

Troublesome Teens

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Troublesome Teens

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Frequently Asked Questions

Do children need to have a solid understanding of place value before introducing teens?

It is very common for children to experience some difficulty with the numbers 11-19, since their names do not follow the common rules, and numerals now take on very different meaning depending on their placement.

The key to understanding numbers beyond ten is to understand place value; however, children do not need to have a full understanding of place value prior to introducing the teen numbers.

Children are exposed to numbers beyond ten daily during the calendar, number line, and hundreds chart routines, and most importantly through the place value routine, in which they are bundling sets of tens with ones left over. Activities involving counting on from a given number and the use of ten frames also assist children in their understanding of the “tricky teens,” which provides a foundation for formally introducing the numbers 11 through 19.

What types of intervention do you suggest for children who struggle with teens?

As with learning to read the numerals 0 through 9, there are many everyday situations that provide purposeful opportunities to practice recognizing numerals and numeral writing. For example, recording the score of a game between the teachers and children, counting crayons in a container and then recording the number, lining children up and having them “count off” as you indicate them in line, assigning a “teen” number to each child (they can write their teen number on their whiteboards or paper), and playing games calling up different teen numbers are all excellent opportunities in which the children can receive needed daily practice. Repeated exposure to the numbers and experiences that involve recording numbers will help those who are struggling while also providing reinforcement for the others.

Unit 5 Research

Once kindergarten children have basic number sense, they soon begin to understand 10 as the foundation for place value. They are then able to distinguish that teen numbers consist of a set of ten and some ones, and that ten ones create one group of ten.

Children must understand that each cardinal teen number consists of two groups; one group of ten, and a group of ones. Therefore they should realize, for example, that 16 consists of one group of ten and 6 ones. The ability to visualize ten ones as one set of ten is crucial to future understanding of math concepts.

To aid in the development of this sense of awareness, it is helpful to provide experiences in which the children observe 16 objects, for example, separated into a group of ten and a group of six, and relate these quantities using both the number words “sixteen is ten and six” and the written number symbol, 16.

It is also helpful to illustrate the written equation $16 = 10 + 6$. Repeated experiences in considering these relationships will assist the children in overcoming the typical error of reversal, or writing the number they say first, when writing teen numerals. Children will eventually hear sixteen and recognize that when writing teen numerals, they write 1 first, even though they may not yet think of this one as a representation of ten, so they write 61.⁽¹⁾

Having learned that ten is the building block of our base 10 numeration system, young children can usually “read” two-digit numbers long before they understand the effect the placement of each digit has on its numerical value. A kindergartner might be able to correctly read 41 as forty-one and 14 as fourteen, without understanding why the numbers are of different values. Ten-frames were developed by researchers Van de Walle (1988) and Bobis (1988) to help develop numbers sense within the context of ten.⁽²⁾⁽³⁾

The simultaneous use of two ten-frames can provide an important first step to understanding teen numbers. In a Starfall classroom, the teacher articulates a teen number, for example, 14. The children then place the Number Card 1 beneath the first ten-frame and fill the ten-frame with 10 counters. They then place the Number Card 4 beneath the second ten-frame and add 4 counters to total 14. Activities such as this are included in the Starfall Math Curriculum because research shows that children develop mental images of numbers based on their experiences with ten-frames.⁽⁴⁾

(1) Committee on Early Childhood Mathematics, (2009). *Mathematics Learning in Early Childhood: Paths toward Excellence and Equity*. Cross, C.T., Woods, T. A., and Schweingruber, H. (Eds). Washington, D.C.: National Academies Press.

(2) Bobis, J. (1996). “Visualization and the development of number sense with kindergarten children.” In Mulligan, J. & Mitchelmore, M. (Eds.) *Children’s Number Learning: A Research Monograph of the Mathematics Education Group of Australasia and the Australian Association of Mathematics Teachers*. Adelaide: AAMT.

(3) Van de Walle, J. A. (1988). *Elementary School Mathematics: Teaching Developmentally*. London: Longman.

(4) Back, J. (2014). “Place Value: The Ten-ness of Ten”, NRICH: Enriching Mathematics, University of Cambridge, UK.

Unit 5 Summary

Time Frame: 15 days

The focus of Unit 5 is the introduction of the numbers 11 through 20. The use of the ten-frame to introduce these numbers provides a basis for further exploration of place value. The children also begin the money component of the Calendar Routine, which has them using one-to-one correspondence, matching coins to the current date, and exchanging them for those of higher values when appropriate. Number stories are solved with the help of math manipulatives, the children explore the concept of estimation and discuss what constitutes a “smart guess.”

Essential Questions

(K.CC.A.3) How can we use a numeral to show how many objects there are?

(K.CC.C.6) How can we tell that one group has more than, less than, or the same amount as another group?

(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?

(Starfall.M.1) How can knowing the name and value of coins help us in the real world?

(Starfall.Math.E.1) How do we estimate the amount of objects and compare them to the actual amount?

Vocabulary

Actual

Review:

Estimation

Horizontal

Smart Guess

Vertical

Survey

Enduring Understandings

Counting is a purposeful skill that assigns a number name to an object or set of objects.

Mathematical operations are used in solving problems in which a new value is produced from one or more values.

Algebraic thinking involves choosing, combining, and applying effective strategies for answering quantitative questions.

