



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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Subitizing & Number Bonds

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Subitizing & Number Bonds

Week 17

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Week 17 Summary

This week the children will continue to practice looking for patterns that help them to count more quickly and easily (subitizing). They will be introduced to fact families and number combinations of 6, 7, 8, and 9. They will sort dominoes by the numbers they represent and create and solve equations to represent dominoes in their workbooks.

The children will also:

- Distinguish greater than and less than
- Use tally marks to represent numbers
- Determine the number that is one more and one less

Preparation

DAY 1

You will need a domino that represents a number from 1 to 10 for each child.

DAY 2

The children will use individual whiteboards and markers, math mats, and math bags.

DAY 3

Draw a ten-frame on an individual whiteboard for use in demonstrating the number 8 in today's lesson. You will also need eight small magnets.

The children will use their math bags, individual whiteboards, and markers.

DAY 4

Prepare a set of Number Representation Cards for the numbers 5 through 9 by placing number, domino, dice, tally marks, and ten-frame cards together in a deck.

The children will use their math bags, which should each contain at least nine connect cubes.

DAY 5

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

Activity Center 2 — You will need a “Race to 20” game board for every two children in this center, playing pieces, and 1 die.

Activity Center 3 — You will need a set of dominoes and a “Parking Lot” game board for every two children in this center.

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

Summative Assessment — Label large sheets of construction paper with the numerals 5 through 9 (one numeral on each sheet). The children will use Equation Cards 5 through 9.

There is no formal Summative Assessment this week. Prepare to observe the children as they work in this center and to record notes on your observations on the Summative Assessment Checklist for Unit 7, Week 17.



DAY 1

DAY 2

Daily Routines

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

Magic Math Moment

Greater than/
less than

Tally marks

Math Concepts

Compare numbers and determine which is greater/less than the other

Strategies to count tally marks

Representations of 6 and 7

Create and solve equations using dots on dominoes

Number combinations of 6 and 7

Sort dominoes by their numbers

Number combinations

Formative / Summative Assessment

Write equations to match dominoes

Arrange connect cubes in combinations of 7

Number combinations of 6 and 7

Workbooks & Media

Workbook page 5



Workbook page 6



DAY 3

DAY 4

DAY 5

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

Learning Centers

Sorting rules

One more/
one less

Starfall.com:

- Monthly Calendar
- Numbers: 6, 7, 8, and 9

Determine sorting attributes
Number combinations of 8
Recognizing 8 in a ten-frame
Create combinations of 8
Write number sentences for combinations of 8

Determine the number that is one more or one less than another
Number combinations of 9
Number patterns of 9
Create combinations of 9


“Race to 20”

Use connect cubes to show a combination of 8 and write an equation to match

Number combinations of 8 and 9

“Parking Lot”

Workbook page 7



Teacher’s Choice

Summative Assessment: Solve equations (number representations) for numbers 5 through 9 and sort them by sums

Magic Math Moment

Greater Than/Less Than

Materials

 None

Divide the class into two teams (Team A and Team B) and choose one child to keep score on a whiteboard using tally marks.

The first child on Team A stands. Say: **Tell me the number that is one less than 6.** If the child answers correctly, Team A receives a point. If the answer is incorrect, the class gives the correct answer, and play moves to Team B.

Play continues as time permits.

Note: The question should always be “What is 1 number greater than or less than (number)?”

Counting & Cardinality

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

Operations & Algebraic Thinking

A.5 - Fluently add and subtract within 5.

Addition to 5

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

Materials

- Whiteboard, markers
- A domino for each child (with different representations of 1-10)
- Number Cards 1-10
- Backpack Bear's Math Workbook #2, page 5

1 Domino Math

Draw a domino on a whiteboard that represents 5 (3 and 2).

Say: **This is a domino. Notice that it has two parts. (Indicate the two parts.) To know what number the domino represents you add both parts together. Look at this domino. What number does this domino represent? Right, 5. How do you know?**

Say: **Let's write a number sentence that shows how much this domino represents.** Demonstrate writing a number sentence by doing the following on the whiteboard.

