

$$2 + 3 = 5$$
$$6 + 2 =$$



Applying Addition

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Applying Addition

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Frequently Asked Questions

Why does Starfall introduce addition so early in the curriculum?

Addition is introduced after the children have had the opportunity to develop number sense. To allow for this, the first semester focuses on the prerequisites necessary to successfully perform the operation of addition. These prerequisites, which are then spiraled throughout the Starfall math curriculum include:

- Counting to 20 or beyond
- Recognizing numerals 0 through 9
- Correctly counting a given number of objects
- Understanding the concepts of more than and less than (greater than and less than)
- Counting on from a given number
- Matching a number of objects with the corresponding numeral symbol
- Writing the numerals 0 through 10
- The ability to see patterns
- Subitizing
- Recognizing coins and their values

Teaching addition earlier in the school year rather than later provides more time for the children to practice their skills and helps them master the relationships between numbers and understand how quantities relate to each other.

Why does the Starfall math curriculum focus so much on story problems when so many children seem to struggle with this concept?

Story problems help bring math to life and give numbers a purpose. For these reasons, the Starfall curriculum introduces story problems long before formally introducing the concept of addition.

The keys to understanding and solving story problems are vocabulary and number sense. Early in the school year math terms such as greater than, one more than, altogether, and how much are introduced. However, relying solely on certain key words that signal specific operations is not enough!

Children are also introduced to eight different strategies for solving addition problems. Many of these strategies are then applied to solving addition story problems. Providing these strategies helps children visualize a problem.

Children need repeated practice applying math concepts to solve real life problems. Providing real-life situations that children can relate to, inserting their names into the story problems, and then moving on to more difficult components such as adding numbers to problems that do not affect the outcome, can lead to future success.

Unit 8 Research

Counting is adding. Each counting number adds one more to the previous number. This observation is essential for children's early methods of solving addition problems. Also, each step in the counting process can be thought of as describing the total number of objects that have been counted so far.⁽¹⁾ Children first learn the comparing terms "equal to" and "more than" for two groups of things or two numbers. They find out which one is bigger and which one is smaller or if they are equal by matching and by counting. Addition is used to relate amounts before and after combining, to relate amounts in parts and totals, or to say precisely how two amounts compare. Situations that can be formulated with addition occur in a wide variety of story problems.

Once children recognize that the sum of a given number plus one is simply the number after the given number, they use this knowledge as a scaffold for inventing a counting-on strategy for starting with a cardinal value of a number (e.g., four and three more: four, five is one more, six is two more, seven is three more – so the answer is seven). In other words, given a problem such as "four and three more," children seem to recognize that "four and one more" would be the next number in the number-word sequence (five) and reason that "four and three more," then, must be three numbers past four (five, six, seven).⁽²⁾ This shortcut allows them to compute sums without having to start their count from one each time.

Math instruction for young children should begin with informal representations of math ideas. Initially, teachers should link math ideas to familiar experiences and terms, resisting the urge to use more formal methods until children have a conceptual foundation for understanding.⁽³⁾ Once children are comfortable using informal methods and representations to describe math ideas, such as "more" and "all together," teachers can help them link formal math vocabulary, symbols, and procedures to their informal knowledge or experiences. They should

explicitly teach children math words so they have the vocabulary needed to connect their informal knowledge to formal terms. Teachers can use this math vocabulary when speaking to children throughout the day, not just during math instruction. Math conversations can happen spontaneously as teachers comment about natural occurrences that involve number or other math concepts. Linking formal representations to informal concepts and representations enables children to understand and more readily learn formal terms, symbols (+ or =), definitions, or procedures.⁽⁴⁾

It is often assumed that solving real-life or story problems is a relatively difficult task and that problem solving should be introduced after formal addition skills (e.g., after they have memorized the basic facts or at least after more concrete experiences). However, children can often solve simple real-life problems before they comprehend formal expressions such as $5 + 2 = ?$.⁽⁵⁾ Research indicates that many children can also use their informal arithmetic knowledge to analyze and solve simple addition word problems before they receive formal arithmetic instruction.

(1) National Research Council. (2009) *Mathematics Learning in Early Childhood: Paths toward Excellence and Equity*. Washington, DC: National Academies Press

(2) Baroody, Arthur J., Jesse L. M. Wilkins, and Seipa Tiilikainen. (1995) "The Development of Children's Understanding of Additive Commutativity." In *The Development of Arithmetic Concepts and Skills: Construction Adaptive Expertise*, Mahwah, NJ: Lawrence Erlbaum Associates

(3) Arnold, D., Fisher, P. H., Doctoroff, G. L., & Dobbs, J. (2002). Accelerating math development in Head Start classrooms. *Journal of Educational Psychology*, 94(4), 762–770.

(4) National Association for the Education of Young Children & National Council of Teachers of Mathematics. (2010). *Early childhood mathematics: Promoting good beginnings*. Retrieved from <http://www.naeyc.org/files/naeyc/file/positions/psmath.pdf> National Council of Teachers of Mathematics.

(5) Carpenter, Thomas P. "Conceptual Knowledge as a Foundation for Procedural Knowledge: Implication from Research on the Initial Learning of Arithmetic." In *Conceptual Procedural Knowledge: The Case of Mathematics*, edited by Harold L. Schoen and Marilyn J. Zweng. Reston, VA: National Council of Teachers of Mathematics, 1986

Unit 8 Summary

Time Frame: 10 days

In this unit the children will be introduced to the operation of addition and several strategies they can use to help them correctly respond to addition problems and number stories. They will experience and practice strategies such as using manipulatives (connect cubes, counters, fingers), referencing a number line, drawing tally marks or pictures, acting out a story, and using five-frames and ten-frames.

Essential Questions

(K.CC.B.4c) Why do we need to count each object to find out how many we have?

(K.OA.A.1) How can we use objects to show addition?

(K.OA.A.2) What strategies can we use to solve word problems?

(K.OA.A.4) How can we use objects to show how to add one number to another to make ten?

(K.OA.A.5) How can practicing math facts help us quickly add and subtract?

(Starfall.Math.M.1) How can knowing the name and value of a penny, nickel, dime, and quarter help us in the real world?

Vocabulary

The children will be introduced to these vocabulary words. Mastery is not expected at this time.

Addition	Operation
Addition Facts	Plus
Number Stories	Story Map
Story Problems	

Enduring Understandings

Practicing math facts to five can help us add quickly.

Finding missing numbers in equations is essential for higher-level math skills.

We can use ten-frames to add one number to another to make ten.

We can use several different strategies to solve word problems: acting out, drawing pictures (story maps), and using manipulatives and ten-frames.

Adding coins together can help us in the real world.