Understanding place value can lead to number sense and efficient strategies for computing with numbers especially as related to teens.

In order to make a good estimate, a sense of the quantity involved is crucial.

Recommended Literature

Betcha! by Stuart J. Murphy

Bunny Money by Rosemary Wells

Great Estimations by Bruce Goldstone

How Many Seeds in a Pumpkin? by Margaret McNamara

Lemonade in Winter: A Book About Two Kids Counting Money by Emily Jenkins

Piglets Playing: Counting from 11 to 20 by Megan Atwood

Ready, Set, Hop! by Stuart J. Murphy

What's the Place Value? by Shirley Duke

Standards & Benchmarks

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.

Starfall Standards

Counting & Cardinality	Measurement & Data
CC.1 Identify numerals out of sequence.	MD.1 Identify and use time measurement tools.
CC.2 Supply missing number in a sequence.	
CC.4 Count to 100 by twos and by fives.	Estimation
Operations & Algebraic Thinking	E.1 Understand the meaning of estimation.
OA.1 Identify, describe, or extend simple patterns.	E.2 Make predictions to determine reasonable answers.

Common Core Standards

Counting & Cardinality	<i>Inline Summary Form</i>
A.2 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>
A.3 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.4 Understand the relationship between numbers and quantities; connect counting to cardinality.	<i>Understand the relationship between numbers and quantities.</i>
B.4a When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object.	<i>Say number names in order, pairing each object with one number.</i>
B.4b Understand that the last number name said tells the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted.	<i>The last number counted tells the total number of objects.</i>
Operations & Algebraic Thinking	<i>Inline Summary Form</i>
A.1 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>
A.2 Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem.	<i>Solve word problems with addition and subtraction within 10.</i>
Number & Operations in Base Ten	<i>Inline Summary Form</i>
A.1 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>
Measurement & Data	<i>Inline Summary Form</i>
A.1 Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.	<i>Describe measurable attributes of objects.</i>
B.3 Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.	<i>Classify, count, and sort objects.</i>

Week 10 Summary

In this unit the children will tackle the “troublesome teens,” which is very often a difficult concept for kindergarten children. The ten-frame is an important tool that is used in this unit to introduce the teens. Its use helps make this concept more concrete.

The children will also:

- Be introduced to the money component of the Calendar Routine
- Explore the concept of before and after
- Practice identifying numerals out of sequence
- Solve number line riddles

Preparation

In Unit 5 the children will be introduced to the money component of the Calendar Routine, which will be used throughout the remainder of the school year. To prepare for this component you will need several pennies, nickels, and dimes, and a Money Graph on which the children will add the coins to keep track of the date. The Money Graph may be a small pocket chart or a cookie sheet. If you use a cookie sheet, be sure to prepare the coins by adding small magnets to the back of each.

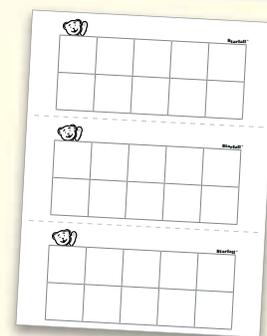
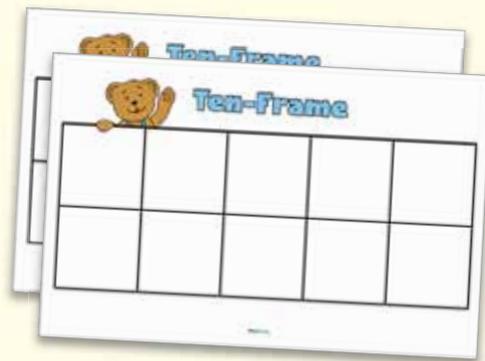
DAY 1

Create a set of Representation Cards for the number 7 by gathering the 7 Number, Dice, Domino, Tally Mark, and Ten-Frame Cards.

DAY 2

You will use 2 classroom ten-frames, 10 large blue paper circles or magnets, and 10 large red paper circles or magnets. If you use paper circles, you will also need reusable adhesive to attach them to the ten-frames.

Duplicate an individual ten-frame for each child. The children will add these to their math bags at the end of the lesson.



Individual Ten-Frames

DAY 1

DAY 2

Daily Routines

- Calendar
- Weather
- Number Line
- **Add** ▶ Count coins to match the date
- Place Value
- Hundreds Chart

Magic Math Moment

Identify the number that comes before another number

Identify the number that comes after another number

Math Concepts

The number that comes before
Number representations 1–10

The number that comes after
Place value and writing equations using a ten-frame
Representing teens using a ten-frame

Formative / Summative Assessment

Number representations

Use connect cubes to represent numbers

Workbooks & Media

Workbook page 24



DAY 3

DAY 4

DAY 5

- Calendar
- Weather
- Number Line
- **Add** ▶ Count coins to match the date
- Place Value
- Hundreds Chart

Place Value – tens and ones/
bundling tens

Representations of numbers
9-11

Learning Centers

Starfall.com:

- Monthly Calendar
- Numbers “11-12”
- Geometry and Measurement: “Button Sort” (medium or hard)
- Addition & Subtraction: “Addition within 10”

Place value – tens and ones

Introduce

The number 11

Representations of 11

Discriminate 11

Write the numeral 11

Before and after 11



Number Representations

Introduce

The number 12

Representations of 12

Discriminate 12

Write the numeral 12

Before and after 12



Number Representations 10-12

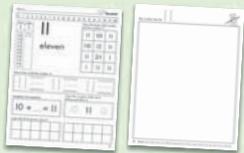
“A Walk in the Park” Game

List times the number 11 might
be seen or used

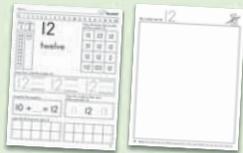
List times the number 12 might
be seen or used

Teacher’s Choice

Workbook pages 25 and 26



Workbook pages 27 and 28



Summative Assessment:
Identify the number that
comes before and after

Writing Numbers

Daily Routines

CALENDAR
31

Calendar

- The children name the month and the days of the week.
- The calendar helper turns the next number.