- **How many dots are on the left?** (Indicate) Write 3 on the board.
- **How many dots are on the right?** (Indicate) Leave a little space and write 2 next to the 3.
- **Should we add the dots together or take some dots away if we want to know how many dots there are in all? Right, we should add.** (Add a plus sign between the numbers.)
- Say: **3 + 2 equals** (Add the equal sign.) **what?** Volunteers respond.

Distribute whiteboards and markers.

Say: **Now it's your turn!**

Draw a domino with 2 dots in each section. Say: **Write a number sentence that matches the domino. Hold up your whiteboard when you are finished.**

Repeat for the combinations 0 and 3, 1 and 4, and 2 and 3.

2 Sorting Dominoes

Gather the children in a circle on a rug or the floor. Distribute a domino representing a number from 1 to 10 to each child.

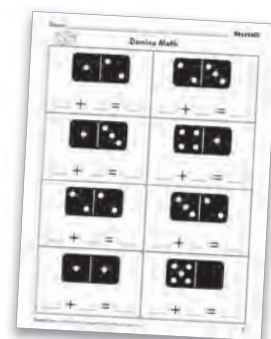
A volunteer places the Number Cards 1-10 face up inside the circle.

Say: **Here are numbers 1 to 10. Look at your domino. Add the two sides together and when you are ready place your domino on the Number Card that shows how much your domino represents.**

Choose the number 5. Say: **Let's look at the dominoes that represent 5.**

Identify the different combinations. Say: **There is more than one way to make a set of 5. I will hold up your domino and you tell us your number combination.**

Assist the children as necessary to identify their number combinations.



Formative Assessment

Writing Number Sentences

Distribute *Backpack Bear's Math Workbook #2* and instruct the children to turn to page 5. Project the page if you have the capability.

Say: **Look at the first domino. Write the number sentence under the domino and solve the equation.** Complete the first item as an example with the children and observe as the children complete it. Continue: **Now look at the other dominoes on the page one at a time and write the number sentences and solve the equations.**

Circulate around the room as the children complete the page independently and assist where necessary.

Note: If it is too difficult for your children to complete the workbook page on their own, direct them as they work each problem one at a time.



Tally Marks

Materials

- Individual whiteboards, markers

Draw a set of five tally marks on a whiteboard. Say:

Without counting the tally marks, raise your hand if you can tell how many tally marks you see. Volunteers respond.

Discuss how a set of five tally marks is a picture of 5.

Ask: **Why is it easy to tell there are 5 tally marks?** Lead the children to understand that when they see a set of tally marks (with one diagonal tally mark) they don't have to count each mark, they automatically know it is a set of five.

Say: **I will say a number and you draw tally marks to represent that number. Ready?** Say the following numbers one at a time. The children draw tally marks for each, and hold up their whiteboards for you to see.

- 5
- 7
- 10
- 4

Continue with other numbers as time allows.

Counting & Cardinality

A.3 - Write numbers from 0 to 20.

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

Operations & Algebraic Thinking

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



Number Combinations of 6 and 7

Materials

- Backpack Bear's Math Big Book, pages 23 and 24
- Backpack Bear's Math Workbook #2, page 6
- Individual whiteboards, markers
- Math bags
- Math mats

1 Representations of 6

Indicate *Backpack Bear's Math Big Book*, page 23. Say:

Raise your hand if you can identify one of the ways Backpack Bear represented 6. Continue until all of the representations are identified.

2 Introduce Number Combinations of 6

Ask: **Who can remember when we wrote equations that equal 5?** (Volunteers respond.) **Today let's see how many equations we can create for 6.**

Create two defined areas in the front of the classroom and distinguish one as the right side and the other as the left side.

Choose 6 children to come to the front of the classroom. Say:

- **Here are 6 children. If you are one of the 6 children, move to the right side.** The children do this.
- Ask: **How many children are on the right side? Right, there are 6 children on the right side. Let's count them to make sure.** Do this then write 6 on a whiteboard.
- Ask: **How many children are on the left side?** Indicate the left side of the classroom. **Right, there are zero children on the left side.** Write +0 beside the 6 on the whiteboard.
- **How many children are there altogether?** Add = 6 to complete the equation on the whiteboard. Indicate and read the equation, $6+0=6$.

Choose a different set of 6 children to come forward.

Ask: **What is a different way to divide these 6 children into two groups?**

A volunteer separates the 6 children into two groups. Continue: **What is the equation that matches the way these children are arranged?** Assist the children, if necessary, to determine the equation that matches.

