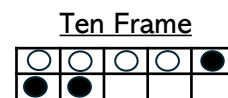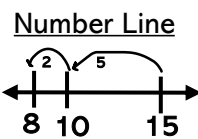
__Ten Frame__

__Use Addition To Find Difference__
$15 – 7 =$ _____
Reframe the problem to think $7 +$ ___ $= 15$
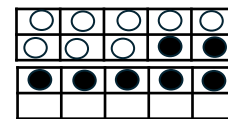
__Anchor to a 5 or 10__
$16 - 9$
$6 + 3$
$16 – 6 = 10$
$10 – 3 = 7$

Math at Mealtime

- Give your child a different amount of an item within 20 (pretzels, crackers, berries etc.) than yourself. 'How many more pretzels did you get than me? How do you know?
- Put a set amount of a specific food on your plate. Such as 17 Cheerios. As you eat, say aloud the subtraction expression to match. 'I had 17 Cheerios and I ate 6. How many do I have left?'
- Keep track of how many apples (oranges or other fruit) you have left throughout the week. Ex: We started with 12 apples. Now we have 8. How many did we eat?

Did You Know?

First grade subtraction is a crucial year for children to develop problem-solving skills and critical thinking skills. When solving subtraction problems, they should look carefully at the numbers to decide their solution strategy. For example, in 18-16, adding on from 16 would be more efficient than subtracting 16 back from 18.

Family Read Aloud Books & Games

- **The Action of Subtraction** by Brian P. Cleary
- **Subtraction Action** by Loreen Leedy
- **If You Were a Minus Sign** by Trisha Speed Shaskan
- **Equal Schmequal** by Virginia Kroll
- **Shut The Box** fluency game
- **Race to Planet X:** A number bond game

BASE TEN & PLACE VALUE

1ST GRADE

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Quick Skills Check

- ☐ I understand that the two digits of a two-digit number represent amounts of tens and ones
- ☐ I understand that 10 can be thought of as ten ones
- ☐ I understand that the numbers between 11-19 are composed of a ten and a set number of ones
- ☐ I understand that the numbers 10,20,30,40,50,60,70,80,90 refer to a set number of tens and zero ones
- ☐ I can compare 2 two-digit numbers based on the meaning of the tens and ones-digit
- ☐ I can read and write numbers to 120 and represent a number of objects with a written number

Math Talk Moments
Some conversation starters for engaging your child in math talk.

- Let's talk about the ages of everyone in our family. I am ___ years old, you are ____ years old (and name the rest of the family). In my age, which number is in the tens place?
- We spent $20 on gas this week and $40 on gas last week (or pick another 2-digit multiple of ten). What does the 0 mean in each of those numbers? What does the 2 and the 4 represent?
- Think about the number 2 and 12. What makes those numbers different? What is similar?
- Look at that speed limit sign (or other road sign). How would you read that number aloud?
- How many ones are in the number 10. Explain your thinking.

Activities to Build
PLACE VALUE UNDERSTANDING

- ☐ Practice renaming a number. Choose a number 11-19 to make using base ten blocks (a homemade base ten model with graham crackers, pretzel rods and Cheerios works great too, or a quick picture). For example: 14 would have 1 ten and 4 ones. Then make the same number but use only ones, so 14 ones. Talk about how the value of the number remains the same and use the model to build understanding.
- ☐ Incorporate math into mealtime. Find examples of place value problems while cooking, baking or serving a meal.
- ☐ Play 'Biggest Number.' All players roll 2 dice (or one dice two times) and use those as the 2 digits to make the largest number possible. Ex: If you roll a 4 and 6, then the largest number would be 64. *Emphasize that you are putting the numbers into each of the tens and ones-digit, so now the 6 isn't just 6, it represents 60.* Then the next player rolls to make their number. Each player should write their number, model it using base ten blocks (or a quick picture), find it on a hundreds chart and count up from 0 to that number. Players then compare their numbers and the player with the largest number gets a point. *You can also play with a deck of cards (no tens or face cards) for digits 7-9.*
- ☐ Play 'Number Chance': Write numbers 11-19 on post its or small pieces of paper. Fold them up and put them in a bowl/hat. Then flip a coin. If it lands on heads, make the number using base ten blocks (or a pretzel/Cheerio base ten model), and if it lands on heads, then find the number on a hundreds chart (or make a number line 1-20 and find the number on a number line).
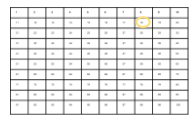
Addition Models   18