NEW ▶ In this unit, you will add a money component to the Calendar Routine. This will continue throughout the remainder of the school year.

Explain to the children that each day from now on, they will also keep track of the date in another way. They will use coins and their values to represent each day's date.

Assist the calendar helper to place one penny on the Money Graph to match the number of today's date. Explain that there are other coins (nickels, dimes) available, and lead the children to exchange the appropriate number of pennies for these other coins.

Each day the calendar helper will add a penny (more for weekends and days off from school). When there are enough coins to be replaced with those of higher value, lead the children to suggest exchanges and the calendar helper makes them.

With the start of a new month, the children remove the coins and begin the procedure again.

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.



Weather

- Review yesterday's weather.
- The meteorologist places a tally mark under his or her weather 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.

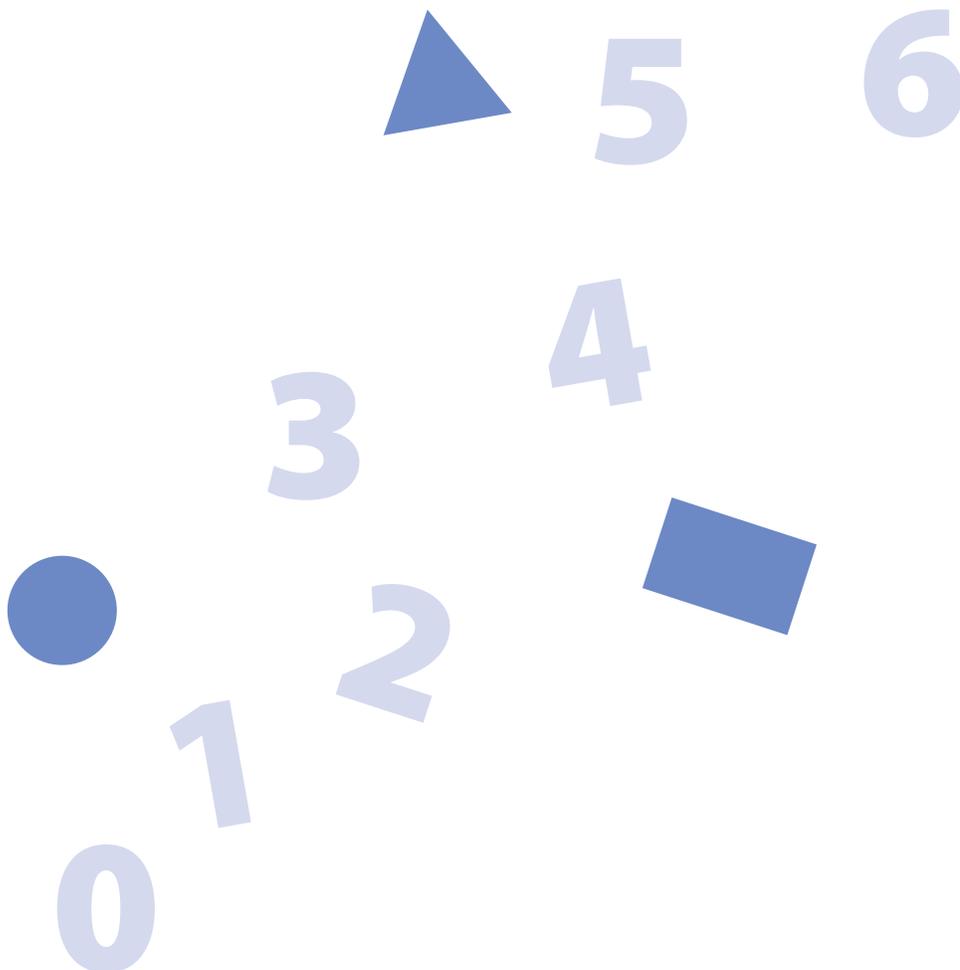
100 Place Value

- 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 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?**



Magic Math Moment

Before

Materials

- None

Write 10 on a whiteboard. Ask: **What number comes right before 10?** (Volunteers respond.) **Yes, 9 is the number that comes right before 10.**

Continue: **If 9 comes before 10, where should we write it?** A volunteer writes 9 to the left of the 10. The class confirms or corrects its placement.

Repeat with other numbers.

Counting & Cardinality

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

CC.2 - Supply missing number in a sequence.