Recommended Literature

1+1=5 And Other Unlikely Additions by David LaRochelle

Double Play! by Betsy Franco

Each Orange Had 8 Slices by Paul Giganti

One More Bunny: Adding From One to Ten by Rick Walton

Roosters Off to See the World by Eric Carle

What's New at the Zoo? by Suzanne Slade

Standards & Benchmarks

Starfall Standards

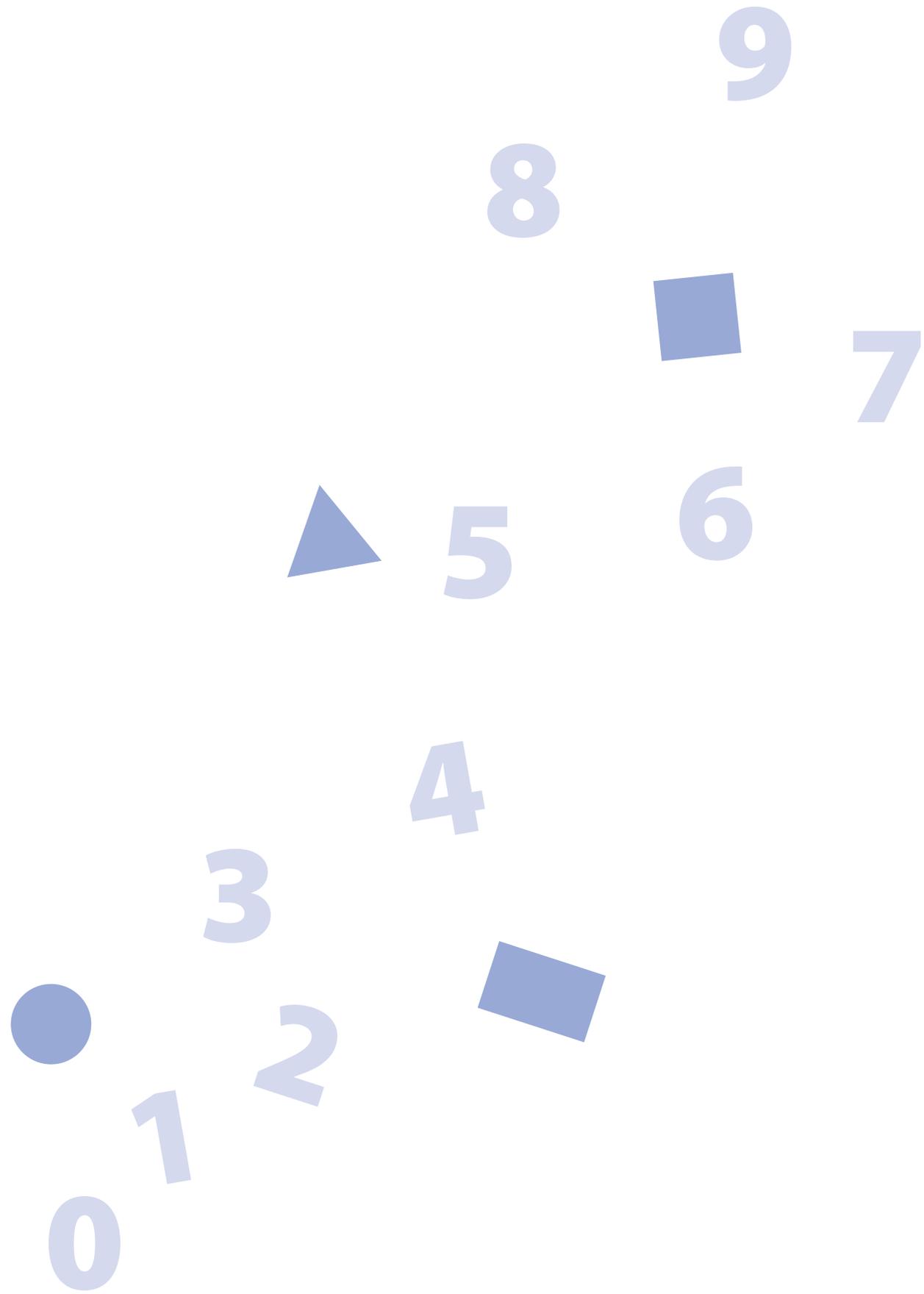
Money

M.1 Identify the value of coins.

Common Core Standards

Progress on the following standards and benchmarks will be made through the course of this unit. For your convenience, applicable learning outcomes are listed alongside each lesson in summary form.

Counting & Cardinality		Inline Summary Form
A.2	Count forward beginning from a given number within the known sequence (instead of having to begin at 1).	Count forward from a given number.
B.4	Understand the relationship between numbers and quantities; connect counting to cardinality.	Understand the relationship between numbers and quantities.
B.4a	When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object.	Say number names in order, pairing each object with one number.
B.4b	Understand that the last number name said tells the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted.	The last number counted tells the total number of objects.
B.4c	Understand that each successive number name refers to a quantity that is one larger.	Each successive number refers to one more.
Operations & Algebraic Thinking		Inline Summary Form
A.1	Represent addition and subtraction with objects, fingers, mental images, drawings, sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations.	Represent addition and subtraction in a variety of ways.
A.2	Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem.	Solve word problems with addition and subtraction within 10.
A.4	For any number from 1 to 9, find the number that makes 10 when added to the given number, e.g., by using objects or drawings, and record the answer with a drawing or equation.	For 1-9, find the number that makes 10.
A.5	Fluently add and subtract within 5.	Fluently add and subtract within 5.
Measurement & Data		Inline Summary Form
B.3	Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.	Classify, count, and sort objects.



Daily Routines



Calendar

- A volunteer tells the name of the month.
- The children name the days of the week.
- The calendar helper turns the next number.
- Assist the calendar helper to place one penny on the money graph to match the number of today's date.
- Remind them that there are other coins (nickels, dimes) available, and lead the children to exchange the appropriate number of pennies for these coins.



Weather

- Review yesterday's weather.
- The meteorologist goes to the window to look outside, predicts the weather, and places a tally mark under his or her prediction.
- Add a tally mark next to today's weather on the Weather Graph.



Number Line

- Point to and count the days on the number line by ones, fives, or tens.
- Sing "How Many Days Have We Been In School?"
- Remove the sticky note to reveal the next number.

How Many Days Have We Been In School?

(Tune: "Here We Go Round the Mulberry Bush")

How many days have we been in school, been in school, been in school?
How many days have we been in school, who can tell me please?



Place Value

- Review the number of bundles and sticks in the *Tens* and *Ones* containers.
- Add one stick to represent today, and place it in the *Ones* container.
- Write the numeral that represents the number of days the children have been in school on the board.
- Every tenth day the children bundle the ten sticks that are in the *Ones* container and place the bundle in the *tens* container.



Hundreds Chart

- The number helper turns the next number on the chart.
- Ask: **The hundreds chart shows we have been in school how many days?**

Counting & Cardinality

A.2 – Count forward from a given number.

B.4 – Understand the relationship between numbers and quantities.

B.4a – Say number names in order, pairing each object with one number.

B.4b – The last number counted tells the total number of objects.

B.4c – Each successive number refers to one more.

Refer to this page for reminders of the Daily Routines for each day in this Unit.

Week 19 Summary

This week the children will be formally introduced to the operation of addition. They will learn to use several strategies that will serve as tools to assist them in solving addition problems.

The children will also:

- Be introduced to the plus sign (“Plus Sign Poem”)
- Explore number combinations of five
- Learn strategies to solve number stories
- Create their own addition number stories

Preparation

Display *Backpack Bear’s Math Big Book*, page 44, “Strategies for Adding” where you will be able to refer to it during this week’s math lessons.

DAY 1

Display *Backpack Bear’s Math Big Book*, page 43, the “Plus Sign Poem” where the children may easily view it.

The children will use their math mats and math bags.

DAY 2

Prepare each child’s math bag to include a small plastic bag of 5 double-sided colored counters. You will also need a small plastic or paper cup for each pair of children.

DAY 3

You will use Addition Equation Cards and 1 index card for each child.

Note: Save the index cards after today’s lesson. You will use them again in **Unit 9, Week 22**.