| Place Value Chart | | Base Ten Block Model | Hundreds Chart |

Place Value Chart

Tens	Ones
1	8

Base Ten Block Model

Base Ten Blocks   Quick Picture
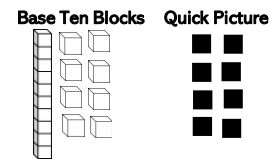
Hundreds Chart

Math at Mealtime

- Make a base ten snack! Choose a few two-digit numbers to model. Use pretzel rods to represent tens and Cheerios, M&Ms or blueberries to represent ones. Write the number and model it using this base-ten model. Then enjoy the treat!
- Look at the nutrition labels on various foods. Look for one and two-digit numbers. Talk about what the digits in each number mean. Compare the numbers.

Did You Know?

In first grade, understanding the meaning of tens and ones is an important foundation for operations with larger numbers. Using hands-on models is key to understanding that ten ones is the same value as one tens, and that the number in the digit in the tens place has more value than the digit in the ones place.

Family Read Aloud Books & Games

- **When I Am Bigger** by Maria Dek
- **Place Value Party** by Courtney O'Grady
- **Lia and Luis Who Has More** by Ana Crespo
- **Make a Splash 120 Floor Game** *by Learning Resources*
- **Racko Jr. Game** *by Winning Moves Games*

ADDITION

WITHIN 100

1ST GRADE

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Quick Skills Check

- ☐ I can add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of ten.
- ☐ Given a two-digit number, I can mentally find 10 more or 10 less than the number without having to count

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

- What is different about adding 53 + 9 and adding 3 + 9?
- What strategies can you use to check your work when solving an addition problem?
- On our family road trip, we spent $54 on gas and $20 on road trip snacks and food. How much did we spend all together on our road trip? *Modify with a real family situation and other numbers.*
- Which problem is more challenging for you to solve 56 + 8 or 23 + 10? Why? What strategy could you use to help you solve that problem?

Activities to Build
ADDITION SKILLS

- ☐ Use grid/graph paper or draw a place value chart to organize your work when adding two-digit numbers. Make sure to line up the hundreds digit in each number, the tens and the ones.
- ☐ Incorporate math into mealtime. Find examples of addition problems while cooking, baking or serving a meal.
- ☐ Play 'Add Ten.' All players roll 2 dice (or one dice two times) in order to make the largest number Ex: If you roll a 6 and 4, make the number 64. Then add 10 to the number you rolled, mentally without counting. The person who is closer to 100 (has the larger number) gets a point. Use hands-on manipulatives and visual models whenever possible for problem solving. *You can also extend this game by having players add their numbers together to find the sum.*
- ☐ Look for examples of addition in the real world in various different situations (ex: part-part whole or add to), or make story problems based on real-world situations. For example, 32 people attended the ball game on Friday and 50 people attended the ball game on Saturday. How many total people attended the ball games? You could also make this more challenging by saying '30 more people attended the fair on Saturday than on Friday. How many total people attended the fair?' You can look up real attendance for games/concerts/fairs, or other real-world situations for context.
- ☐ Practice ways to make ten. Start at a number (Ex: 34) and say what number you would need to add to it to get to the next ten. "34 + 6 is 40." This supports efficient problem solving when breaking apart one addend.