Number Representations 1-10

Materials

- Representation Cards 1 through 7
- Backpack Bear's Math Workbook #1, page 24
- Pocket chart
- Pencils

1 Review Representations for Numbers 1-6

Say: **Today we will review number representations. Number representations are different ways to show a specific number. What number does this represent?**

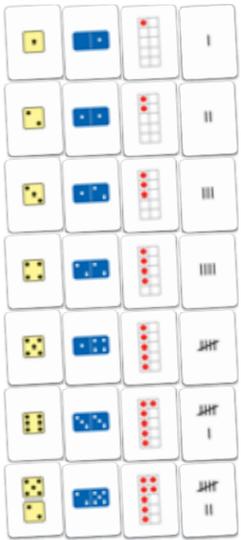
Indicate one representation card and a volunteer responds. Continue: **There are many ways to represent each number.**

Show a variety of types of cards representing different numbers and volunteers tell which numbers the cards represent.

2 Representations for the Number 7

Display all of the representations for 7 in a pocket chart. Ask: **What do you notice about all of these representation cards?** (Volunteers respond.) **Right, they are all different ways to show or represent 7.** Discuss.

Say: **Today let's be Number Detectives!**





Formative Assessment

Backpack Bear's Math Workbook, Page 24

Distribute *Backpack Bear's Math Workbook #1* and instruct the children to turn to page 24. If you have projection capabilities, project the page as a guide.

Note: If you project on a Smartboard or Mimeo, use the "shade" function so only one row is revealed at a time.

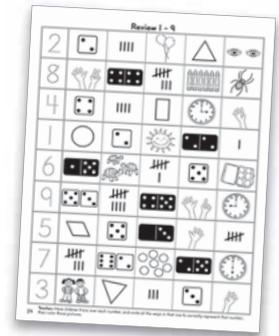
Partner the children. They will work as a group as you provide the directions for each row, then partners will compare their answers.

Ask: **What is the number at the beginning of the first row? Right, it is a 2.**
Trace over the number 2. The children do this.

Continue: **Now find all the representations for the number 2 in the same row and circle the answers.** The children do this and partners compare their answers.

If you project the workbook page, choose a volunteer to circle the representations on the whiteboard and the children check their answers.

Repeat for each row.



After**Materials** None

Write 8, 9, ____ on the board. Read the sequence of numbers saying “blank” for the missing number.

Ask: **What number is missing?** (Volunteers respond.) **Right, 10 comes after 9. If 10 comes after 9, where should we write it?**

A volunteer writes 10 in the blank.

Create several additional examples to provide practice.

Remind the children of the strategies they might use to find the answers such as the Classroom Number Line, calendar, and hundreds chart.

Counting & Cardinality

A.3 - Write numbers from 0 to 20.

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

CC.2 - Supply missing number in a sequence.

Number & Operations In Base Ten

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

Introduce Teens Using a Ten-Frame

Essential Question: How can we use a numeral to show how many objects there are?

Materials

- Two classroom ten-frames
- Ten large blue magnets or paper circles
- Ten large red magnets or paper circles
- Ten-frame for each child
- Math bags

1 Counting On From 10 to 20

Say: **Today let's play with some higher numbers. Look at the Classroom Number Line. Let's start counting from 10. We will stop at 20. Ready?**

Begin at 10 and indicate each number as you and the children count together to 20.

2 Classroom Ten-Frame Demonstration

Display one classroom ten-frame vertically on the whiteboard.

Say: **Let's put a circle in each section of the ten-frame.** A volunteer places a large blue magnet or circle in each section of the ten-frame.

Ask:

- **How many magnets are in the ten-frame?**
- **Since this is a ten-frame, do we need to count every circle to know there are 10? Why not?**

3 Place Value and Equations with Ten-Frames

Say: **We know there are 10 sections in a ten-frame, so if there is a magnet (or circle) in every section, we know there are 10 without even counting them! Let's write the number 10 under the ten-frame.** A volunteer does this.

Display the second classroom ten-frame vertically next to the first one. Ask: **What can we do with two ten-frames that we can't do with just one?**

Explain: **With one ten-frame we can only count to ten. If we have two ten-frames we can add to that number and count higher. Who can count by tens and tell how high we can count with two ten-frames?** A volunteer does this.

On the board above the ten-frames, write: *The number is 14.*

Say: **We already have 10 magnets (or circles). How many more should we add to make 14?** A volunteer adds 4 red magnets or circles to the second ten-frame. Begin counting with 11 as the magnets are added.

Continue: **Since we added 4 magnets, let's write the number 4 under this ten-frame.** (A volunteer does this.) **What sign do we use to show we are adding numbers together? Right, a plus sign. If we want to add 10 plus 4 where does the plus sign go?** A volunteer adds the plus sign between the 10 and the 4.

Add an equal sign to the equation. Ask: **Who knows the name of this sign? Right, it is an equal sign. Now we have an equation, but there is something missing. What number did we get when we added 10 plus 4 more? Right, 14. Let's read the equation together, $10 + 4 = 14$.**

Draw a square and place a vertical line down the center. Label the columns *tens* and *ones*. Indicate the tens column and ask:

- **How many sets of 10 are in 14? (one) Right, there is 1 set of ten. I will write a 1 in the tens column.**
- **How many extra ones are there? (four) Right, there are 4 ones, so I will write 4 in the ones column. One set of 10 plus 4 ones equals 14.**
- **Where else in the room do you see a 14?**



4 Creating Numbers Using Ten-Frames

Distribute a math bag and a ten-frame to each child.