DAY 1

DAY 2

Daily Routines

- Calendar
- Weather
- Number Line
- Place Value
- Hundreds Chart

Magic Math Moment

Introduce "Operation"

"Five Little Bears"

Math Concepts

Determine the number that is one more than another

Review addition strategies

"Plus Sign" Poem

"Shake, Spill, and Add"

Introduction to addition and addition strategies

Create addition equations using colored counters

Addition practice

Formative / Summative Assessment

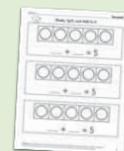
Use addition strategies to solve problems

Write addition equations to total 10

Workbooks & Media

Starfall.com: Math Songs: "Five Little Bears"

Workbook page 9



DAY 3

DAY 4

DAY 5

- Calendar
- Weather
- Number Line
- Place Value
- Hundreds Chart

Learning Centers

Counting on using the Number Line

Addition Equation Cards and counting on

Starfall.com:

- Monthly Calendar
- Addition & Subtraction: "Addition Intro," Addition Practice, "Addition within 10"

Using the Number Line to count on from a number other than one

Using the Number Line to add

Create a floor number line

Review addition strategies

Act out addition story problems

Write addition equations

Illustrate number stories

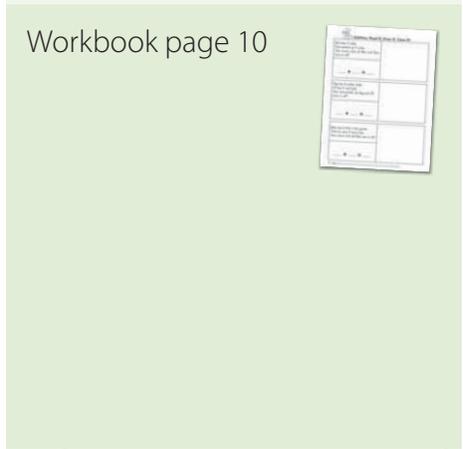
"Shake, Spill, and Add"

Solve addition equations using the floor number line

Solve addition number stories

"What's Your Answer?"

Workbook page 10



Teacher's Choice

"A Walk in the Park"

Summative Assessment: Distinguish the larger number on dominoes and count on from them

Introduce "Operation"

Materials

None

Ask: **Who knows what it means to operate on someone?**

(Volunteers respond.) **Right, when a doctor operates he or she works to change someone.** Volunteers may share their experiences if time permits.

Continue: **Today we will operate, but not on each other! Instead we will operate on numbers. When we operate on numbers, we do something to change those numbers.**

Write 2 ____ 2 on the board. Say: **Let's perform the operation of addition on these numbers.**

Add a plus sign between the twos. Continue: **How will performing the operation of addition change them? Right when we perform the operation of addition on 2 + 2, they become 4. Let's operate on other numbers.**

Continue with several other addition problems using the term "operation" so the children get accustomed to hearing it.

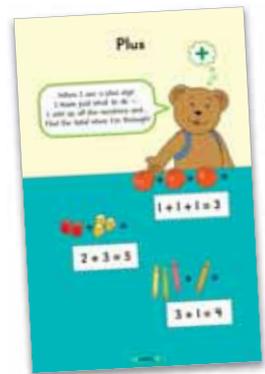
Counting & Cardinality

B.4c - Each successive number refers to one more.

Operations & Algebraic Thinking

A.1 - Represent addition and subtraction in a variety of ways.

A.2 - Solve word problems with addition and subtraction within 10.



Introduction to Addition

Materials

- Whiteboards, markers
- Backpack Bear's Math Big Book, pages 43 and 44
- Math mats
- Math bags

1 Plus Sign Poem

Indicate Backpack Bear's Math Big Book, page 43, the "Plus Sign Poem."

Say: **Backpack Bear has been learning about the operation of addition. He even wrote a poem to help himself learn to add. He would like to share it with us! He thinks it will help us learn to perform the operation of addition, too.**

2 Strategies for Adding

Say: **We have learned strategies for counting. What are some of the strategies we use to help us count?** Volunteers respond.

Continue: **Right, one strategy is to use your fingers. Another strategy is to use the number line. We can use counters or cubes to help us count. Now, Backpack Bear has some good strategies to help you add numbers.**

Indicate Backpack Bear's Math Big Book, page 44, Strategies for Adding.

Say: **Let's look at the different strategies Backpack Bear uses to help him perform the operation of addition.**

Introduce the Strategies for Adding in a way that is appropriate for your class. One suggestion is to discuss each strategy. Another suggestion is to have volunteers identify each strategy using the pictures as clues.



3 Using Addition Strategies

Distribute math mats, math bags, whiteboards, and markers.

Write the equation: $2 + 3 = \underline{\quad}$ on a whiteboard.

Say: **Let's try each of these strategies to perform the operation of addition and solve the problem $2 + 3 = \text{what?}$**

- Strategy 1 — *I can use my fingers.* Say: **Hold up 2 fingers on one hand and 3 on the other hand. How many fingers are you holding up altogether? Right, 5.**
- Strategy 2 — *I can use a ten-frame.* Say: **Place 2 red counters and 3 blue counters in the ten-frame on your math mat. How many counters are on the ten-frame in all? Right, 5.**
- Strategy 3 — *I can use counters.* Say: **Take 2 red connect cubes and join them to 3 blue connect cubes. How many connect cubes are there altogether? Right, 5.**
- Strategy 4 — *I can use the number line.* Say: **Find the 2 and put your finger on it. Now hop like a bunny 3 times. What number did you land on? Right, 5.**
- Strategy 5 — *I can use tally marks.* Say: **Draw 2 tally marks on your whiteboard. Now draw 3 more tally marks. How many tally marks are there in all? Right, 5.**
- Strategy 6 — *I can use my head and count on.* Say: **Think the number 2. Now put up 3 fingers. Start at 2 and count 3 more. What is the number? Right, 5.**
- Strategy 7 — *I can draw pictures.* Say: **Draw 2 circles on your whiteboard. Now draw 3 squares. How many shapes do you have in all? Right, 5.**
- Strategy 8 — *I can act it out.* Say: **Let's act out a story. Two children were playing a game. (Choose 2 volunteers to come forward.) Three more children joined them. (Choose 3 more volunteers to join the first two.) How many children were playing the game in all? Right, 5!**

Ask: **What did you notice about the answer to the problem $2 + 3 = \underline{\quad}$ each time?**

Explain: **Right, no matter what addition operation strategy we used to solve the addition problem, the answer was always the same. All of the strategies helped us find the correct answer, 5.**



Formative Assessment

Using Addition Strategies to Solve Equations

Say: **Now you will work with a partner to solve an addition problem. You and your partner will choose one of these strategies to help you perform the operation of addition and solve it.**

Partner the children. Write the equation $5 + 2 = \underline{\quad}$ on a whiteboard.

Say: **The first thing you need to do is decide which addition strategy you and your partner will use. Talk about it and raise your hand when you have chosen your strategy.**

The children do this. They do not need to share which strategy they chose.

Continue: **Use the strategy you and your partner chose to solve the problem $5 + 2 = \text{what?}$** Partners solve the problem and share which addition operation strategy they used with the class.

Repeat with another equation. Partners choose a different strategy to solve the problem.

Five Little Bears

Navigate a classroom computer to *Starfall.com*:
Math Songs: "Five Little Bears."

Before opening the link, the children look for the addition strategies they learned (counting fingers, number line, acting out).

Play "Five Little Bears" and discuss what happened to the number of bears each time a new bear arrived.

Materials

- Starfall.com*:
Math Songs: "Five Little Bears"

Using Counters and Ten-Frames

Essential Question: How can we use objects to show addition?

Materials

- Paper or plastic cup for each set of partners
- Whiteboards, markers
- Math bags with 5 double-sided colored counters
- Backpack Bear's Math Big Book*, page 44
- Math mats
- Backpack Bear's Math Workbook #2*, page 9

Operations & Algebraic Thinking

A.1 - Represent addition and subtraction in a variety of ways.

A.5 - Fluently add and subtract within 5.

1 Review Strategies for Adding

Indicate *Backpack Bear's Math Big Book*, page 44, Strategies for Adding.

Say: **Backpack Bear would like to know if you remember the different addition strategies.**

Choose volunteers to indicate a strategy on page 44 of *Backpack Bear's Math Big Book*, and explain what the strategy is.

2 Use Counters and Ten-Frame Strategies

Gather the children in a semi-circle to demonstrate "Shake, Spill and Add." You will need a math mat, a cup, 5 double-sided, colored counters, a whiteboard, and a marker.