Addition Models

45 + 20

Number Line

28 + 6

Nearest Ten

6

28 + 2 = 30

2 + 4
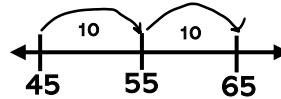
30 + 4 = 34

Base Ten Model
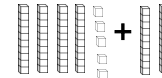
Hundreds Chart

21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40

Math at Mealtime

- Look for a two- number on a nutrition label on food (ex: mg of sodium, calories etc.). Mentally find 10 more than that number and explain your thinking.
- Make a base-ten s'mores snack to practice adding two numbers together. Model each number using chocolate bar rectangles for tens and marshmallows for ones. Use this model to practice regrouping/renaming as needed while adding the numbers together.

Did You Know?

A solid understanding of place value is the foundation for successful addition of large numbers. At the first-grade level, children should be focusing on using hands-on and visual models and strategies to build a foundation for addition within 100 and 1,000 next year in second grade.

Family Read Aloud Books & Games

- **Spaghetti and Meatballs for All** by Marilyn Burns
- **100 Bugs! A Counting Book** by Kate Narita
- **When I Am Bigger** by Maria Dek
- **Monopoly Junior** *keep track of total money on separate sheet of paper*
- **Math Tac Toe** *A Play Smart Dice Game*

SUBTRACTION WITHIN 100

Math Guide

1ST GRADE

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Quick Skills Check

- ☐ Given a two-digit number, I can mentally find 10 more or 10 less than the number without having to count
- ☐ I can subtract multiples of ten in the range 10-90 from multiples of ten in the range 10-90 using concrete models.

Math Talk Moments

Some conversation starters for engaging your child in math talk.

- I am _____ years old. If I were ten years younger, how old would I be? *Discuss that subtracting can mean less than, taking away, finding the difference etc.*
- When we got to the store there were 34 people inside. 10 people left. How many people are left?
- If I bought 30 flowers and put 10 in a vase, how many flowers are left?
- I planted 40 strawberry plants and 20 pepper plants. How many more strawberry plants than pepper plants did I plant in my garden?

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 100. Each player rolls one dice. This number goes in the tens place to create a multiple of ten. *Example: if you roll a 4, that goes in the tens place, so the number is 40.* Then the player subtracts that number from 100, and the difference becomes their new number (*in this case, 60*). This process continues, rolling the dice to create a new multiple of ten to subtract from the new number. Once you get closer to zero, you can switch to rolling to subtract a 1-digit number from your number to try to reach exactly zero.
- ☐ Use hands-on manipulatives (base-ten blocks or homemade base-ten block models) whenever possible for modeling subtraction.
- ☐ Explore different subtraction situations such as comparison (find the difference), part-part-whole and take away (find what's left).
- ☐ Practice skip counting backwards from 100 by 10. Ex: 100, 90, 80, 70, 60… etc.). This is a great activity to do on-the-go together alternating numbers back and forth. You can also do this starting at a different two-digit number. Such as 95, 85, 75 65 etc. You can use a hundreds chart as a visual model to keep track.

Subtraction Models

$34 - 10$

Number Line

10

24   34
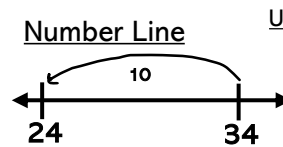
Base Ten Model

Use Addition to Subtract

$50 - 20$

$20 + \_\_\_\_ = 50$

Use Smaller Problems To Support Large Problems

$50 - 20$
Think '5 – 2'

Hundreds Chart

21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40

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. *Modify this to subtract only multiples of ten which is unrealistic but will give important context for this type of problem to first graders.*
- Look for a two-digit number on a nutrition label on food (ex: mg of sodium, calories etc.). Find 10 less than that number and explain your thinking.
- Use the s'mores base ten model (chocolate pieces for tens and marshmallows for ones) to make the connection between subtracting numbers within 20 and numbers within 100. *For example, subtracting 5 tens from 8 tens is similar to subtracting 5 tens from 8 ones.*

Did You Know?

In first grade, it is important for children to learn the variety of subtraction situations (such as comparison/finding the difference, subtracting back/finding what's left and 'how many more' contexts). Using real-world examples of subtraction helps build this solid foundation. This also helps children see how addition can help them solve subtraction problems.