Say: **Remove your connect cubes and place the ten-frames beside each other vertically, just like the ten-frames on the board.**

After the children have done this, say: **Let's see if we can create the number 12. Who knows what we should do first?** (Volunteers respond.) **Right, place 10 red connect cubes, one in each section, in the first ten-frame.** The children do this.

Ask: **To show 12, how many connect cubes should we add to the second ten-frame?** (Volunteers respond.) **Right, we should add 2 more.** A volunteer does this.

Instruct the children to add 2 cubes of a different color to their second ten-frames.

Ask:

- **How many cubes are in your first ten-frame? Right, 10.** Write 10 on the board.
- **How many cubes are there in your second ten-frame?** Write + 2 next to the 10.
- **What is 10 plus 2 more?** (Volunteers respond.) **Right, $10 + 2 = 12$.**

The children remove the connect cubes from their ten-frames.



Formative Assessment

Complete Ten-Frames

Say a number between 10 and 20 and the children use connect cubes to complete their ten-frames to represent the number. Observe the children as they work to check for understanding. Repeat with other numbers as time allows.

Tens and Ones

Materials

None

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

Choose ten volunteers to stand side-by-side in the front of the classroom. The class counts the children as you tap each child on the head.

Say: **This is a set of 10 children. Let's bundle them!**

Instruct the ten children to form a circle and hold hands. Select one additional volunteer to stand to the left (when facing the class) of the 10 children.

Say: **Now there are 10 children plus one more.**

Write $10 + 1 =$ on the board and read the equation. Ask: **How many children are there altogether? Right, 11; $10 + 1 = 11$.** Write 11 to finish the equation.

Repeat using a different set of 10 children to create a "bundle" and 2-4 children to create the "ones."

Counting & Cardinality

A.3 - Write numbers from 0 to 20.

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

Number & Operations In Base Ten

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

Introduce 11

1 Representations of 11

Say: **Today we'll learn about the number 11.**

Indicate *Backpack Bear's Math Big Book*, page 28.

Lead the children to discuss what they see on this page, encouraging them to notice the different representations of the number 11.

2 The Number 11

Distribute *Backpack Bear's Math Workbook #1*. Instruct the children to turn to page 25.

If you have projection capabilities, project the workbook page to use as a guide.

Ask: **Who can point to the number line?** The children point to the number line on their workbook pages.

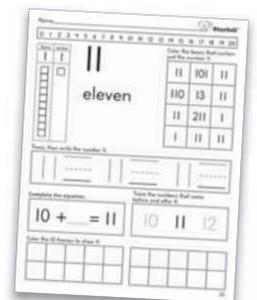
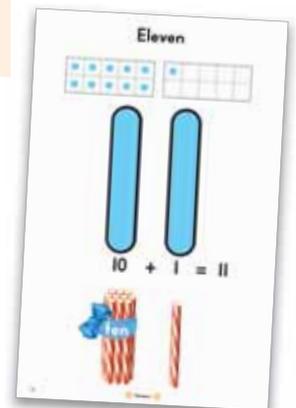
Say: **Now with your pencil, circle 11.** The children circle 11 on their number lines.

Check to see that the children circle eleven. Continue: **Now point to the word eleven on your workbook page.**

Materials

- Backpack Bear's Math Big Book*, page 28
- Backpack Bear's Math Workbook #1*, pages 25 and 26
- Pencils, crayons

Note: This activity requires step-by-step teacher direction.



- If you are able to project the workbook page, volunteers become number detectives. They circle elevens and place an X on the boxes that do not contain an eleven. The other children use the example as a guide to complete the section of the workbook page.
- If you are unable to project the workbook page, lead the children to determine which boxes contain the numeral 11.
- The children color the boxes that contain an 11 and place an X on the boxes that do not.
- They practice the numeral 11 by tracing over, and writing 11 in the spaces.
- Lead the children to complete the equation $10 + 1 = 11$.
- They trace the numerals that come before and after 11.
- The children color the ten-frames to indicate 11.



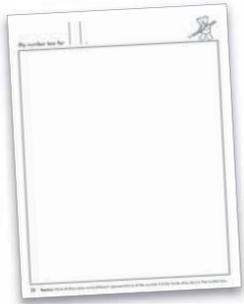
Formative Assessment

Number Boxes for 11

Instruct the children to turn to page 26 in their workbooks.

Ask: **Where might we see or use the number 11?**

The children take turns sharing times they might see or use the number 11. Write several of their responses on the board and the children draw and/or copy them into their number boxes. (Examples: 11:00, 11 pennies or cents, 11 years old, $10+1=11$)



Handwritten examples of the number 11 and related concepts:

- $10 + 1 = 11$
- 11:00
- 0 1 2 3 4 5 6 7 8 9 10 11
- $20 - 9 = 11$
- $11 + 0 = 11$
- $5 + 5 + 1 = 11$
- $5 + 6 = 11$
- $10 + 1 = 11$
- $7 + 4 = 11$
- $1 + 10 = 11$
- $12 - 1 = 11$
- $8 + 3 = 11$
- $11 + 11 + 11 = 33$
- $10 + 1 = 11$
- HF → I
11th word

Representations for Numbers 9-11

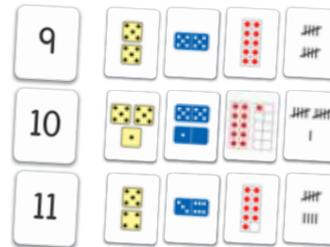
Gather the children around a pocket chart. Place the Number Cards 9-11 in the top row as column headings.

