

UNIT

9



# Subtraction

**Starfall Education Foundation**  
P.O. Box 359, Boulder, CO 80306

**Starfall Education Foundation** P.O. Box 359, Boulder, CO 80306 U.S.A.

**Email:** [helpdesk@starfall.com](mailto:helpdesk@starfall.com)

**Phone:** 1-888-857-8990 or 303-417-6414

**Fax:** 1-800-943-6666 or 303-417-6434

# Subtraction

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# Frequently Asked Questions

***Subtraction traditionally seems more difficult for young children than addition. With that in mind, how does Starfall ensure that children meet with success when they are introduced to this concept?***

The Starfall math curriculum begins preparing children for subtraction early in the year through the morning Daily Routines, in which the children practice counting backward and identifying numbers that are less than other numbers. Because subtraction is practiced in these and other real-life situations throughout the program, the children develop a basic understanding of the concept before it is formally introduced, making them much more likely to meet with success later on.

The concept of subtraction is introduced and reviewed through:

- Subtraction story songs (*Starfall.com* and *Starfall Math Melodies*)
- Board games
- Story maps
- Illustrating subtraction word problems
- Subtraction strategies (*Backpack Bear's Big Math Book*)
- Dramatizations
- *Starfall.com* subtraction activities
- Learning center games and activities

***Children often try to use their fingers to subtract but end up adding the numbers rather than subtracting. What are some ways to help children use this strategy correctly?***

The key to helping children understand the concept of subtraction is to be sure they understand the concept of less than. Additionally, practice with estimation, teaching number sense, and working with money help the children understand that the outcome of a subtraction problem will be less than the original number.

Children are introduced to eight different subtraction strategies, so they have others on which they may also rely. These strategies are practiced repeatedly and help to reinforce the concept of subtraction.

The online subtraction activities at *Starfall.com* concretize subtraction in a fun way. The children hear and see the concept being played out in games and activities. Providing opportunities for children to explore subtraction activities online provides the much-needed practice children require in order to become proficient in subtraction.

# Unit 9 Research

Research indicates that the fundamental understanding of subtraction evolves from children's early counting experiences.<sup>(1)</sup> By playing with sets of items, children can recognize that taking something away from a set makes it smaller. From their numerous experiences that involve removing items from a set to make it smaller, children construct an informal conceptual basis for understanding subtraction as taking away. They use this view of subtraction to comprehend and to solve simple arithmetic tasks or word problems.

Various early math content areas should be taught according to a developmental progression of skills and concepts that build on one another. These developmental progressions show the order in which young children typically learn math concepts and skills. Educators should ensure that children are comfortable with earlier steps in the progression before being introduced to more complex steps. Understanding developmental progressions is also necessary to employ progress monitoring that tracks each individual child's success along the steps in the progression.<sup>(2)</sup> Children should be provided many opportunities to practice recognizing the total number of objects in small sets. Next, teachers should promote accurate one-to-one counting as a means of identifying the total number of items in a set. Once children can recognize or count sets, they need many occasions to use number words and counting to compare quantities. When children have developed these fundamental number skills, they are ready to begin solving basic problems.

Using their number knowledge to solve arithmetic problems gives children a context to apply and expand this knowledge and gain confidence in their math ability. Once children can determine the total number of items in a set by using number recognition or counting and can understand the concepts of "fewer," they can explore the effects of subtracting items from a set. Children can change small sets of objects by combining or removing objects (e.g., taking away two blocks

from a set of five blocks) and then count to determine "how many" they have in the new set. As children become more adept, teachers should present more difficult problems with slightly larger numbers. Children should begin posing word problems as well as solving them. It is important for children to retell a word problem in their own words as a powerful general teaching strategy to extend their knowledge.<sup>(3)</sup> Problem solving challenges children to use their math knowledge to answer and explain math-related questions. Teachers can use problem-solving tasks across classroom situations so children can see how to apply counting to solve everyday challenges, such as taking attendance to see how many children are present or absent. Once children have experience with combining or separating items in a set they can see, they can do the same with collections of objects (e.g., pennies) when the final outcome is hidden from view. The children see the initial group of objects and the objects being taken away, but they do not see the final set of objects. The children must then determine how many are hiding. Children may solve this problem by counting on their fingers or in their heads. After the children give their answer, the teacher can take the cover away, and the children can count to check the answer. Snack time can provide children with authentic comparisons of adding and subtracting or "more" and "fewer." As children receive or eat their snacks, they can count how many items they have, or "How many will you have after you eat one?"

(1) Baroody, A. J., & Wilkins, J. L. M. (1999). The development of informal counting, number, and arithmetic skills and concepts. In J. V. Copley (Ed.), *Mathematics in the early years* (pp. 48-65). Reston, VA: National Council of Teachers of Mathematics.

(2) Frye, D., Baroody, A. J., Burchinal, M., Carver, S. M., Jordan, N. C., & McDowell, J. (2013). *Teaching math to young children: A practice guide* (NCEE 2014-4005). Washington, DC: National Center for Education Evaluation and Regional Assistance (NCEE), Institute of Education Sciences, U.S. Department of Education.

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

# Unit 9 Summary

**Time Frame:** 10 days

In Unit 9 the children are formally introduced to the operation of subtraction. They use the ten-frame and other strategies to help them determine the answers to subtraction problems and solve subtraction story problems, including those involving the use of money.

## Essential Questions

**(K.CC.A.2)** How can we count on from a given number?

**(K.CC.B.5)** How can we tell if a number is greater than or less than, another number?

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

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

**(K.NBT.1.1)** How can we group numbers by tens and ones to see how many of each we have?

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

## Vocabulary

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

Backward

Minus

Storyboard

Subtraction

## Enduring Understandings

Counting from a given number will help us with many math skills.

We can count objects in sets to compare which set has more or less, or if they have equal amounts.

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

Subtraction describes the process of separating from a whole, through problem solving and use of manipulatives.