Say: **Today we will practice two of the addition strategies.**

- **Who can find "I can use counters" on the strategy page?**
- **Who can find "I can use a ten-frame?"**

Volunteers indicate these strategies on the Strategies for Adding page.

Choose a volunteer to partner with you to demonstrate the "Shake, Spill and Add" activity. Then choose two new volunteers to demonstrate the activity again.

The children partner (stand up, hand up, partner up). Designate which child in each pair is partner 1 and which is partner 2. Distribute a paper or plastic cup, a math mat, a math bag containing 5 double-sided, colored counters, and an



individual whiteboard and marker to each pair. Choose one set of partners to demonstrate the following procedure to the class.

Say: **Partner 1, shake your cup gently. Partner 2, spill the counters onto the math mat. Now work together to place the yellow counters on the ten-frame. Add the red counters to the ten-frame.**

Continue: **Partner 1, count the yellow and red counters. How many are there in all? Partner 2, write the equation on your whiteboard.**

3 Partner Work—Addition Practice

Assign new partners to work together. The children who are partner 1 get their math bags and math mats and the children who are partner 2 get their whiteboards and markers. Distribute 1 cup to each set of partners.

The partners repeat the above procedure as you provide step-by-step directions. Partners switch after each run through.

Allow as much time as needed to be sure the children understand the game.



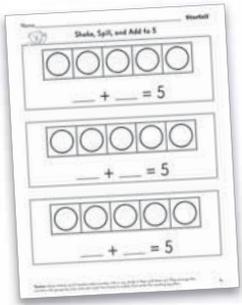
Formative Assessment

Different Ways to Make 5

Distribute *Backpack Bear's Math Workbook #2*. Instruct the children to turn to page 9.

Say: **This time when you spill your counters you will use your yellow and red crayons to record your spill. Then use your pencil to write the equation. Let's see how many different ways we can make 5!**

Note: Complete the first row together if necessary.



Magic Math Moment

DAY

3

Counting On Using the Number Line

Materials

-
- Pointer

Say: **Look at the number line. I will use a pointer to touch a number. We will use the number line to help us count on.**

Point to 7 on the number line. Say: **Here is 7. If we add 2 more (Demonstrate "hopping" 2 more and count, 7, 8, 9.) what number will we end on? Right, 9. Seven plus 2 more equals 9.**

Continue: **Now, it's your turn. Here is the number 5. What is 5 plus 2 more?** A volunteer indicates 5 on the number line and "hops" 2 more.

Repeat with several numbers and volunteers.

Counting & Cardinality

A.2 - Count forward from a given number.

Operations & Algebraic Thinking

A.1 - Represent addition and subtraction in a variety of ways.

Using a Number Line to Add

Materials

- 1 Index card per child (**NOTE:** Save the index numbers for use in Unit 9, Week 22.)
- Pencils, crayons
- Addition Equation Cards
- Backpack Bear's Math Big Book*, page 44
- Pointer

1 Using the Number Line to Add

Indicate the *Backpack Bear's Math Big Book*, page 44, Strategies for Adding.

Say: **Today we will use the addition strategy "I can use a number line" to help us add. Who can find that strategy on the list?** A volunteer does this.

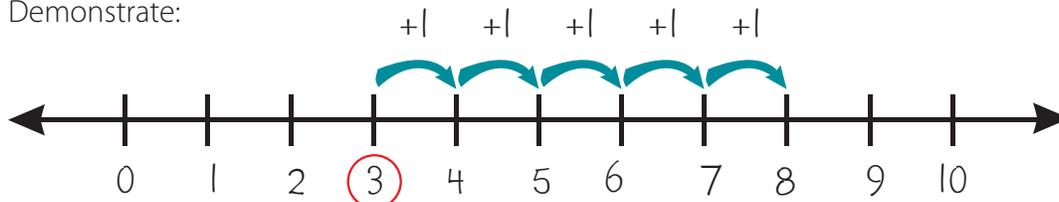
Draw a number line from 0 to 10 on the classroom whiteboard.

Write $3 + 5 = \underline{\quad}$.

Say: **We will use the number line to count on and solve the equation. The problem starts at 3. Who can find 3 on the number line?** A volunteer uses a pointer and points to 3 on the number line. Circle 3 in the equation on the whiteboard.

Say: **The problem tells us to add 5. Adding 5 is the same as adding 1, 5 times!**

Demonstrate:



Say: **Let's count to be sure we added 5. We started at 3 and added 5 more. What number did we land on? Right, 8, so 3 plus 5 equals 8.**

Repeat with several other equations.

2 Making a Large Number Line

Say: **Let's make our own number line! Each of you will write a different number on your index card.**

- Distribute an index card to each child.
- The children fold the index cards in half with the fold at the top.
- Assign a different number beginning with zero to each child. He or she writes that number on the bottom half of the folded index card. The children write the number in pencil first then trace it with a crayon. (The size of your class will determine how many numbers will be on your number line.)
- Remind the children they can look at the number line to help them write their numbers.

The children bring their index cards to an area where they can arrange the folded index cards in order on the floor. Make sure there is space behind the cards for the children to stand.

The child with zero places his or her index card where you would like the number line to begin.

Each child places his or her index card in order to create a floor number line.

Note: To make this activity more challenging, call children out of numerical order.



Formative Assessment

Use the Floor Number Line to Add

Flash and read an Addition Equation Card (Example: $5 + 2$). A volunteer stands behind the number 5 index card.

Say: **The equation says $5 + 2$. How many "hops" should we make? Right, 2.** The volunteer "mini-hops" two times and lands behind the 7.

Ask: **Where did we land? (7) Right, 5 plus 2 more equals 7.**

Repeat this activity so each child has an opportunity to be the "hopper."

Magic Math Moment

DAY

4

Addition Equation Cards (Counting On)

Say: **Today we will use the addition strategies “I can use my head and count on” and “I can use my fingers.”**

Indicate an Addition Equation Card (Example: $1 + 4 =$). Ask: **Who can read this equation?** A volunteer does this.

Indicate the equation $4 + 1 =$ and ask: **Who can read this equation?** A volunteer does this.

Ask: **Are these two equations the same or are they different? Right, the numbers are the same but they are in a different order. If we solve both of these equations the answer will be the same since we are adding the same numbers. But if we want to use the strategy of counting on to solve the equations, would it be faster to count on from 1 or to count on from 4?** (Volunteers respond.) **Let’s try it.** Solve the equations by counting on. Lead the children to understand that is quicker to solve an addition problem by counting on from the larger number.

Flash other Addition Equation Cards. Ask: **Which number is greater (or larger)?** Let’s put that number in our heads and count on.

Materials

- Addition Equation Cards

Operations & Algebraic Thinking

A.1 - Represent addition and subtraction in a variety of ways.

A.2 - Solve word problems with addition and subtraction within 10.

Acting It Out

Essential Question: *What strategies can we use to solve word problems?*

Materials

- Individual whiteboards, markers
- Backpack Bear’s Math Workbook #2*, page 10
- Pencil, crayons
- Backpack Bear’s Math Big Book*, page 44
- Nine crayons

1 Review the Strategies for Adding

Indicate the *Backpack Bear’s Math Big Book*, page 44, Strategies for Adding.

Review the strategies encouraging the children to read them with you.

2 Acting Out Story Problems

Say: **Let’s use the addition strategy “I can act it out.” Who can find that strategy on the list?** A volunteer does this.

Choose two volunteers to come to the front of the classroom.

Story #1

- Listen closely to this number story. There was once a teacher who wanted the children in her class to work with partners to draw beautiful pictures together. The teacher gave one of the children five crayons (Do this.)
- The teacher gave another child four crayons. (Do this.)
- How many crayons did these partners have to draw their pictures with altogether? (Volunteers respond.) Right, nine.
- Continue: How do you know they had nine crayons altogether? Let's count to be sure. Count the crayons orally with the children.
- Did we add the crayons together or take some crayons away? Right, we added the crayons. Let's write the equation for this number story on the board.
- Write $5 + 4 = 9$ horizontally on a whiteboard.
- Say: Now, you write the equation on your whiteboard.