Family Read Aloud Books & Games

- **Shark Swimathon** by Stuart J. Murphy
- **Monster Math** by Anne Miranda
- **One Hundred Hungry Ants** by Elinor J. Pinczes
- **How Many Blue Birds Flew Away** by Paul Giganti Jr.
- **The Clumsy Thief In the Candy Shop** Game

MEASUREMENT & DATA

1ST GRADE

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Quick Skills Check

❏ I can order three objects by length; compare the lengths of two objects directly by using a third object
❏ I can express the length of an object as a whole number of unit lengths by laying multiple copies of a shorter object (length unit) end to end.
❏ I can tell and write time in hours and half-hours using analog and digital clocks
❏ I can organize, represent and interpret data with up to three categories. Ask and answer questions about the data set

Math Talk Moments

Some conversation starters for engaging your child in math talk.

• How many kids your height would we have to stack on top of each other to be as tall as that tree? Explain your thinking.
• What animals are taller than a zebra? What animals are shorter?
• About how many pencils long is this desk/table? How could you find out exactly how many pencils long it is?
• What tools do you use for measuring the height and length of objects?
• Look at the clock on my phone/the wall. What time is it? How do you know? *Try to catch the clock on a half hour or hour.*

Activities to Build
MEASUREMENT SKILLS

❏ Make a daily schedule of a regular day in your house. Use an analog clock model and a digital clock model to write the time that each event should happen *on the hour or half hour*. Record the actual time that it happens next to the schedule.
❏ Incorporate math into mealtime. Find examples of measurement while cooking, baking or in the kitchen.
❏ Do a clock scavenger hunt: Throughout the day, look for clocks (At home, at the store, at school etc.) Make a chart of where you saw the clock and what time it said.
❏ Play 'Magic Measure': Choose an object in the house to measure the length or height (*ex: the dining room table length, or the height of a door*). Players each choose three measurement units to use to measure the object (*for example, a pencil, a notebook, a cooking spoon*). Then both players measure using their three different units. Practice measuring without overlapping. Discuss the difference in measure based on the length of the unit being used. See the 'magic' in how the unit you choose to use determines the measurement number, but no matter what unit you use, the actual height/length is the same. *Try this with a really large object and then a really small object and discuss how different units of measure are more appropriate for measuring different objects. This prepares children to choose between inches, feet and yards etc. when measuring in the real world.*
❏ Choose a set unit of measure to use to measure the height of everyone in your family. If you have stacking cubes, or blocks of the same size, these work great but you also could use a cardboard box, basket, game board box, pencil etc. Measure the height of all family members and record the data on a chart.
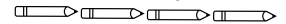
Measurement Models

Clocks

5:00

Measurement

"How many pencils long is the notebook? The desk? Which is longer?"

Math at Mealtime

• Choose a measurement tool/unit (ex: a ruler or a student-created unit such as a marker, a toothpick, a unit cube etc.). Measure the length of the items on your breakfast plate. Record the data in a chart.
• Measure the length of a large pretzel rod using a small pretzel stick (or any other foods that are similar to a linear model). Use this pretzel stick unit of measure, to measure other things on the table like the placemat, table runner, table length etc.
• Write a daily schedule that includes mealtime or snack time on the hour. Have your child help you check the time when you sit down to eat.

Did You Know?

In first grade, children are learning measurement basics. It is not expected that they will use a ruler and understand inches, centimeters or millimeters as measurement units yet. The goal of first grade measurement is to build a foundation of understanding length, width and height are attributes of objects (linear measurement) and these measurements can be expressed in units. *It is of course okay to show them a ruler and real measurement units, but that does not need to be the focus of measurement activities at this level.*

Family Read Aloud Books & Games

• **The Loch Ness Monster Loves to Measure!** by Therese M. Shea
• **How Long or How Wide: A Measuring Guide** by Brian P. Cleary
• **Giraffe Math** by Stephen Swinburne
• **How Many Flamingos Tall is a Giraffe?** by Clara Cella
• **Ants Rule: The Long and Short of It** by Bob Barner

GEOMETRY

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Quick Skills Check

- ❑ I can distinguish between defining attributes (ex: triangles are closed and 3-sided) vs. non-defining attributes (color, orientation, overall size).
- ❑ I can build and draw shapes with defining attributes
- ❑ I can compose two-dimensional shapes or three-dimensional shapes to create a composite shapes
- ❑ I can partition circles and rectangles into two and four equal shares. Use the words halves, fourths and quarters. Understand decomposing into more shares creates smaller shares.
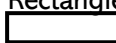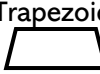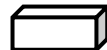
Math Talk Moments
Some conversation starters for engaging your child in math talk.