## Recommended Literature

*Five Little Monkeys Go Shopping* by Eileen Christelow

*If You Were a Minus Sign* by Speed Shaskan

*Monster Musical Chairs* by Stuart J. Murphy

*One Less Fish* by Kim Michelle Toft

*Ten Sly Piranhas: A Counting Story in Reverse* by William Wise

*The Action of Subtraction* by Brian P. Cleary

*The Doorbell Rang* by Pat Hutchins

# Standards & Benchmarks

## Starfall Standards

### Counting & Cardinality

**CC.3** Count backward from a given number.

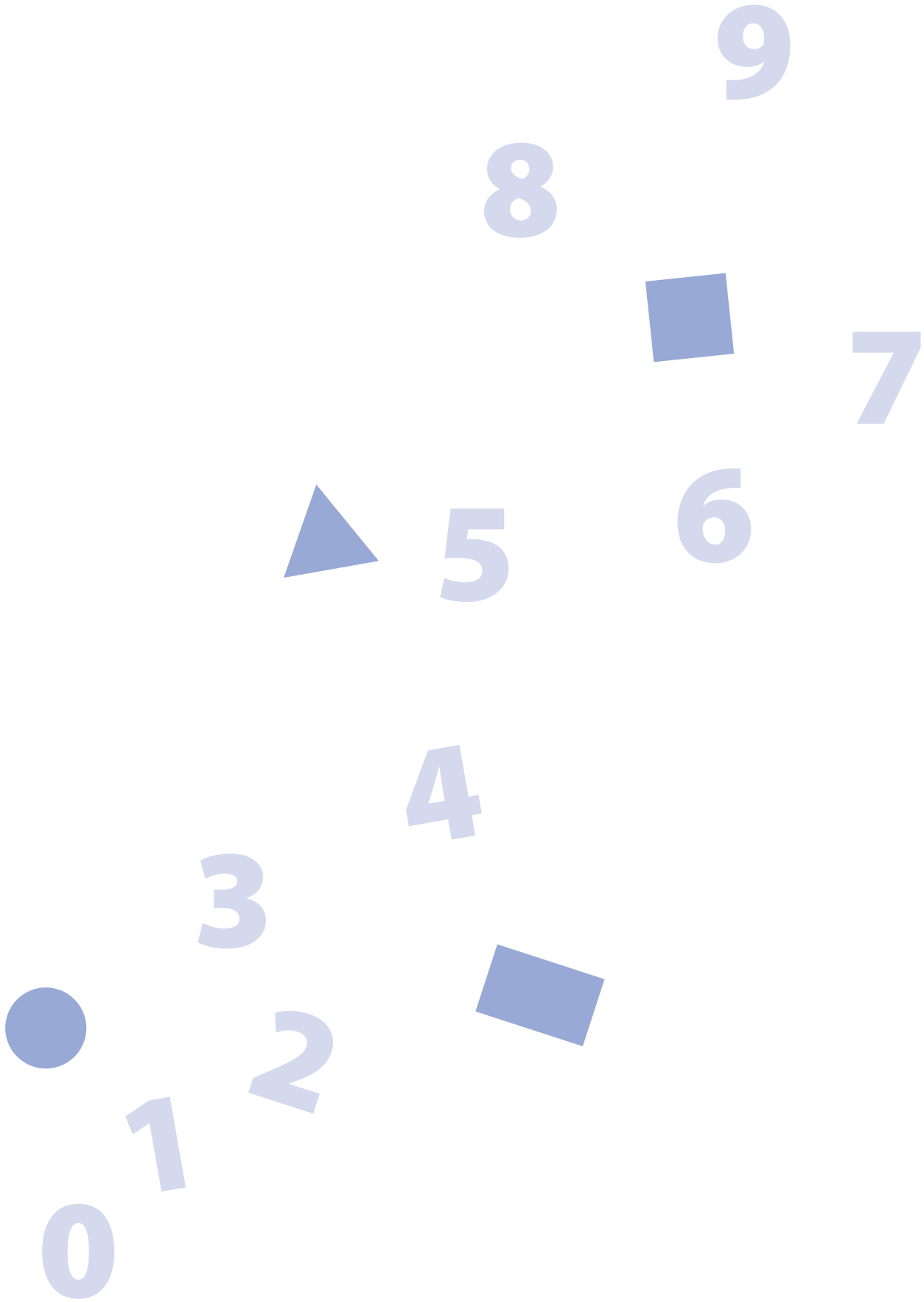
### Money

**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
<b>A.1</b> Count to 100 by ones and by tens.	<i>Count to 100 by ones and by tens.</i>
<b>A.2</b> Count forward beginning from a given number within the known sequence (instead of having to begin at 1).	<i>Count forward from a given number.</i>
<b>A.3</b> Write numbers from 0 to 20. Represent a number of objects with a written numeral 0-20 (with 0 representing a count of no objects).	<i>Write numbers from 0 to 20.</i>
<b>B.4</b> Understand the relationship between numbers and quantities; connect counting to cardinality.	<i>Understand the relationship between numbers and quantities.</i>
<b>B.4a</b> 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.	<i>Say number names in order, pairing each object with one number.</i>
<b>B.4b</b> 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.	<i>The last number counted tells the total number of objects.</i>
<b>B.4c</b> Understand that each successive number name refers to a quantity that is one larger.	<i>Each successive number refers to one more.</i>
<b>C.6</b> Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group, e.g., by using matching and counting strategies.	<i>Identify greater than, less than, and equal to.</i>
<b>C.7</b> Compare two numbers between 1 and 10 presented as written numerals.	<i>Compare two numbers as written numerals.</i>
Operations & Algebraic Thinking	Inline Summary Form
<b>A.1</b> Represent addition and subtraction with objects, fingers, mental images, drawings, sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations.	<i>Represent addition and subtraction in a variety of ways.</i>
<b>A.2</b> Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem.	<i>Solve word problems with addition and subtraction within 10.</i>
Number & Operations in Base Ten	Inline Summary Form
<b>A.1</b> Compose and decompose numbers from 11 to 19 into ten ones and some further ones, e.g., by using objects or drawings, and record each composition or decomposition by a drawing or equation (e.g., $18 = 10 + 8$ ); understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones.	<i>Understand numbers 11-19 are ten ones plus more ones.</i>





# 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 21 Summary

This week the children will be introduced to the operation of subtraction. They will learn the “Minus Poem” and experiment with strategies they can use to determine the answers to subtraction problems and number stories. The children will also:

- Practice greater than and less than
- Practice estimation skills
- Count backward

## Preparation

### DAY 1

Hang a length of clothesline or thick yarn low enough for the children to reach, and have ten clothespins available. Place the Number Cards 0-10 in a basket or other container. The children will hang the Number Cards on the clothesline using the clothespins. Prepare two paddles (or other objects) for the children to use to cover Number Cards hanging on the “number line” they will create.