Story #2

- Choose ten volunteers to come to the front of the classroom.
- Here is another number story. Listen closely. There were five children playing with blocks. Five of the volunteers pretend to play with blocks.
- Five more children wanted to play with blocks so they joined in. The other five volunteers join the first group.
- How many children played with the blocks altogether? Right, ten. How do you know? Let's count to be sure. Count the volunteers orally with the children.
- Ask: Did we add children or take away children to solve this problem? (Volunteers respond.) Right, we added. Write the equation that matches this number story on your whiteboard. Hold up your whiteboards when you are finished.

3 Create an Addition Story

Volunteers take turns to make up their own addition number stories and choose classmates to act them out. The other children write the matching equations on their whiteboards.

4 Drawing Pictures

Say: **This time I will tell you a number story and we will draw pictures as we go.**
Create the diagram pictured here on a whiteboard.

A volunteer reads the number story. Ask:
How many dogs does Ben have?
Right, the number story said Ben has 3 dogs so I will draw 3 dogs. Do this.

Ask: **How many cats does Tim have?**
Right, Tim has 2 cats, so I will draw 2 cats.

Ask: **What should we do to find out how many pets Ben and Tim have in all?**
Right, we should add. Now, let's solve the problem. What numbers should we write in the equation? Count the dogs together with the children and write 3 in the first blank. Repeat for the 2 cats.

Ask: **If we add 3 plus 2, how many pets are there in all? Right, 5.**

Ben has 3 dogs. Tim has 2 cats.
How many pets do Ben and Tim have in all?

Solve it:
 $\underline{\quad} + \underline{\quad} = \underline{\quad}$

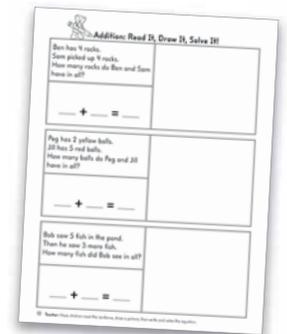
Formative Assessment

Solve Number Stories

Distribute *Backpack Bear's Math Workbook #2* and instruct the children to turn to page 10.

- Say: **Now, you will solve number stories on your own. Let's read the first number story together.** A volunteer reads. Repeat the story.
- Continue: **Now, draw a picture that will help you solve the problem in the box.** The children do this.
- Say: **When you are ready, solve the problem and write the matching equation.**

Note: The children complete the other two stories independently, or you may solve them together.



1 Computer

The children explore:

- Monthly calendar
- Addition & Subtraction: "Addition Intro"
- Addition & Subtraction: "Addition Practice"
- Addition & Subtraction: "Addition within 10"

Children may navigate to other *Starfall.com* math activities after they have explored those suggested above.

Materials

- Computers navigated to *Starfall.com*

Counting & Cardinality

B.4 - Understand the relationship between numbers and quantities.

B.4a - Say number names in order, pairing each object with one number.

Operations & Algebraic Thinking

A.1 - Represent addition and subtraction in a variety of ways.

A.5 - Fluently add and subtract within 5.

2 "Shake, Spill, and Add"

The children shake their cups containing double-sided counters and "spill" them onto their math mats. They place the counters on their ten-frames, count each color, and write the corresponding equation on drawing paper. The children repeat as time allows.

Materials

- Math mat for each child
- Double-sided counters (10 for each child)
- Plastic or paper cup for each child
- Drawing paper, pencils
- Ten-frames

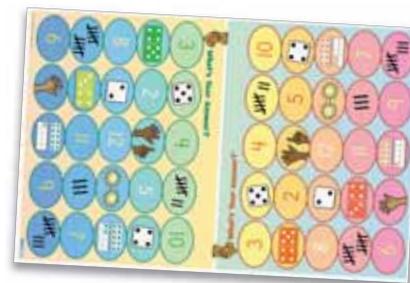
3 "What's Your Answer?"

The children take turns rolling a pair of dice, adding the numbers together, then placing a cube on one of the squares that represents that number. If there are no spaces available for that number, the child does not place a cube on the board.

The game ends when the first player completely fills his or her board, or play may continue until both players fill their boards.

Materials

- 1 or 2 "What's Your Answer?" game boards
- 20 cubes per player
- Pair of dice



4 Teacher's Choice

Review or expand a skill from this unit according to the needs of your students.

Week 20 Summary

The children will continue their study of addition. They will review addition strategies and use them to solve number stories. They will review coins (pennies, nickels and dimes) and their values and use them to “go shopping!”

The children will also:

- Form addition number stories using illustrations
- Solve addition problems to 10
- Be introduced to story maps
- Learn to solve for X

Preparation

DAY 1

There is no additional preparation needed.

DAY 2

You will use Addition Equation Cards through 5.

Today’s math lesson has the children divided into 5 groups. Each group will solve the same story problems, but they will each use different (assigned) strategies to do so. The groups will rotate in order to experience all of the strategies introduced on *Backpack Bear’s Math Big Book* page 44, Strategies for Adding.

You will need Number Cards 1 through 5 to designate the groups and enough of the following materials to accommodate your class.

- Group 1 - Math mats and two-sided counters
- Group 2 – Connect cubes in two different colors
- Group 3 – Individual whiteboards and markers
- Group 4 – Math mats (number line)
- Group 5 – Individual whiteboards and markers (tally marks)



DAY 3

You will use Addition Equation Cards for the numbers 5 through 10 (equations that include +1 only).

Display *Nursery Rhymes* pages 25 and 27, "Little Bo Peep" and "Mary Had a Little Lamb."

DAY 4

The children will need their math bags containing pennies, nickels, and dimes. You will use Picture Cards with Price Tags (airplane, pencil, orange, pretzel, apple, party hat, marble).

Duplicate a copy of the "Let's Go Shopping" worksheet for each child. The children will need their scissors and glue sticks.



"Let's Go Shopping" Worksheet

DAY 5

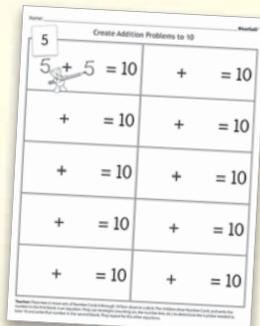
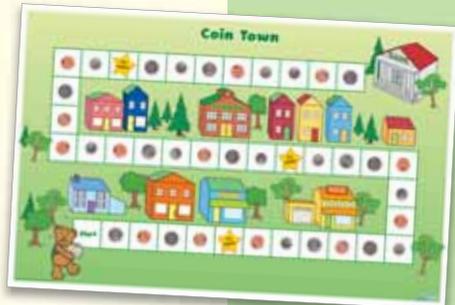
Activity Center 1 — Navigate classroom computers to *Starfall.com*.

Activity Center 2 — The children will use 1 or 2 "Coin Town" game boards, coin spinners, playing pieces, a cup or other container of coins (pennies, nickels, dimes), and 1 empty paper or plastic cup for each child.

Activity Center 3 — The children will use 1 or 2 "Parking Lot" game boards and a set of dominoes placed face down.

Activity Center 4 — Prepare materials for this week's Teacher's Choice Activity.

Summative Assessment — Duplicate a copy of the "Create Addition Problems to 10" worksheet for each child. The children will use connect cubes and several sets of Number Cards 0 through 10. Record responses on the Summative Assessment Checklist for Unit 8, Week 20.