Distribute the number, dice, domino, tally marks, and ten-frame cards 9 to 11 to individual children. Say: **Today we will sort the cards by numbers. Let's read the numbers in the pocket chart, 9, 10, 11.**

Choose a volunteer to bring his or her card to the pocket chart and place it under the correct number. Ask: **How did you know that card belongs with that number?** Repeat until all the number representation cards have been sorted.

Materials

- Pocket chart
- Numbers Cards 9-11
- Number Representation cards for 9-11



Counting & Cardinality

A.3 - Write numbers from 0 to 20.

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

Introduce 12

1 Representations of 12

Say: **Today we will learn about the number 12.**

Indicate *Backpack Bear's Math Big Book*, page 29 and lead the children to discuss the representations of 12 on this page.

2 The Number 12

Distribute *Backpack Bear's Math Workbook #1* and instruct the children to turn to page 27. If you have projection capabilities, project the workbook page to use as a guide.

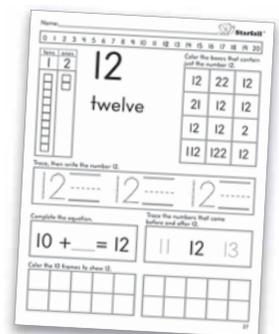
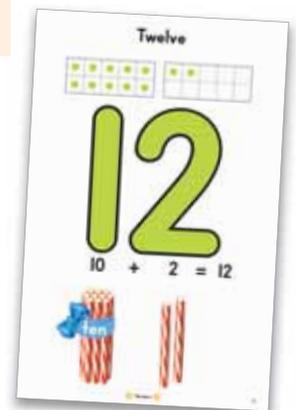
Say: **Put your finger on the number line at the top of the page.** (Check to see that the children do this.) **Now with your pencil, circle 12.** The children circle 12.

Continue: **Now point to the word twelve on your workbook page.** The children circle the word twelve.

- If you are able to project the workbook page, volunteers become number detectives. They circle twelves and place an X on the boxes that do not contain twelve. The other children use the example as a guide to complete the section of the workbook page.
- If you are unable to project the workbook page, lead the children to determine which boxes contain the numeral 12.
- The children color the boxes that contain a 12 and place an X on the boxes that do not.
- They practice the numeral 12 by tracing over, and writing 12 in the spaces.
- Lead the children to complete the equation $10 + 2 = 12$.
- They trace the numerals that come before and after 12.
- The children color the ten-frames to indicate 12.

Materials

- Backpack Bear's Math Big Book*, page 29
- Backpack Bear's Math Workbook #1*, pages 27 and 28



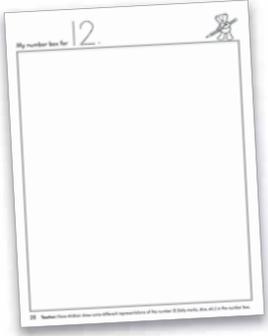


Formative Assessment

Number Boxes for 12

Instruct the children to turn to workbook page 28.

The children take turns sharing times they might see or use the number 12. Write their responses on the board and children draw and/or copy them into their number boxes. (Examples: 12:00, dozen eggs, 1 dime and 2 pennies, 12 years old, $10+2=12$)



Learning Centers

DAY

5

1 Computer

The children explore:

- Monthly calendar
- Numbers: "11-12"
- Geometry & Measurement: "Button Sort" (medium or hard)
- Add & Subtract: "Addition within 10"

Materials

- Computers navigated to *Starfall.com*

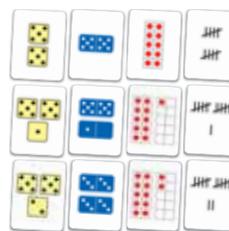
2 Number Representations 10-12

Place the three prepared sheets of construction paper side-by-side. Shuffle the Representation Cards and stack them in a deck.

The children take turns revealing cards then placing them on the construction paper indicating the corresponding numbers. Play continues until all of the Representation Cards have been sorted.

Materials

- 3 sheets of construction paper labeled 10, 11 and 12
- Two sets of Number Representation Cards: 10, 11, 12

**Counting & Cardinality**

A.3 - Write numbers from 0 to 20.

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

CC.2 - Supply missing number in a sequence.

Operations & Algebraic Thinking

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

Measurement & Data

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

MD.1 - Identify and use time measurement tools.

3 "A Walk in the Park" Game

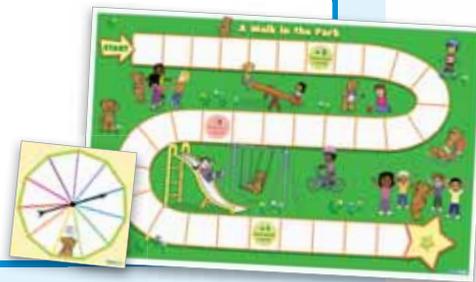
The children place their playing pieces on start. They take turns to spin then move their playing pieces the corresponding number of spaces.

If a player lands on a +2 or +1, he or she moves forward that number of additional spaces.

If a player lands on -3, the player moves back 3 spaces. The first player to reach the end wins (or the children may play until all players reach the end).