You will also need two sets of Number Cards 0-20.

### DAY 2

The children will use their math bags and math mats for today’s lesson.

### DAY 3

No additional preparation is needed.

### DAY 4

You will use an “Add and Subtract” game board. Prepare a blank game spinner by labeling the sections with the numbers  $-1$ ,  $-2$ ,  $-3$ ,  $-5$ ,  $+2$ ,  $+4$ , and  $+6$ . You will also need two sets of twenty connect cubes (different colors for each player) to demonstrate the game.



**DAY 5**

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

*Activity Center 2* — Have two to four “Add and Subtract” game boards available, and prepare two blank game spinners by labeling the sections with the numbers -1, -2, -3, -5, +2, +4, and +6. You will also need 20 connect cubes for each player.

*Activity Center 3* — You will need four sets of Number Cards 0-10.

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

*Summative Assessment* — Prepare a copy of the Summative Assessment Checklist for Unit 9, Week 21. You will assess the children’s understanding of subtraction story problems.

The children will complete pages 16 and 17 of *Backpack Bear’s Math Workbook #2*.



Summative Assessment Checklist Unit 9, Week 21  
 Understands Subtraction Story Problems (1.OA.A.2)

Name	Understanding Subtraction Problems	Comments



Summative Assessment  
 Unit 9 - Week 21

DAY 1

DAY 2

*Daily Routines*

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

*Magic Math Moment*

*Estimate with Backpack Bear*  
(more/less than)  
"Five Little Speckled Frogs"

Subtraction as an operation

*Math Concepts*

Estimate more/less than  
Greater than and less than  
(order number cards)

Review strategies for adding  
Introduce Subtraction and  
strategies for subtracting

*Formative /  
Summative  
Assessment*

Greater than, less than and  
equal to

Compare addition and  
subtraction strategies

*Workbooks  
& Media*

**DAY 3**

**DAY 4**

**DAY 5**

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

*Learning Centers*

Counting backward

"Five Little Teddy Bears"

**1**

*Starfall.com:*

- Monthly Calendar
- Subtraction: "Subtraction Intro"
- Subtraction: "Subtract Within 10"
- Add & Subtract: "Word Problems" (Take From)

Counting backward  
Drawing pictures as a subtraction strategy  
Write equations

One less (taking one away)  
Acting it out and using pictures as subtraction strategies  
Write subtraction equations

**2**

"Add & Subtract"


Draw picture representations of story problems and write the matching equations

"Add and Subtract"


**3**

High/Low Card Game

*Math Melodies*, Track 9  
Workbook page 15



*Math Melodies*, Track 10  
Workbook pages 16 and 17



**4**

Teacher's Choice

**5**

Five Little Teddy Bears Subtraction

Summative Assessment: Subtraction story problems

Workbook pages 16 and 17 (color)

**Estimate with Backpack Bear**

Indicate *Estimate with Backpack Bear*. Say: **Let's see how well we can estimate more than and less than.**

**Estimate with Backpack Bear will help us!** To practice this skill, choose pages that require the children to estimate more than and less than.

**Materials**

- Estimate with Backpack Bear

**Counting & Cardinality**

A.2 - Count forward from a given number.

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

C.6 - Identify greater than, less than, and equal to.

C.7 - Compare two numbers as written numerals.

**Greater Than / Less Than Game Day**

**Essential Question:** How can we tell if a number is greater than or less than another number?

**Materials**

- Clothesline or length of thick yarn
- 10 clothespins
- Number Cards 0-10 in a basket or container
- Two prepared "paddles"
- Pocket chart
- Two sets of Number Cards 0-20

**1 Clothesline Game**

Say: **Today is "Greater Than, Less Than Game Day!" Let's play a game called "The Clothesline Game."** (If necessary, define clothesline, explaining that when people wash their clothes they sometimes hang them on a clothesline to dry.)

Indicate the clothesline or length of yarn. Say: **This is a clothesline. It is used with clothespins (indicate) to hold the clothes on the line.**

Two volunteers hold the ends of the clothesline. Use a clothespin to attach the 5 Number Card to the center of the clothesline.

Ask: **What number is pinned to the clothesline?** (Volunteers respond.) **Right, 5.**

Remove the 8 Number Card from the basket or container. Say: **Here is the number eight. Eight is greater than, or more than, five. Since eight is greater than five, where should it be placed on the clothesline?** (Volunteers respond.) **Right, eight is greater than five, so it belongs here.** Indicate a location a few spaces to the right of the 5 Number Card and attach the 8 Number Card there.

Volunteers continue to choose Number Cards and state if they are greater than or less than five. They use clothespins to attach them to the correct locations on the clothesline. Classmates may assist as needed.

**Note:** If there isn't enough space on the clothesline to attach a Number Card, the children work together to problem solve until they realize that they must move the attached numbers closer together to create space.

Continue until all of the Numbers Cards 0-10 are attached in order to the clothesline.

## 2 Mystery Number Game

Write the numerals 0 to 10 on a whiteboard at a height the children can easily reach. Say: **Now let's play the "Mystery Number Game."**

- Choose a "mystery number holder" to select a Number Card from the basket or container. He or she looks at the mystery number without allowing anyone else to see it.
- Two additional volunteers become "bracket holders," and use paddles to cover 0 and 10 on the "number line."
- The mystery number holder selects a classmate to guess the number.

Examples:

- The mystery number holder chooses 5. The volunteer guesses 8. The mystery number holder says: "No, the number is less than 8." The right bracket holder moves the bracket to cover 8.
- The next volunteer guesses 4. The mystery number holder says: "No, the number is greater than 4." The left bracket holder moves the bracket to cover 4.

Players continue to guess until the mystery number is the number between the two brackets. The player who identifies the mystery number becomes the next mystery number holder.



## Formative Assessment

### Pocket Chart Game

Combine two sets of Number Cards 0-20 and place them face down in a pocket chart. Divide the children into two teams. Tell Backpack Bear that he will be the "card holder" and hold the discarded Number Cards.