Ask: **Who can write the new equation on the board?** A volunteer writes the equation under the previous one.

Continue until the children create all of the combinations of 6 ($0 + 6$, $1 + 5$, $2 + 4$, $3 + 3$, $5 + 1$, $4 + 2$, $6 + 0$).

3 Representations of 7

Indicate *Backpack Bear's Math Big Book*, page 24. Say: **Raise your hand if you can identify one of the ways Backpack Bear represented 7.** Continue until all of the representations are identified.

4 Introduce Number Combinations of 7

Distribute math bags and math mats. Instruct the children to turn their math mats to the blank side and remove 7 cubes from their math bags.

Say: **I will write a number sentence on the whiteboard.** Write $7 = 6 + 1$.

Continue: **Arrange your cubes to show $6 + 1$. If you need help, you may ask your neighbor to help you.** Observe the children and assist if necessary.

Write $7 = 4 + 3$ on the whiteboard. Say: **Let's try another one. Arrange your cubes to show $4 + 3$.**





Formative Assessment

Complete Number Sentences

Ask: **Who can think of another way to arrange the cubes to equal 7?**

Volunteers create combinations and share them with the class. Write the combinations (equations) on the whiteboard or volunteers write them.

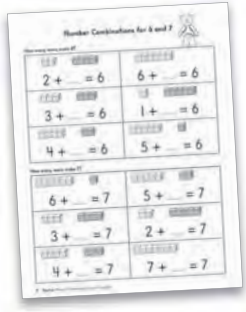
Distribute *Backpack Bear's Math Workbook #2* and instruct the children to turn to page 6.

Explain: **This workbook page shows number combinations of 6 and 7. Look at the cubes and write the number that completes the number sentence.**

Say: **Let's do the first one together. The number sentence says 2 plus what number equals 6. If you already have 2, how many more do you add to have 6? Remember to count the cubes.** (Volunteers respond.) **Right, 2 plus 4 more equals 6. Use your pencil to write 4 in the blank.**

Continue: **Who can tell what is different in the bottom section of the page? Right, these number sentences are combinations of 7. You complete them the same way.**

The children work independently to complete the page. Observe the children as they work and assist them as needed.



What's My Sorting Rule?

Materials

 None

Select the boys in the class by name to come to the front of the classroom.

Ask: **What is the same about all of the children in this group? Right, they are all boys, so what is the sorting rule?** Volunteers respond. The boys return to their seats.

Select the girls in the class by name to come to the front of the classroom.

Ask: **What is the same about all of the children in this group? Right, they are all girls, so what is the sorting rule?** Volunteers respond. The girls return to their seats.

Say: **Those were easy! Now let's try some that are a little harder. Ready?**

Select children by name in the following groups to come forward one at a time. For each group, the children identify what attribute they have in common and what the sorting rule is.

- Children with short hair
- Children with brown shoes
- Girls wearing headbands

Note: You may choose to create groups according to specific attributes of your class.

Counting & Cardinality

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

Operations & Algebraic Thinking

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

Measurement & Data

B.3 - Classify, count, and sort objects.

Number Combinations of 8

Materials

- Backpack Bear's Math Big Book, page 25
- Individual whiteboards, markers
- Prepared whiteboard
- Eight small magnets
- Math bags

Essential Question: How can we group objects to make counting them easier?

1 Representations of 8

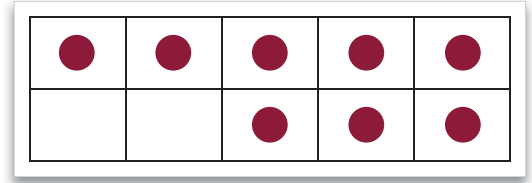
Indicate *Backpack Bear's Math Big Book*, page 25. Say:

Raise your hand if you can identify one of the ways Backpack Bear represented 8. Continue until all of the representations are identified.



2 Recognizing 8

Gather the children on a rug or on the floor. Place 5 magnets on the top row and 3 magnets in the bottom row of the ten-frame whiteboard (as pictured), being careful not to allow the children to see.