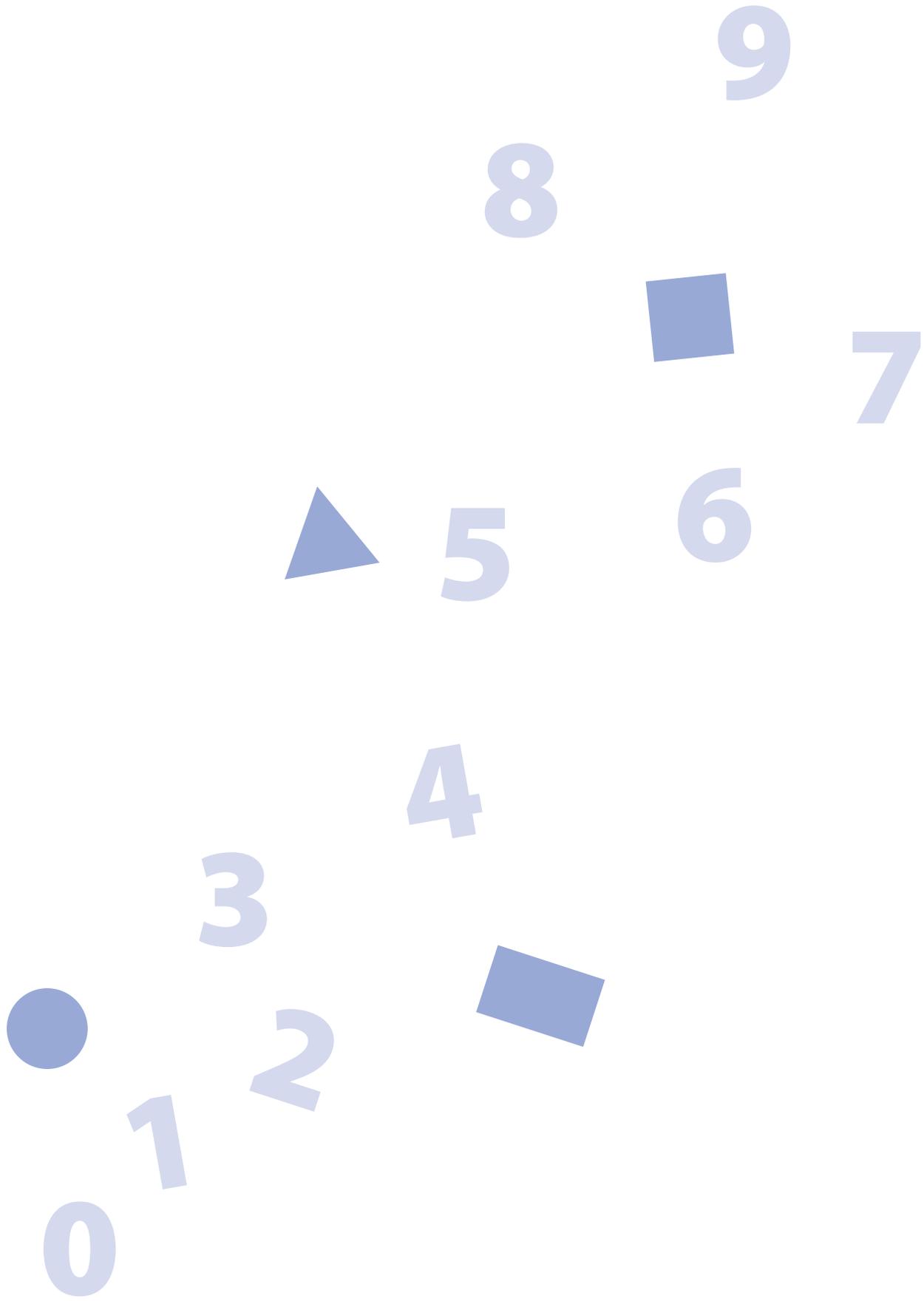
Materials

- "A Walk in the Park" game board
- Game spinner labeled 4-12
- Playing piece for each child



4 Teacher's Choice

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



Week 11 Summary

The children will continue their quest to conquer the “troublesome teens” as they are introduced to the numbers 13 through 16. The children will also:

- Create and extend patterns
- Review counting by fives
- Solve number problems using manipulatives
- Use ten-frames to represent teen numbers

Preparation

DAY 1

No additional preparation is needed.

DAY 2

No additional preparation is needed.

DAY 3

You will use 10 pennies and 3 nickels in today’s lesson.

DAY 4

You will need a “Race to 20” game board, a pair of dice, and two playing pieces to preview the “Race to 20” game the children will play in this week’s Learning Centers.

DAY 5

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

Activity Center 2 — The children will need their math mats, a container of cubes or counters, one set of Number Cards 11-16 and enough play dough to form numerals, and small balls to represent the numerals.

Activity Center 3 — The children will need 1 or 2 "Race to 20" game boards, dice, and playing pieces.