- One child from each team reveals a Number Card and identifies the number.
- The first child uses a complete sentence to tell whether his or her number is greater than, less than or equal to the other child's number.
- The second child uses a complete sentence to express whether his or her number is greater than, less than or equal to the other child's number. Example: 4 is less than 18. 18 is greater than 4.
- The children remove the two numbers from the pocket chart and hand them to Backpack Bear.
- The next two children come forward to select their numbers.
- Play continues until all of the Number Cards have been removed.

*Continue this plan on Day 2 if there is not enough time to introduce all three games today.*

## Subtraction as an Operation

## Materials

 None

Ask: **Who remembers what it means to operate on someone?** (Volunteers respond.) **Right, when a doctor operates, he or she works to change someone to help the person feel better.**

Continue: **Raise your hand if you remember when we learned to perform the operation of addition.** The children do this.

Say: **Today we will learn to operate on numbers in a different way.**

Write  $2 - 2$  on the whiteboard. Continue: **Let's perform the operation of subtraction on these numbers.**

Place a minus sign between the twos. Ask: **How will performing the operation of subtraction change the twos? Right, when we perform the operation of subtraction on  $2 - 2$  they become 0. Let's operate on some other numbers.** Continue to solve subtraction problems using the term "operation" so the children become accustomed to hearing it.

## Counting &amp; Cardinality

CC.3 - Count backward from a given number.

## Operations &amp; Algebraic Thinking

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

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

## Introduce Subtraction

## Materials

- Backpack Bear's Math Big Book, pages 43-46
- Math bags
- Math mats
- Whiteboards, markers

## 1 Plus and Minus Poem

Indicate *Backpack Bear's Math Big Book*, page 43 and review the Plus Poem. Review the equations and discuss the meaning of adding numbers together.

Indicate page 45 and review the Minus Poem. Say: **Backpack Bear says he knows an operation that is the opposite of addition. It is called subtraction. He wrote a poem to help us learn about the operation of subtraction.**

Read the poem. Explain that minus is another way to say, "take away."





## 2 Compare Addition and Subtraction Strategies

Indicate page 44, Strategies for Adding.

Say: **We already learned strategies for adding. Who can remember one of the strategies we can use to help us add numbers together?** Volunteers answer and point to the strategies they name and demonstrate how to use each of the strategies to solve a simple addition problem ( $4+1=5$ ) as follows.

- **#1**—The child holds up his or her fingers.
- **#2**—The child draws a ten-frame on the board and places magnets or dots in it.
- **#3**—The child uses connect cubes.
- **#4**—The child stands near the number line.
- **#5**—The child makes tally marks on an index card.
- **#6**—The child points to his or her head.
- **#7**—The child uses drawing paper.
- **#8**—Four children act out the problem.

Indicate page 46, Strategies for Subtraction.

Say: **Now let's look at the strategies Backpack Bear uses to help him subtract.**

The volunteers choose new volunteers to demonstrate as you introduce each of the subtraction strategies.

Ask: **What do you notice about the addition and subtraction strategies?**

Lead the children to understand that many of the addition strategies and the subtraction strategies are the same, or similar.



## Formative Assessment

### Partner to Solve Subtraction Problems

Say: **Now you will work with a partner. You and your partner will choose one of the strategies and use it to solve a subtraction problem.**

Partner the children. Write the equation  $5 - 3 = \underline{\quad}$  on a whiteboard. Say: **First you and your partner talk about it and decide which strategy you will use. Raise your hand when you and your partner have chosen your strategy.**

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

Continue: **Use your strategy to solve the problem  $5 - 3 = \text{what?}$  (The children do this.) Raise your hand if you know the answer to the problem.** Volunteers respond. Partners share which strategy they used to solve the problem.

Repeat using a different equation. Partners choose different strategies.

## Counting Backward

Say: **One of the strategies for subtraction is to think of the number and then count backward. Let's practice.**

The problem is  $5 - 2 = \underline{\quad}$ .

Continue: **Think 5 then count backward two times. As you count backward, hold up a finger for each number. Ready? We start with 5 (Hold up 5 fingers.), then 4 (Bend one finger.), 3 (Bend another finger.). How many fingers are you holding up now? Right, you are holding up three fingers, so  $5 - 2 = 3$ .**

Practice several times, using different equations.

If you have projection capabilities, project *Starfall.com*: Math Songs: "Five Little Speckled Frogs" or play *Math Melodies*, Track 9.

The children listen and sing along. Ask: **What happened to the number of frogs on the log each time one jumped into the pool?** (Volunteers respond.) **Right, the number went down each time because there was one less frog on the log. Let's listen again.** Encourage the children to use their fingers to represent the frogs.

### Materials

- Starfall.com* or *Math Melodies* Track 9, "Five Little Speckled Frogs"

### Counting & Cardinality

CC.3 - Count backward from a given number.

### Operations & Algebraic Thinking

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

## Subtraction Practice

### 1 Drawing Pictures Strategy

Draw a large rectangular box and an equation box with blanks for a subtraction equation. (Pictured below.)

### Materials

- Backpack Bear's Math Workbook #2*, page 15
- Whiteboards and markers

Say: **Listen to this story problem. We will use these diagrams to help us solve it.**

- **One day Jack and Pat went out on a boat. They saw a school of fish swimming near the shore. They counted 6 fish altogether. Then 2 of those fish swam away. How many fish were left?**

A volunteer, with your support, draws pictures of 6 fish in the large box, then places an X on 2 of them.

Another volunteer writes the equation,  $6 - 2 = 4$  on the lines provided in the equation box.

## 2 Read It, Draw It, Solve It Practice

Distribute whiteboards and markers.

Say: **Listen to this story.**

- **Grandma packed 3 grapes in my lunch. I gave 1 grape to my best friend. How many grapes do I have left? Right, 2.**

Continue: **Let's draw the story on your whiteboards. How many grapes did my grandma pack? (Volunteers respond.) Right, draw 3 grapes.**

Ask: **How many grapes did I give away? Right 1, so cross out 1 grape.** (The children do this.) **How many grapes do I have left? Right, 2. What is the equation that matches this story problem? (Volunteers respond.) Write the equation  $3 - 1 = 2$  on your whiteboard.**

Say: **Erase what's on your whiteboard. Let's try one more.**

Continue: **Four friends were at the playground. One went home. How many friends were left at the playground?**

The children draw a picture to represent the story problem then write the equation. Discuss their answers.