Create Addition Problems to 10 Worksheet



Summative Assessment Unit 8 - Week 20

DAY 1

DAY 2

Daily Routines

- Calendar
- Weather
- Number Line
- Place Value
- Hundreds Chart

Magic Math Moment

"Five Little Bees"

Addition flash cards

Math Concepts

Act out math (addition) song
 Build addition number stories
 Determine the missing number in an addition equation
 Solve for X

Solve addition problems on flash cards
 Review addition strategies
 Groups solve addition problems using the different strategies

Formative / Summative Assessment

Determine missing number in addition equations and solve

Solve addition story problems

Workbooks & Media

Math Melodies Track 5
 Workbook pages 11 and 12



DAY 3

DAY 4

DAY 5

- Calendar
- Weather
- Number Line
- Place Value
- Hundreds Chart

Learning Centers

Addition flash cards (greater numbers)

Word Problems

Starfall.com:

- Monthly Calendar
- Money Link,
- Add & Subtract: "Word Problems" and "Make 10"

Solve addition problems on flash cards

Review penny, nickel, and dime

"Coin Town"

Introduce story maps

Discuss uses for money

Use story maps to create and solve number stories

Review coin values

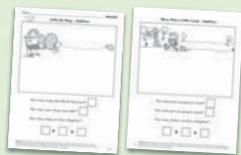
"Go shopping" using real coins

Use a story map to create and solve an addition equation

Add "pennies" in order to have enough money to purchase items

"Parking Lot"

Workbook pages 13 and 14



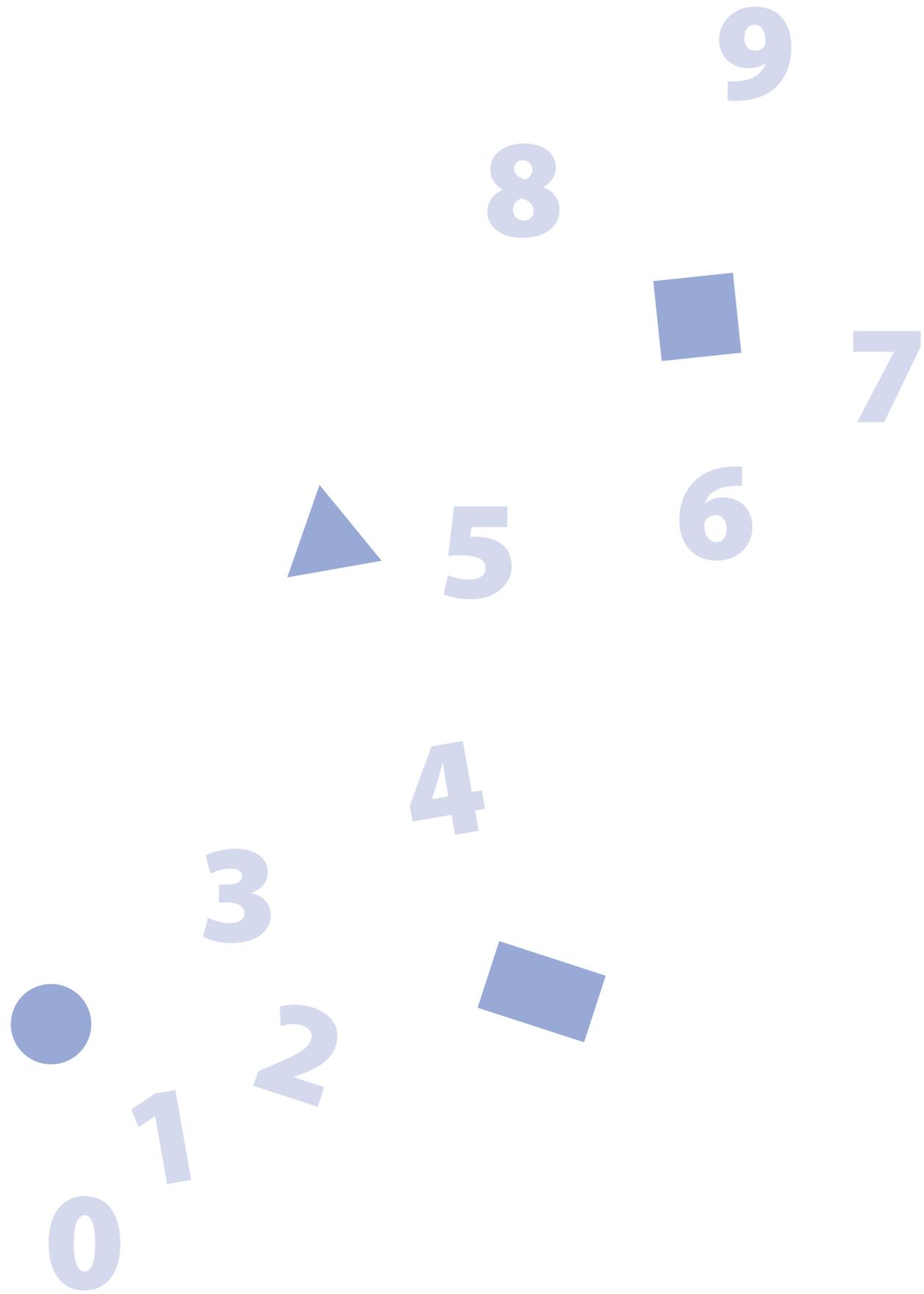
Starfall.com, Addition & Subtraction: "Word Problems"

"Let's Go Shopping"

Teacher's Choice

Create addition problems to 10

Summative Assessment: Add a number to equal 10



"Five Little Bees"

Ask: **Who can share something about bees?**

Volunteers respond.

Say: **Let's listen to a song about five little bees.** Play *Math Melodies* Track 5, "Five Little Bees."

Continue: **Let's listen again, only this time five volunteers will act out the song.** Select five volunteers and play the song again.

Ask: **When we acted out this song, did we add bees or take bees away?** (Volunteers respond.) **Right, we started with one bee and then we repeatedly added one more until there were five.**

Repeat with different sets of volunteers as time permits.

Materials

- Math Melodies* Track 5

Counting & Cardinality

B.4 - Understand the relationship between numbers and quantities.

B.4a - Say number names in order, pairing each object with one number.

Operations & Algebraic Thinking

A.2 - Solve word problems with addition and subtraction within 10.

Missing Numbers

1 Building Addition Number Stories

Say: **Today we will use pictures to build number stories and then we will solve them.**

Distribute *Backpack Bear's Math Workbook #2* and instruct the children to turn to page 11.

Say: **Look at the first box. What do you see? Backpack Bear created a story about these pictures. Would you like to hear it?**

Continue: **One day Backpack Bear went to the beach. He brought 3 beach balls with him to play with on the sand. As he was playing he found 3 more beach balls. How many beach balls did he have in all?**

Demonstrate how to write the equation under the pictures. The children write the equation on their workbook pages.

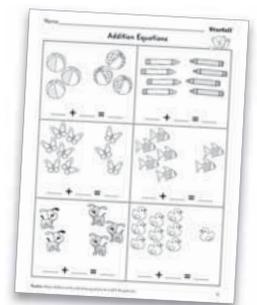
Say: **Look at the second box. What do you see? Who can make up a story about the crayons?**

Continue this process for each problem. It is not necessary for children to color the pictures.

Note: The children will use their workbooks again at the end of today's lesson.

Materials

- Backpack Bear's Math Workbook #2*, pages 11 and 12
- Pencils
- Math bags
- Individual whiteboards and markers



2 Solving For X

Say: **Today we will be “missing number” detectives. Remember to use the addition strategies to help find the missing number!**

Make an x on the whiteboard.

Ask: **What number does x stand for?** Volunteers respond.

Explain: **Right, we don’t know because x is not a number! It is unknown. We don’t know how much x is!**

Write $3 + x = 4$ on the whiteboard. Read: **Three plus x = 4. X stands for the missing number. What do we need to add to 3 to equal 4?** (Volunteers respond.) **Right, 1. So, x = 1.**

Write $3 + x = 4$, and below that write $x = 1$.

