This is a one-week excerpt from the Starfall Kindergarten Mathematics Teacher's Guide.

If you have questions or comments, please contact us.

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Subtraction

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Starfall
Kindergarten
MATHEMATICS

Starfall Kindergarten MATHEMATICS

Subtraction

Week 21

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.

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
Unit 9 - Week 21

	DAY ①	DAY ②
Daily Routines	• Calendar • Place Value • Weather • Hundreds Chart • Number Line	
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 • Place Value • Weather • Hundreds Chart • Number Line		

Learning Centers

Counting backward	"Five Little Teddy Bears"	*Starfall.com:* **1** • 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	"Add & Subtract" **2**
Draw picture representations of story problems and write the matching equations	"Add and Subtract"	High/Low Card Game **3**
		Teacher's Choice **4**
Math Melodies, Track 9 Workbook page 15	*Math Melodies*, Track 10 Workbook pages 16 and 17	Five Little Teddy Bears Subtraction **5** Summative Assessment: Subtraction story problems Workbook pages 16 and 17 (color)

Magic Math Moment

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.

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

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

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

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.*

Magic Math Moment

Subtraction as an Operation

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 & Cardinality

CC.3 - Count backward from a given 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.

Introduce Subtraction

**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."
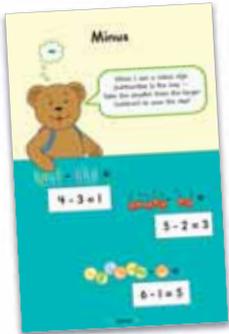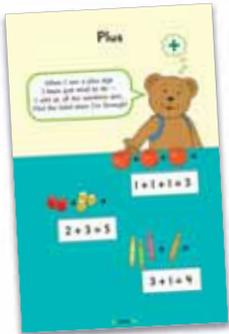
2 Compare Addition and Subtraction Strategies

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 = _____ 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 = 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.

Magic Math Moment

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 = _____ .

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.

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.)

_____ - _____ = _____

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.
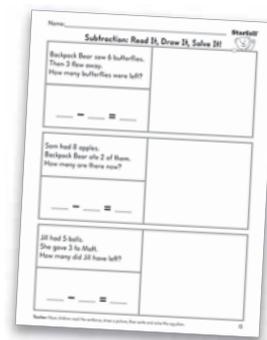
Formative Assessment

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.

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.**

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.
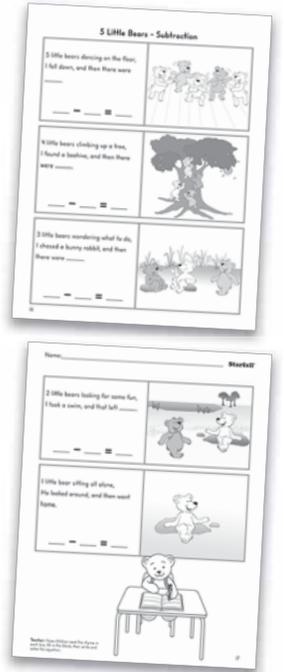
Formative Assessment

"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.

Learning Centers

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.

2 "Add and Subtract"

Materials

☐ 2 prepared game spinners

☐ 2 to 4 "Add and Subtract" game boards

☐ 20 connect cubes for each player

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.

3 High/Low Card Game

Materials

☐ 4 sets of Number Cards 0-10

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.

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.

4 ### Teacher's Choice

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

5 ### Summative Assessment: "Five Teddy Bears"

The children color the illustrations on pages 16 and 17 of *Backpack Bear's Math Workbook #2*. Informally assess their understanding of subtraction story problems by discussing the equations they wrote and how they knew they should subtract to solve the problems on these pages.

Record your observations on the Summative Assessment Checklist for Unit 9, Week 21.