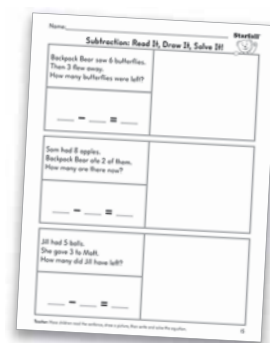


## Formative Assessment

### Represent Subtraction

Distribute *Backpack Bear's Math Workbook #2*. Instruct the children to turn to page 15.

Help the children read the story problem. They draw a picture representation and write the corresponding equation.



# Magic Math Moment

## "Five Little Teddy Bears"

Play *Math Melodies* Track 10: "Five Little Teddy Bears" and the children listen.

Ask: **What did you notice about the little bears? As we sang the song, did we add bears or subtract bears?** (Volunteers respond.) **Right, we subtracted or took them away.**

Choose five volunteers to come forward, and distribute Number Cards 1-5 to them.

Say: **Let's sing the song again, and this time we will act it out. We will pretend that the children with the Number Cards are the five little teddy bears.**

The children line up holding their Number Cards. As each bear leaves, the child holding the highest Number Card sits, until there are no children left standing.

### Materials

- Math Melodies*, Track 10
- Number Cards 1-5

### Counting & Cardinality

CC.3 - Count backward from a given number.

### Operations & Algebraic Thinking

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

## "Five Little Teddy Bears" Subtraction

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

### 1 Strategies for Subtraction

Indicate *Backpack Bear's Math Big Book* page 46, Strategies for Subtraction, and review each strategy.

Say: **We just used the strategy of "acting it out" to solve the subtraction problem of the five teddy bears. Now let's use the strategy of using pictures to help us solve a problem.**

### Materials

- Backpack Bear's Math Big Book*, page 46
- Backpack Bear's Math Workbook #2*, pages 16 and 17
- Two sets of 20 connect cubes (each set a different color)
- Prepared game spinner
- "Add & Subtract" game board
- Pencils

## 2 "Five Little Teddy Bears" Subtraction Story

Say: **Today let's use the song "Five Little Teddy Bears" to practice subtraction.**

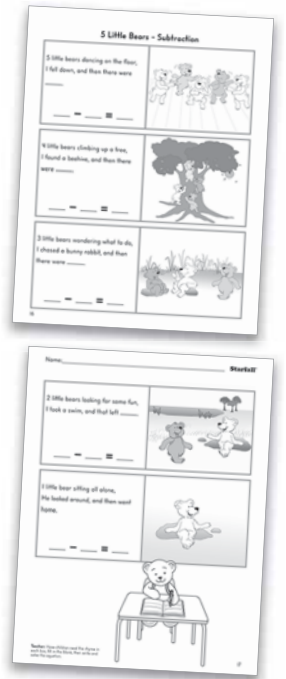
Play the song again then distribute *Backpack Bear's Math Workbook #2* and instruct the children to turn to pages 16 and 17.

Read the text in the first box. Ask:

- **How many little bears were dancing?**
- **How many fell down?**
- **How many bears are left?**

Say: **Write 4 on the line.** (The children do this.) **Who can write the equation for this story problem on the whiteboard?** A volunteer does this. The children complete the equation in box 1. Repeat for story problems 2 through 5.

Collect the workbooks. The children will color the remaining illustrations on these pages in this week's learning centers.



## Formative Assessment

### "Add and Subtract"

Gather the children in a semi-circle. Demonstrate how to play "Add & Subtract." The children will play this game in this week's learning centers. It is played by two players.

The children take turns spinning the spinner. For positive numbers, they add the corresponding number of connect cubes to their game boards.

For negative numbers, the children remove the corresponding number of connect cubes from the boards (unless there are not enough cubes to remove) The game ends when a child fills his or her entire game board, or play continues until both children fill their boards.



## 1 Computer

The children explore:

- Monthly calendar
- Subtraction: "Subtraction Intro"
- Subtraction: "Subtract within 10"
- Add & Subtract: "Word Problems" (Take From)

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

**Materials**

- Computers navigated to *Starfall.com*

**Counting & Cardinality**

A.2 - Count forward from a given number.

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

## 2 "Add and Subtract"

The children will partner to play "Add and Subtract" (as demonstrated on **Day 4**).

Each pair of children shares a game board. The children may share the spinners if there are more than four children in the learning center.

**Materials**

- 2 prepared game spinners
- 2 to 4 "Add and Subtract" game boards
- 20 connect cubes for each player



## 3 High/Low Card Game

Shuffle the four sets of Number Cards together. The children partner to play "High/Low Subtraction." (Two children play together as player #1 and two children play together as player #2.)

**Note:** The children may also play individually. Use several decks of Number Cards 0-10.

Each child or team alternately draws two cards from the deck. They subtract the smaller number from the larger number. The child or team with the **LOWEST** number takes all four cards.

When the children have gone through the deck, they put the cards back together and shuffle them to play again.

**Materials**

- 4 sets of Number Cards 0-10



# Week 22 Summary

The children will continue their study of the operation of subtraction as they use storyboards and manipulatives to solve subtraction story problems and create corresponding equations.

The children will also:

- Solve “Backpack Bear Says” subtraction stories
- Pretend to go shopping and subtract money
- Identify the number that is one less
- Identify the number of tens and ones in two-digit numbers

## Preparation

### DAY 1

You will need eight magnets (or other objects) to cover the sheep on page 26 of *Nursery Rhymes*.

Prepare a large blank game spinner with the numbers -1 to -6 (repeated).

### DAY 2

Check the children’s math bags to make sure they each contain ten connect cubes.

### DAY 3

You will need a set of Picture Cards with Price Tags (from **Unit 8**) and ten pennies for demonstration. You will also need one small paper cup per child.

Prepare the children’s math bags with ten pennies for each child.

### DAY 4

You will use four sets of Number Cards 1-9 for today’s Magic Math Moment.

You will also use the index cards from **Unit 8** to create a number line, twenty connect cubes for each child, and one die for each pair of partners.