- • Look at signs on the road while driving (safely) or while parked. What shape is that sign? How many sides does it have? What is the name for a shape with that many sides. *Find a yield sign. Ask if it is a triangle—discuss the fact that it is not 'upside down' because triangles can have any orientation as long as they are a 3-sided closed figure). Look for other examples like this.*
- • If I wanted to share a cake evenly between 4 people, how could we cut the cake so everyone gets an equal share? What fraction/part of the whole chocolate bar would one person get?

Activities to Build
GEOMETRY UNDERSTANDING

- ❑ Discuss 'equal shares' and 'making it fair.' Draw on a post it note, a line that cuts it into two unequal pieces. Pretend it is a cake or candy bar. Ask 'would this be fair if I cut it this way to share with you? Which piece would you want and why? How could we cut this so that it would be fair and both of us would get an equal share? Do the same thing with a drawing of a circle or rectangle.
- ❑ Incorporate math into mealtime. Find examples of 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 various shapes such as triangles, squares, trapezoids, rectangles, circles, half circles, quarter circles, cones, cylinders, prisms and cubes. 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. Discuss what is the same and different about each shape—for example if you see a square sticker and a rectangular poster, discuss that they both have 4 sides but one has equal sides and one does not. *You can also categorize shapes by 2-D and 3-D and notice similarities and differences.*
- ❑ Play 'Shape Draw': spend some time drawing together with your child. Name a shape, like hexagon and at the same time on your own a hexagon too. Try it again with another shape. Emphasize that not all hexagons look the same *(like the pictures in the Geometry models on this page).* A hexagon is a six-sided polygon, so as long as it meets that criteria then it is a hexagon. You can extend this by playing 'Name My Shape' where each of you draws a shape and the other has to name the shape that the other person drew, using geometry vocabulary.

Geometry Models

2-D Shapes

Triangles

Rectangle

Square

Trapezoid

This triangle is not 'upside down' it just has a different orientation. Both are triangles.

Half Circle

Quarter Circle

3-D Shapes

Cube

Cone

Cylinder

Right- Rectangular Prism

Math at Mealtime

- • 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 try to name them. Look for two foods that are the same shape but different color *Ex: circular large watermelon slice and circular apple slice. Discuss the fact that they are the same shape even though different size and color.*
- • Use a food like a chocolate bar, cake in a rectangular pan, egg casserole etc. Cut it in half and discuss the value of each part using fraction language (each part is one half of the whole). Then cut the half in half to make fourths and use math vocabulary to describe it.

Did You Know?

First grade geometry is a critical foundation for geometry and fractions in elementary math. Using 'equal shares' language and discussing what it means to partition a whole into equal parts is key to a strong foundation for fractions.

Family Read Aloud Books & Games

- • **A Trapezoid is Not A Dinosaur** by Suzanne Morris
- • **The Greedy Triangle** by Marilyn Burns
- • **The Little Mouse The Red Ripe Strawberry and the Big Hungry Bear**, by Don Wood
- • **Which One Doesn't Belong?** b**y** Christopher Danielson
- • **All Shapes Matter** by Sreekanth Kumar, Chakra Sreekanth
- • **Drop It** *A family game*

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 10:** *First Grade Addition Within 20: Fueling Your First Grader's Success*

- ❑ **Episode 11:** *First Grade Addition Within 100: Learning the Base Ten Number System*

- ❑ **Episode 12:** *First Grade Subtraction: Building Understanding and Fluency within 20*

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