Say: **Let’s try some more.** Continue solving for x, presenting several examples to the class. Choose volunteers to come to the board to complete the equations. Review the equation and value of x each time. Example:

Distribute individual whiteboards and markers.

Say: **Now you will try solving for x on your own. On your whiteboard write $5 + x = 6$.** The children do this.

$$4 + x = 6$$

$$x = \underline{\quad}$$

Continue: **Write $x = \underline{\quad}$ under the equation. Now think, 5 plus what number equals 6? Write what number x stands for.**

Provide several equations for the children to solve for x. Include problems that include zero. Example:

$$x + 6 = 7$$

$$x = \underline{\quad}$$



Formative Assessment

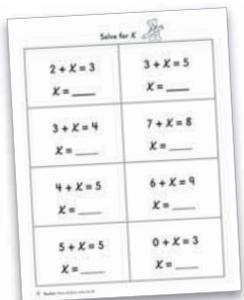
What Number is Missing?

Distribute math bags and *Backpack Bear’s Math Workbook #2* and instruct the children to turn to page 12.

Say: **Remove the connect cubes from your math bags. You can use the connect cubes to help you tell what number is missing in each of the equations on this workbook page.**

Work each problem together, encouraging the children to use their connect cubes to solve the equations.

Note: The children may lightly write an x in each blank, then replace each as they solve for x.



Flash Card Game

Say: **Today let's play a Flash Card Game.** Flash an Addition Equation Card and continue: **Look at this equation.** (Example: $4+1$) **Give a thumbs-up if you know what $4 + 1$ equals.** (Remind the children not to call out, just to give a thumbs-up.) Choose a volunteer to respond.

Continue for all of the Addition Equation Cards through 5.

Materials

- Addition Equation Cards through 5

Strategies to Solve Story Problems

Essential Question: How can we use objects to show addition?

Materials

- Backpack Bear's Math Big Book, page 44
- Math mats
- Two-sided Counters
- Connect cubes
- Whiteboards, markers

Operations & Algebraic Thinking

A.2 - Solve word problems with addition and subtraction within 10.

A.5 - Fluently add and subtract within 5.



1 Review Strategies for Adding

Say: **Today we will work in groups to solve addition problems.** **Each group will use a different strategy.** Reference *Backpack Bear's Math Big Book*, page 44.

2 Strategy Demonstration

Say: **Each group will solve the same story problem, but every group will use a different strategy. Listen to this story. Backpack Bear has 6 red flowers and 2 yellow flowers in his garden. How many flowers does Backpack Bear have in all?**

Divide the class into five groups, and demonstrate the following strategies for each:

- Group 1 will use the ten-frames on their math mats and two-sided counters.
- Group 2 will use connect cubes.
- Group 3 will draw pictures on their whiteboards.
- Group 4 will use their math mats and number line.
- Group 5 will use their whiteboards and markers to draw tally marks.

Repeat the story problem. Groups use their strategies to solve it.

3 Explanation of Addition Strategies

The groups share their answers and take turns to explain the addition strategies they used to solve the problem.

4 Using Strategies to Solve Story Problems

Rotate the groups so that each group uses a different strategy to solve each of the following story problems. (Example: Group 1 uses connect cubes. Group 2 will draw pictures on whiteboards. Group 3 will use their math mats and number line. Group 4 will use whiteboards and markers to draw tally marks. Group 5 will use the ten-frames on their math mats and two-sided counters.)

Share the following story problems. You may substitute the names given for names of children in your class. Discuss the correct answer to each problem before moving on.

- **Noah has 4 goldfish and 3 cats. How many animals does Noah have altogether?**
- **An apple tree had 7 apples on it and then 2 more apples grew. How many apples were on the apple tree in all?**
- **Emma went to the store to buy peanuts. She had 4 pennies when she started walking, and then she found 2 more pennies on the sidewalk. How many pennies did Emma have to buy peanuts altogether?**
- **Five fish swam by the log. Then 3 more fish swam by the log. How many fish swam by the log in all?**
- **Mia has 5 balloons. If her mother buys her 5 more balloons, how many balloons will Mia have altogether?**

Greater Number

Say: **Let's play "Greater Number." I will show you an Addition Equation Card. Then we will count on to solve the equation. Remember, we want to count on from the greater, or larger, number. Ready?**

Flash the Addition Equation Cards individually and select volunteers to identify the greater number and count on to solve the equation. Volunteers may ask for assistance from their classmates if needed.

Materials

- Selected Addition Equation Cards 5-10

Story Maps

Essential Question: What strategies can we use to solve word problems?

Materials

- Nursery Rhymes, pages 25 and 27
- Backpack Bear's Math Workbook #2, pages 13 and 14
- Pencils, crayons

Operations & Algebraic Thinking

A.1 - Represent addition and subtraction in a variety of ways.

A.2 - Solve word problems with addition and subtraction within 10.

1 Introduce a Story Map

Indicate *Nursery Rhymes*, page 25. Say: **Today we will learn how to use a story map. Who knows the nursery rhyme about Little Bo Peep? Let's say it together.**

Recite "Little Bo Peep" with the children.

Ask: **How many sheep do you think Little Bo Peep lost?** Volunteers respond.

Little Bo Peep

*Little Bo Peep has lost her sheep,
And doesn't know where to find them.*

*Leave them alone,
And they'll come home,
Wagging their tails behind them.*



2 Use a Story Map

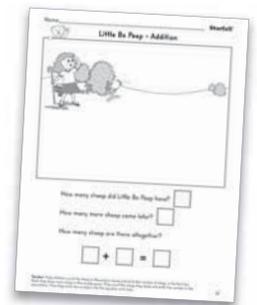
Distribute *Backpack Bear's Math Workbook #2*. Instruct the children to turn to page 13.

Indicate the "Little Bo Peep" addition story map.

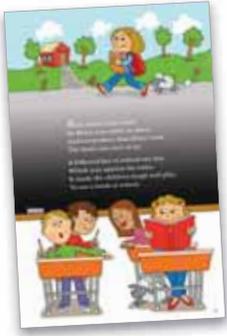
Say: **Here is a scene from the "Little Bo Peep" nursery rhyme. It is a story map. Who can describe what you see? (Volunteers respond.) Let's use this story map to create a number story.**

Indicate the bottom box. Ask:

- **How many sheep did Little Bo Peep have? Let's count the sheep we see in the picture. (3) We'll put the number 3 in the number box.**
- **How many more sheep came home? (Volunteers respond.) Do we really know?**
- **Guess how many additional sheep came home, but don't say your answer.**
- **Now draw the additional sheep on your story map and write the number in the number box. (Answers will vary.)**



3 Create and Solve a Number Sequence



Say: **Now it's time to create a number sentence.** Demonstrate writing the numbers in the equation boxes.

Ask: **If Little Bo Peep had 3 sheep and (choose a number) more came, how many sheep did Little Bo Peep have altogether?** Write the number and read the completed equation together.

Say: **Let's try another one.**

Indicate *Nursery Rhymes*, page 27.

Ask: **What nursery rhyme does this make you think of? Right, "Mary Had a Little Lamb." Let's say the nursery rhyme together.**

Mary Had a Little Lamb

*Mary had a little lamb,
Little lamb, little lamb,
Mary had a little lamb,
Its fleece was white as snow*

*And everywhere that Mary went,
Mary went, Mary went,
Everywhere that Mary went,
The lamb was sure to go.*

*It followed her to school one day,
School one day, school one day,
It followed her to school one day,
Which was against the rules.*

*It made the children laugh and play,
Laugh and play, laugh and play,
It made the children laugh and play,
To see a lamb at school.*

Formative Assessment

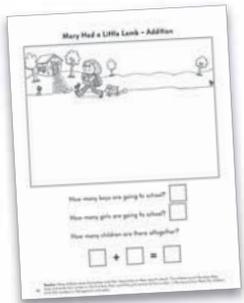
Story Maps

Say: **Turn to page 14 in your workbooks.** The children do this.