DAY 1

DAY 2

*Daily Routines*

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

*Magic Math Moment*

"Five Little Chickadees"

Number line subtraction

*Math Concepts*

Count backward from 5

Act out story problems

Use a storyboard to create subtraction problems

Write equations to match story problems

Act out subtraction story problems

Write equations to match story problems

*Formative / Summative Assessment*

"Subtraction Train"

Use connect cubes to practice subtraction/write equations and solve

*Workbooks & Media*

Starfall.com: "Subtraction"

Math Melodies, Tracks 6 and 13

Starfall's Selected Nursery Rhymes

"Little Boy Blue"

Workbook page 18

Starfall.com: Add & Subtract: "Word Problems"



**DAY 3**

**DAY 4**

**DAY 5**

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

*Learning Centers*

Subtraction flash cards

Teen numbers

*Starfall.com:*

- Monthly Calendar
- Subtraction, "Subtraction Practice"
- Subtraction, Subtract within 10" (Bowling)
- Add & Subtract, "Word Problems"

Answer subtraction problems  
Subtract using money  
"Let's Go Shopping"

Place value (tens and ones)  
Use a number line to subtract

"Add & Subtract"

Use pennies to "buy" items/write and solve equations

Train Subtraction

"Backpack Bear's Subtraction Train"

Teacher's Choice

Workbook page 19



Summative Assessment:  
Use connect cubes to represent subtraction equations

1

2

3

4

5

**"Five Little Chickadees"****Materials**

- Math Melodies*, Track 6
- Number Cards 1-5

Navigate a computer with projection capabilities (or gather the children around a classroom computer) to *Starfall.com*, Subtraction. The children play Subtraction Intro: "Five Little Chickadees." You may also use *Math Melodies*, Track 6 and the children sing along.

Distribute Number Cards 1-5 to five volunteers and they come to the front of the classroom.

Say: **Let's sing the song again, and this time we will act it out. The volunteers line up in order holding their Number Cards. As each "chickadee" leaves, the child holding the highest Number Card sits, until there are no children left standing.**

Repeat with different volunteers as time permits.

**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.

**"Little Boy Blue" Story Problems****Materials**

- Math Melodies*, Track 13
- Nursery Rhymes*, page 26
- 8 magnets or objects to cover the sheep
- Pencil, crayons
- Prepared (large) game spinner
- Backpack Bear's Math Workbook #2*, page 18

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

**1 "Little Boy Blue"**

Ask: **I know a nursery rhyme about a little boy who fell asleep and lost some sheep! Would you like to hear it?** Indicate *Nursery Rhymes* page 26, "Little Boy Blue" and recite the rhyme.

Continue: **Let's listen to it again.** Play *Math Melodies*, Track 13 and the children listen. Play the nursery rhyme again and encourage the children to sing along.

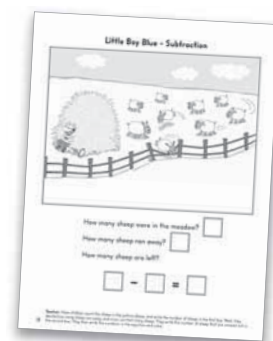
**2 "Little Boy Blue" Story Problems**

Indicate the "Little Boy Blue" rhyme. Say: **Here is a picture of the nursery rhyme we just said together. How many sheep did Little Boy Blue have?** (Volunteers respond.) **Right, there are 8 sheep. Let's use this illustration to create subtraction problems about Little Boy Blue and his sheep.**

Read the following story problems. Choose a volunteer to place magnets or other objects on the illustration over the number of sheep that ran away for each problem. Write the equations to match each story problem on the board.

**Optional:** The children may represent the sheep and act out the story problems.

- Little Boy Blue had 8 sheep. He was supposed to watch the sheep so none of them ran away, but he fell asleep. While he was sleeping 4 sheep ran away. When Little Boy Blue woke up how many sheep were left?
- Little Boy Blue put 8 sheep in a pen. (Explain if necessary.) He decided to take a walk. When he got back, he realized he had left the gate to the pen open, and there were only 6 sheep left. How many sheep ran away?
- Little Boy Blue was playing with 8 sheep. After a while, he counted the sheep to be sure he still had 8, but he only counted 3 sheep. How many sheep were missing?



### 3 "Little Boy Blue" Subtraction

Distribute *Backpack Bear's Math Workbook #2* and instruct the children to turn to page 18.

Say: **Today you will get to decide how many sheep got away while Little Boy Blue was sleeping. Let's start together.**

Say: **Point to the first line of writing under the picture. Follow as I read. It says: How many sheep were in the meadow? (Volunteers respond.) Right, there are 9. Write 9 in the box.**

Continue: **Let's read the next line together. Ready? How many sheep ran away? We don't know, so you get to decide! Put an X on each sheep you think ran away, then count the sheep you put Xs on, and write the number in the blank.**

Ask: **Who can read the last line? (Volunteers respond.) Right, how many sheep are left? Count the sheep that don't have Xs on them.**

Say: **Now, we will write the equation in the boxes. What number did we start with? Right, 9. Write 9 in the first box. Write the number of sheep that ran away in the next box, and the number of sheep that were left in the last box. The children do this.**

Volunteers share their story problems with the class.



## Formative Assessment

### Human Subtraction Train

Attach a game spinner to a whiteboard. Say: **Today let's play a game called "Subtraction Train."**

Divide the class into two "trains." The children form two lines side-by-side. Assign a volunteer to be the "spinner." Say: **First, the spinner will spin and name the number he (or she) lands on.** The "spinner" does this.

Continue: **Team 1, count that number of children, starting from the end of your train, and they sit down (in the line).**

The "spinner" spins again and names the number. Say: **Team 2, this time that number of children at the end of your train sit down.** Play continues until all of the children are sitting.

## Number Line Subtraction

### Materials

 None

Ask: **Who would like to choose a number on the number line between 1 and 20?** A volunteer does this.

Ask: **What is 1 less than (the number chosen)?**

Repeat this procedure changing volunteers to choose numbers.

### Counting & Cardinality

A.3 - Write numbers from 0 to 20.

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

## Subtraction Story Problems

### Materials

- Individual whiteboards, markers
- Backpack Bear
- Math bags (containing 10 connect cubes)

### 1 Acting Out Story Problems

Present the following story problems or create your own. Choose volunteers to dramatize them. Replace the names in the story problems with the names of children in your class. After each story problem, a volunteer writes the corresponding subtraction equation on the whiteboard, with your help if necessary.

**Note:** If the children have individual whiteboards, they may first write the equations on their whiteboards then volunteers copy them onto a classroom whiteboard.