Say: **I will quickly show you a whiteboard with a ten-frame on it. Give a thumbs-up if you know how many magnets there are in the ten-frame.**

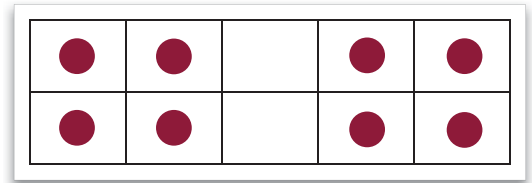
Show the whiteboard for about 3 seconds. Choose volunteers to respond, and repeat each child's response.

Continue: **Now, let's look at the whiteboard again. If you need to revise, or change your answer, you may.** Show the whiteboard for about 3 seconds. Choose volunteers to respond, but don't confirm their responses.

Say: **Now I will show you the whiteboard one more time.** This time keep the whiteboard visible.

Ask: **How many magnets are there? How did you know there were 8 magnets when you looked at the ten-frame so quickly?** Volunteers respond.

Rearrange the magnets, placing four on the left and four on the right. Again, be careful not to allow the children to see.



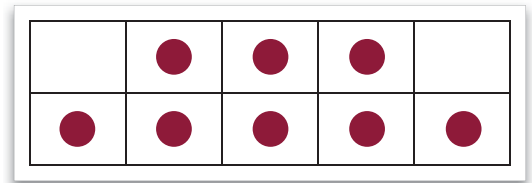
Say: **Okay, the magnets have been moved. Look at the whiteboard now and give a thumbs-up if you know how many magnets there are.** Show the whiteboard for about 3 seconds.

Choose volunteers to respond and repeat each child's response.

Continue: **Now, let's look at the whiteboard again. If you need to revise or change your answer, you may.** Show the whiteboard for about 3 seconds.

Choose volunteers to respond, but don't confirm their responses.

Rearrange the magnets again, placing three magnets on the top row and five on the bottom.



Say: **Now, I'll show you the whiteboard one more time.** This time keep it visible.

Ask: **How many magnets are there? How did you know there were 8 magnets this time?**

Repeat using the following magnet arrangement.

3 Combinations of 8

Distribute math bags, individual whiteboards, and markers.

Say: **Let's create a number combination for 8. Who can use the magnets to show a combination of 8 on this whiteboard?** A volunteer does this. Confirm the combination and discuss it with the class. The children copy the combination on their whiteboards.

Ask: **Who can write a number sentence to go with the combination of 8?** A volunteer does this on the classroom whiteboard.

Continue: **Write the number sentence on your whiteboard.** (The children do this.) **Look at your ten-frame and your number sentence. Does your number sentence match your ten-frame?**



Formative Assessment

Create Different Combinations of 8

Ask: **Are you ready to try a combination of 8 on your own? Let's review the steps.**

- **Use your 8 cubes to show a different combination of 8.**
- **Write your equation on your whiteboard.**
- **Ask your neighbor to check it for you.**
- **If you need help, raise your hand.**

Volunteers bring their whiteboards to the front of the classroom and share their equations. Repeat as time allows.

One More/One Less

Distribute individual whiteboards and markers.

Say: **I will hold up a Number Card. Look at the number on the Number Card, and write the number that is one more on your whiteboard. What strategies can you use to help you find the number that is one more?** (Volunteers respond.) **Right, you could use the Number Line or the hundreds chart. Let's try one together.**

Hold up the Number Card 14. Say: **Think of the number that is one more than 14. Write that number on your whiteboard and hold your whiteboard up.**

Repeat for several other numbers.

Say: **This time when I hold up a Number Card, think of a number that is one less. Let's try one.**

Hold up the Number Card 10. Ask: **What number is one less than 10? Write that number on your whiteboard and hold it up.**

Repeat for several other numbers.



Materials

- Number Cards 1-20
- Individual whiteboards, markers

Counting & Cardinality

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

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



Number Combinations of 9

1 Representations of 9

Indicate *Backpack Bear's Math Big Book*, page 26. Say: **Raise your hand if you can identify one of the ways Backpack Bear represented 9.** Continue until all of the representations are identified.

Materials

- Backpack Bear's Math Big Book*, page 26
- Backpack Bear's Math Workbook #2*, page 7
- Number Representation Cards 5-9
- Pocket chart
- Math bags
- 18 cubes

2 "Number Patterns of 9" Game

Shuffle the Number Representation Cards for 5-9.