Ask:

- **How many boys do you think are going to school? Draw that many boys into the story.** (The children do this.) **Now write the number of boys next to the first sentence.**
- **How many girls do you think are going to school? Draw that many girls into the story.** (The children do this.) **Now write the number of girls next to the second sentence.**
- **Let's fill in the equation.** (Equations will vary.)
- **How many boys and girls are in school altogether?**

Volunteers bring their story maps to the front of the classroom and share their results.



Word Problems

Navigate a classroom computer to *Starfall.com*, Addition & Subtraction: "Word Problems" and select the "Add To/Result Unknown" activity. The children help navigate through the activity and solve the problems.

Materials

None

Addition With Coins

Essential Question: What strategies can we use to solve word problems?

Materials

- Backpack Bear's Math Big Book, pages 13-15
- Math bags (containing coins)
- Math mats
- Pocket chart
- "Let's Go Shopping" worksheets
- Scissors, glue sticks
- Picture Cards with Price Tags:
 - Airplane, 9¢
 - Apple, 6¢
 - Orange, 10¢
 - Party Hat, 8¢
 - Pencil, 4¢
 - Pretzel, 7¢
 - Marble, 5¢

Operations & Algebraic Thinking

A.1 - Represent addition and subtraction in a variety of ways.

Money

M.1 - Identify the value of coins.

1 Review Penny, Nickel, and Dime

Indicate *Backpack Bear's Math Big Book*, pages 13, 14, and 15.

Review the Penny, Nickel, and Dime rhymes.

2 Uses for Money

Ask: **How do we use money in real life?** The children give examples such as to buy food, toys, houses, etc.

Ask: **Why is it important to know how much each coin is worth?** Discuss the children's responses.

Continue: **If I want to buy a toy that costs 10 cents, but I only have 5 cents, can I buy it? How much more do I need?** (Volunteers respond.) **Right, if I only have 5 cents, I need 5 more cents in order to have 10 cents.** Write $10 = 5 + \underline{\quad}$.

3 Coin Values

Distribute math bags and math mats and instruct the children to remove their bags of coins. Say: **Sort your coins into piles of pennies, nickels, and dimes.** The children do this.

Continue:

- **Show me a penny. How much is a penny worth?**
- **Show me a nickel. How much is a nickel worth?**
- **Show me a dime. How much is a dime worth?**



4 Going Shopping

Say: **Backpack Bear is going shopping. He would like to buy a few things, but he is not sure how much money he needs. He brought pictures of the items he would like to buy.**

The children will use their bags of coins and their math mats to solve the problems.

Indicate the *pencil* Picture Card.

Ask: **How much does this pencil cost? (4 cents) Take the pennies out of your math bag. Pretend you are giving Backpack Bear enough money to buy the pencil. Use the ten-frame on your math mat, and place the correct number of pennies Backpack Bear needs to buy the pencil.** Check to see that the children do this correctly. They clear their math mats after each purchase.

Indicate the Apple Picture Card With Money Tag.

Ask: **How much does the apple cost? (6 cents) How many pennies would you need to buy the apple? (6) Place 6 pennies in your ten-frame. Can you think of other coins you could use instead of 6 pennies to buy the apple?**

Lead the children to understand that they could also use a nickel plus a penny. Remind them that a nickel is worth 5 cents. (Write $5 + \underline{\quad} = 6$.) Ask: **If you have 5 cents how much more do you need to have a total of 6 cents? What coin could you add to the nickel?**

Indicate the remaining Picture Cards with Price Tags. The children use their coins to determine different ways to help Backpack Bear pay for each item.



Formative Assessment

“Let’s Go Shopping” Worksheet

Distribute the “Let’s Go Shopping” worksheets. Instruct the children to place their paper pennies on their math mats after they cut them apart.



Say: **Today you will help Backpack Bear with his shopping. He has some money but not enough to buy each item. You will use the pennies you cut apart to add to Backpack Bear’s money so that he will have enough to buy each item.**

The children cut apart the pennies and place them on their math mats. Say:

- **Look at the apple. How much does it cost?**
- **Backpack Bear has a nickel. Put your finger on the nickel. Does he have enough to buy the apple?**
- **How many pennies should you add to Backpack Bear’s nickel in order for him to have 6 cents? Right, one! Glue a penny next to the nickel.**
- Write and say: $5 + 1 = 6$. Ask: **Does Backpack Bear have enough to buy the apple now? (yes)**

Repeat this procedure for the remaining items.

Learning Centers

DAY

5

1 Computer

The children explore:

- Monthly calendar
- Money Link
- Add & Subtract: "Word Problems"
- Add & Subtract: "Make 10"

Children may navigate to other *Starfall.com* math activities after they have explored those suggested above.

Materials

- Computers navigated to *Starfall.com*

Operations & Algebraic Thinking

A.1 - Represent addition and subtraction in a variety of ways.

A.4 - For 1-9, find the number that makes 10.

Money

M.1 - Identify the value of coins.

2 "Coin Town"

For each turn the child spins, then moves his or her playing piece to the next coin equal to the amount shown on the spinner.

The child identifies the coin and takes the corresponding coin out of the bank and places it into his or her own bank (cup).

At the end, the children sort their coins and count their pennies, nickels, and dimes.

Materials

- 1 or 2 "Coin Town" game boards
- Playing piece for each child
- Coin spinners
- One cup of coins – the bank (pennies, nickels, dimes)
- One empty paper or plastic cup for each player



3 "Parking Lot"

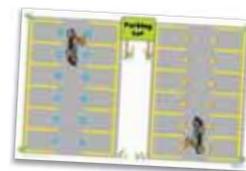
The first child selects a domino, adds the dots on the domino, then "parks" the domino in the appropriate parking space.

If the child chooses a domino that equals the same value as one already on his or her board, he or she stacks it on top.

The children take turns. The first child to fill all of his or her parking spaces wins, or the game continues until both children fill their spaces.

Materials

- 1 or 2 "Parking Lot" game boards
- Dominoes placed face down



4 Teacher's Choice

Review or expand a skill from this unit according to the needs of your students.

5 Summative Assessment: Create Addition Problems to 10

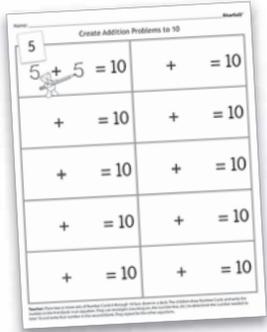
Place several sets of Number Cards face down in a deck. The children take turns to draw a Number Card and write that number as the first number of the equation. They then write the number that when added totals 10.

The children may use connect cubes to help them.

Observe the children as they work in this center and note their ability to determine the answers on the Unit 8, Week 20 Summative Assessment Checklist.

Materials

- Create Addition Problems to 10 worksheets
- Several sets of Number Cards 0-10
- Two sets of connect cubes (10 each of two different colors)
- Summative Assessment Checklist for Unit 8, Week 20



Name: _____

Let's Go Shopping!





Teacher: The children cut out the pennies, add them to the other coins to match the price of the items on the left, and then glue the pennies in place.

Create Addition Problems to 10

5

$$5 + 5 = 10$$


$$+ = 10$$

$$+ = 10$$

$$+ = 10$$

$$+ = 10$$

$$+ = 10$$

$$+ = 10$$

$$+ = 10$$

$$+ = 10$$

$$+ = 10$$

Teacher: Place two or more sets of Number Cards 0 through 10 face-down in a deck. The children draw Number Cards and write the number in the first blank in an equation. They use strategies (counting on, the number line, etc.) to determine the number needed to total 10 and write that number in the second blank. They repeat for the other equations.