- **Sophia, Jacob, Juan, and Mia were playing on the playground. Jacob went inside to get a drink of water. How many children were left on the playground?**
- **Roberto had a birthday party. He invited 5 friends. Two of his friends left the birthday party early. How many of Roberto's friends were left at the end of Roberto's party?**
- **Lucas was playing ball with 4 friends. Lucas left when his mother called him for dinner. How many children were left playing ball?**
- **Seven penguins were playing on the ice. Three of the penguins dove into the water. How many penguins were left playing on the ice?**

### 2 Starfall.com

Navigate a computer with projection capabilities (or gather the children around a classroom computer) to *Starfall.com*, Add & Subtract: "Word Problems," and select the "Take From: Total Unknown" activity. Volunteers take turns navigating the online activity.



# Formative Assessment

## “Backpack Bear Says”

Gather the children with their math bags in a semi-circle on a rug or the floor. The children remove ten connect cubes from their math bags then place their bags behind them.

Place a set of ten connect cubes on the floor. Say: **Here are 10 connect cubes. I will take away five of them.** (Do this.) **How many connect cubes are left?** (Volunteers respond.) **Right, there were ten connect cubes and I took five away. Now there are five connect cubes left.**

Write the equation to match the demonstration on a whiteboard ( $10 - 5 = 5$ ). Indicate the equation as you read: **Ten minus five equals five.**

Continue: **Now let’s play “Backpack Bear Says.” Ready?**

- **Backpack Bear says put ten of your connect cubes side-by-side in front of you.**
- **Backpack Bear says take two of the connect cubes away.**
- Ask: **How many connect cubes do you have left?** (Volunteers respond.)  
**Right, you each have eight connect cubes left.**

Write the equation to match on the whiteboard,  $10 - 2 = 8$ . Indicate the equation as you read: **Ten minus two equals eight.**

Select volunteers to create “Backpack Bear Says” subtraction stories using the sentence stem, Backpack Bear says: “Take \_\_\_\_\_ connect cubes away.”

Write the equations to match the stories on the whiteboard. The children read them with you. Check to be sure the children reset their connect cubes between stories.



## Subtraction Flash Cards

Say: **Today we will play a flash card game. I will flash a card and you give a quiet thumbs-up if you know the answer.** Backpack Bear whispers, "Don't forget to look at the sign!"

Display the 10 - 1 Equation Card. The children give a thumbs-up if they know the answer. Choose a volunteer to respond.

**Note:** Choose the Subtraction Equation Cards you think your children can most easily answer.

## Materials

- Subtraction Equation Cards
- Backpack Bear

## Counting &amp; Cardinality

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

## Operations &amp; Algebraic Thinking

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

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

## Money

M.1 - Identify the value of coins.



## Subtraction and Money

## 1 Do I Have Enough?

Gather the children on the floor or a rug near a pocket chart.

Say: **Today let's pretend to go shopping again.**

Place the Picture Cards with Price Tags in the pocket chart. Volunteers take turns identifying the items and their costs.

Say: **Each item costs a different amount of money. If you had 10 cents, which of the items could you buy?** Volunteers identify the items with prices that are ten cents or less.

Ask: **Why couldn't you buy the baseball mitt?** (Volunteers respond.) **Right, you wouldn't have enough money.**

## 2 "Let's Go Shopping"

Place ten pennies and a paper cup or container on the floor in front of the pocket chart.

Say: **Here are ten pennies. The cup will hold the number of coins needed to buy the items we choose to buy.** Write the numeral 10 on the board.

Continue: **Let's buy the pencil. How much does the pencil cost?** (four cents) **Let's take four of the pennies and place them in this cup.** Do this.

Ask: **How many pennies did we take away? Right, 4. Write 10 - 4 on a whiteboard. How many pennies are left? Right, 6 pennies are left.**

Write and read: **10 - 4 = 6.**

## Materials

- Pictures Cards with Price Tags (from Unit 8)
- Pocket chart
- 10 pennies and a paper cup or container for demonstration
- Math bags (containing 10 pennies per child)
- 1 small paper cup per child



- **Is there enough money left to buy anything else?** Volunteers respond. **Right, 6 cents is enough to buy a pretzel.** Write 6.
- **How much does the pretzel cost? Right, the pretzel costs 5 cents, so how much more money should go into the cup? Yes, 5 pennies.** Write  $6 - 5$ .
- **There were 6 pennies. We took 5 pennies away to buy the pretzel. How many pennies are left? Right, 1.** (Write  $6 - 5 = 1$ .) **Is there enough money left to buy anything else? No, because everything costs more than 1 cent.**



## Formative Assessment

### Practice with Coins

Distribute the math bags with coins.

Place the *airplane*, *orange*, *apple*, *party hat*, and *marble* Picture Cards with Price Tags in a pocket chart face down.

Say: **Now you will go shopping!**

A volunteer chooses one item from the pocket chart and identifies the item and its cost. Each child places the number of pennies needed to buy the item in his or her cup or container.

Ask: **How many pennies do you have left?** The children count their remaining pennies. A volunteer writes the corresponding equation on a whiteboard. The children read the equation with you.

**Note:** Children may use individual whiteboards to write the equations.

Choose additional volunteers and repeat for the remaining Picture Cards.

Add the *slinky* and *book* Picture Cards to the pocket chart. Ask:

- **How much does the slinky cost?** (Volunteers respond.) **Right, the slinky costs eleven cents.**
- **Do you have enough to buy a slinky?**
- **What would you need in order to buy the slinky?** (Volunteers respond.) **Yes, you would need one more penny.**
- **If you really wanted to buy the slinky, where could you get one more penny?** (Example: You could borrow a penny from a friend.)
- **What is something else you could do?**

Lead children to realize they could save the money they have and try to earn more money.

Place the remaining Picture Cards with prices over ten cents in the pocket chart and repeat the above procedure.

## Scrambled Teens

## Materials

- Four sets of Number Cards 1-9

**Essential Question:** How can we group numbers by tens and ones to see how many of each we have?

Divide the children into four groups and distribute a set of Number Cards 1-9 to each group.

Say: **Let's see if we remember how to form teen numbers. I will say a number and one person in each group will use the number cards to form that number. Ready? 14.**

The children in each group work together to form 14. Observe the results and make corrections if necessary. Continue with the other teen numbers.

## Operations &amp; Algebraic Thinking

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

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

## Number &amp; Operations In Base Ten

A.1 - Understand numbers 11-19 are ten ones plus more ones.