Say: **Today we will look at number patterns for 9. I will flash some cards. When you see a card that represents 9, stand. Then we'll put that card in the pocket chart. Ready?**

Flash several of the Number Representation Cards. For each card representing 9, the children explain how they knew it was nine. Volunteers place the cards in the pocket chart.



3 Evaluating the Pocket Chart

Ask: **Who can share one of the ways 9 was represented? How did you know it was 9?**

Continue choosing volunteers until all the representation cards have been identified.

4 Create Combinations of 9

Say: **Today you will work with a partner to create combinations of 9. Let's practice.**

Choose a volunteer to partner with you. Each of you count out 9 connect cubes.

Say: **We each have 9 cubes. I will lay down 8 of my cubes. If we want to create a set of 9 cubes how many cubes should my partner add?**

The partner decides how many cubes to add to your 8 cubes to create a set of 9.

Continue: **Let's count to see if we have 9 cubes altogether.**

You and your partner count the cubes. If the set of cubes does not total 9, your partner removes his or her cubes and tries again, with help from the class if necessary.

Distribute math bags.

Say: **Stand up, hand up, partner up. Sit facing your partner.** Identify a child in each pair as partner 1 and partner 2.

Explain: **Now you will work with your partner to create number combinations of 9. Partner 1 will start by choosing some cubes. Partner 2 will decide how many more cubes to add to total 9. Ready, begin.**

Repeat the activity with partner 2 choosing the first set of cubes.

Continue as time allows.



Formative Assessment

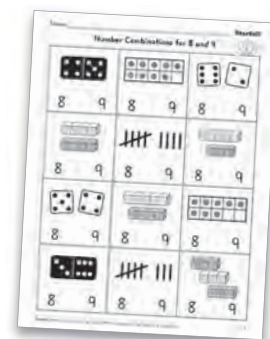
Circle Number Representations

Distribute *Backpack Bear's Math Workbook #2* and instruct the children to turn to page 7.

Say: **On this page there are representations of the numbers 8 and 9. Look at the representation in the first box and use a pencil to circle the number it represents.** (The children do this.) **What number did you circle?**

Volunteers respond.

The children continue to circle the numbers and the sets they represent. Circulate and observe as the children work. Assist individual children if necessary.



Learning Centers

1 Computer

The children explore:

- Monthly calendar
- Numbers: "6, 7, 8, 9"
- Add & Subtract: "Addition Within 10"

Materials

- Computers navigated to *Starfall.com*

Counting & Cardinality

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

Operations & Algebraic Thinking

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

2 "Race to 20"

The first child rolls the die and moves his or her playing piece the corresponding number of spaces. Children take turns until one reaches 20, or the game may continue until all of the children land on 20.

The children repeat the game as time permits.

Materials

- 1 or 2 "Race to 20" game boards
- Playing pieces
- 1 die for every two children



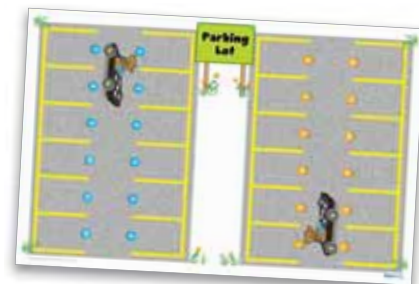
3 "Parking Lot"

The children place the dominoes face down on the floor or a table. The first child selects a domino, adds the dots, then "parks" the domino in the appropriate parking space.

If a 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 may continue until both children have filled their spaces.

Materials

- 1 or 2 "Parking Lot" game boards
- Dominoes



4 Teacher's Choice

Prepare an activity that will provide the children with an opportunity to practice a skill from this unit.

5 Summative Assessment

Spread the labeled sheets of construction paper on a table. The children work together to solve the equations and sort the Equation Cards to match.

Note: There is no formal Summative Assessment this week. Observe the children as they work in this center and note mastery and/or areas of concern on the Unit 7, Week 17 Summative Assessment Checklist.

Materials

- Addition and Subtraction Equation Cards to represent 5-9
- Prepared construction paper for numbers 5 through 9
- Unit 7, Week 17 Summative Assessment Checklist