## Using a Number Line to Subtract

## Materials

- Backpack Bear's Math Big Book, page 46
- Index cards made during **Unit 8** (Number Line activity)
- Subtraction Equation Cards
- Backpack Bear's Math Workbook #2, page 19
- "Backpack Bear's Subtraction Train" game board
- 20 connect cubes per player
- 1 die

## 1 Using the Number Line to Subtract

Indicate *Backpack Bear's Math Big Book* page 46, Strategies for Subtraction.

Say: **Today let's try the strategy of using a number line to help us perform the operation of subtraction. Who can find that strategy on our list?**

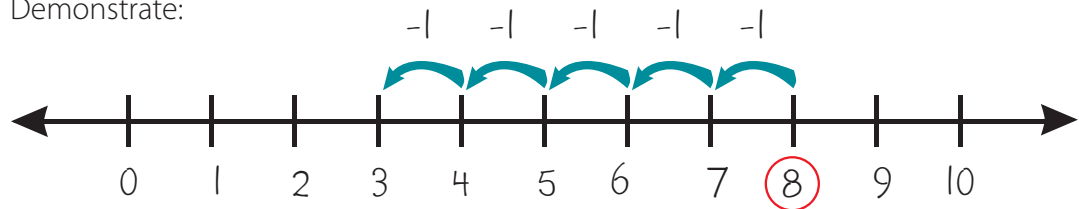
A volunteer does this.

Draw a number line from 0 to 10 on a classroom whiteboard. Write  $8 - 5 = 3$ .

Say: **We will use our number line to count backward to solve the equation. The problem starts at 8. Who can find 8 on the number line?**

A volunteer circles 8. Continue: **The problem says to take away 5. Taking away 5 is the same as counting backward 5 times!**

Demonstrate:



Say: **We started at 8 and subtracted 5. What number did we land on? Right, 3!**

Repeat with several other equations.

## 2 Making a Large Number Line

Distribute a number index card to each child. Say: **Let's make our own number line!**

Children bring their folded index cards to an area where they can arrange them 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.

Call each child to place his or her card in order to create a floor number line.

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

## 3 Use the Floor Number Line to Subtract

Flash and read a Subtraction Equation Card, for example 5-2. Instruct a volunteer to stand behind the number 5 index card. Say: **The equation says 5 - 2. Should we hop to a larger number or hop backward to a lower number? Right, since we are taking away, or subtracting, the answer will be a lower number.** A volunteer "mini-hops" back two times.

Ask: **On what number did (child's name) land? (3) 5 minus 2 equals 3.**

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



## Formative Assessment

### Train Subtraction

Say: **Let's practice subtraction problems.**

Distribute *Backpack Bear's Math Workbook #2* and instruct the children to turn to page 19.

Ask:

- **What does the first number in the subtraction sentence mean?**  
Lead children to understand the first number stands for how many train cars there are in all, or how many we have to begin with.
- **What sign do you see?**
- **What does that sign tell you to do?**
- **What does the next number in the subtraction sentence mean?**
- **What does the last number in the subtraction sentence mean?** Lead the children to understand the last number stands for how many train cars are left.



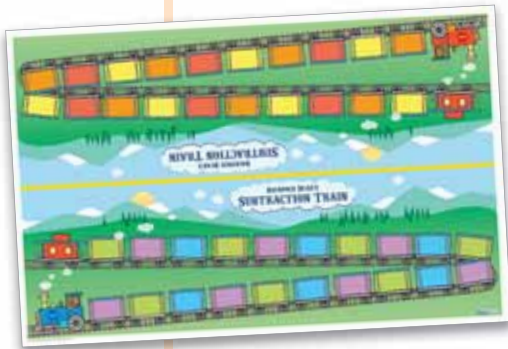
Demonstrate the first problem. Say: **Let's read the first equation together.** (Do this.) **It says  $4 - 3 = \underline{\quad}$ . Trace the numerals. Now, find the last train car and place an X on the cars the problem tells us to take away.** The children do this.

Ask: **How many cars are left? Right, 1, so write 1 in the blank. Let's read the equation again,  $4 - 3 = 1$ .**

The children may complete the remainder of the workbook page together as a class, or they may work independently. If you choose to have the children complete the page independently, discuss the correct answer with them after they complete each problem.

If time permits introduce the "Backpack Bear's Subtraction Train Game," which will be played in learning centers on **Day 5**.

Place a cube on each car of both trains (not on the engine or caboose). The players take turns rolling a die, and removing the corresponding number of connect cubes. The first player to uncover his or her whole train wins, or play continues until both players remove all of the connect cubes from their trains.



## Learning Centers

DAY

5

## 1 Computer

The children explore:

- Monthly calendar
- Subtraction, "Subtraction Practice"
- Subtraction, "Subtract within 10" (Bowling)
- Add & Subtract, "Word Problems" (Take From/Unknown)

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

## Materials

- Computers navigated to *Starfall.com*

**Counting & Cardinality**

A.2 - Count forward from a given number.

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

## 2 "Add and Subtract"

The children partner to play "Add and Subtract" (demonstrated on **Day 4**).

Each pair of children shares a game board. The children may share the spinners if there are more than four children in the learning center.

## Materials

- 2 prepared game spinners
- 2 to 4 "Add and Subtract" game boards
- 20 connect cubes for each player



## 3 "Backpack Bear's Subtraction Train"

Place a cube on each car of both trains (not on the engine or caboose). The children take turns rolling a die, and removing the corresponding number of connect cubes.

The first child to uncover his or her whole train wins, or play continues until both children remove all of the connect cubes from their trains.

## Materials

- 20 connect cubes per child
- 2-4 "Backpack Bear's Subtraction Train" game boards
- 1 die for each pair of children



## 4 Teacher's Choice

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

## 5 Summative Assessment: Subtraction

Flash a Subtraction Equation Card. The children use their connect cubes to demonstrate the equation (Example:  $5-4$ ) by placing connect cubes on their math mats to represent the first number in the equation. They take away the appropriate number of cubes and state how many connect cubes are left. Repeat for several equations.

Observe the children and note those who have difficulty with the concept of subtraction on the Summative Assessment Checklist for Unit 9, Week 22.

### Materials

- Subtraction Equation Cards
- Math mats
- Connect cubes
- Summative Assessment Checklist for Unit 9, Week 22