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

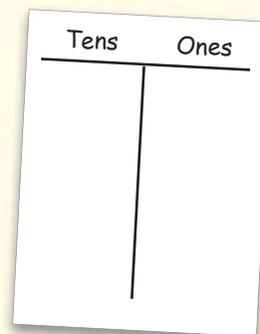
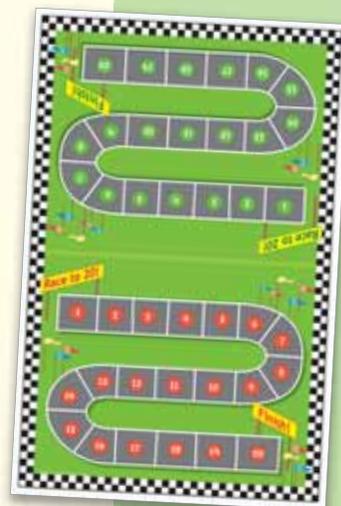
Summative Assessment — You will use a set of Number Cards 8-16. The children in this center will each need 16 connect cubes or counters and a sheet of construction paper that has a T-frame drawn on it. The columns should be labeled Tens and Ones.

You will need a T-frame and connect cubes for demonstration.

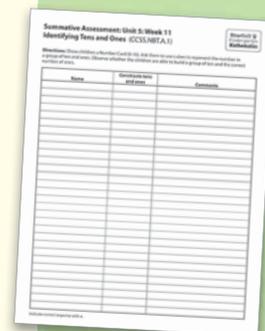
Prepare a copy of the Summative Assessment Checklist for Unit 5 – Week 11.

Looking Ahead

For **Week 12** you will need two large, clear plastic jars (pickle or peanut butter) of the same size.



Labeled T-Frame



Summative Assessment
Unit 5 - Week 11

DAY 1

DAY 2

Daily Routines

- Calendar
- Weather
- Number Line
- Count coins to match the date
- Place Value
- Hundreds Chart

Magic Math Moment

Identify number represented in a ten-frame

Guess the pattern

Identify a number represented in a ten-frame

Create and guess patterns and their rules/extend patterns

Introduce

13

The Number 13

Introduce

14

The Number 14

Math Concepts

Create Number Combinations

Tens and ones

Before and after 13

Before and after 14

Representations of 13

Representations of 14

Discriminate 13

Discriminate 14

Write the numeral 13

Write the numeral 14

Formative / Summative Assessment

List times the number 13 might be seen or used

List times the number 14 might be seen or used

Workbook pages 29 and 30

Workbook pages 31 and 32

Workbooks & Media



DAY 3

DAY 4

DAY 5

- Calendar
- Weather
- Number Line
- Count coins to match the date
- Place Value
- Hundreds Chart

Count by fives

Writing numerals 10-14

Count by fives

Number exercises

One-to-one correspondence

Introduce

16

Introduce

15

The Number 15

The Number 16

Review the penny and the nickel, and their values

Before and after 16

Before and after 15

Representations of 16

Representations of 15

Discriminate 16

Discriminate 15

Write the numeral 16

Write the numeral 15

Preview "Race to 20"

List times the number 15 might be seen or used

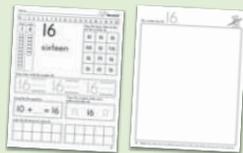
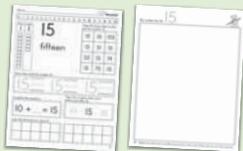
List times the number 16 might be seen or used

"Penny, Penny" Rhyme

Workbook pages 35 and 36

"Nickel, Nickel" Rhyme

Workbook pages 33 and 34



Learning Centers

Starfall.com:

- Monthly Calendar
- Numbers "11-16"
- Addition & Subtraction: "Word Problems"
- Addition & Subtraction: "Addition Practice"

Use play dough to form numerals and count manipulatives to match

"Race to 20"

Teacher's Choice

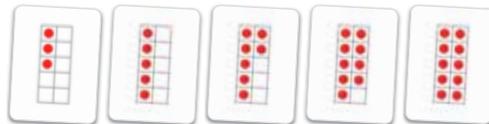
Represent numbers by creating groups of tens and ones

Ten-Frame Flash Game

Flash the ten-frame Representation Card with 3 dots and allow the children 3 seconds to observe it.

Say: **Write the number that tells how many dots you saw on the ten-frame on your whiteboard. Hold up your whiteboard for me to see when you are finished.** The children do this.

Repeat with 5, 7, 9, and 10, observing to see if the children identify the number of dots correctly.



Materials

- Ten-frame Number Representation Cards: 3, 5, 7, 9, and 10
- Individual whiteboards, markers

Counting & Cardinality

A.3 - Write numbers from 0 to 20.

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

CC.1 - Identify numerals out of sequence.

Number & Operations In Base Ten

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

Introduce 13

1 Creating Number Combinations

Say: **Today we will learn about the number 13. But first, let's do a warm-up. Who can show us 8 fingers?**

A volunteer shows 8 fingers, then chooses a second volunteer who will show 9 fingers. Repeat with another volunteer who will show 10 fingers.

Ask: **Who can show us 11 fingers?** Volunteers respond.

Continue: **That's right, no one can do that because we each only have 10 fingers! What could we do to show 11 fingers?** Volunteers respond. Lead to children to conclude that it would take two children to do this.

Choose two volunteers to come forward to show the class 11 fingers. Instruct one child to hold up 10 fingers and the other child to hold up 1 finger.

Repeat with new volunteers for 12 and 13. Lead the children to realize that they don't have to count the fingers of the child holding up 10 fingers. Instead they can just say ten and count on from there.

2 Before and After 13

Ask: **Who can write the number that comes before 13 on the board?**

A volunteer writes 12 on the board.

Ask: **Who can write the number that comes after 13?** A volunteer writes 14 on the board.

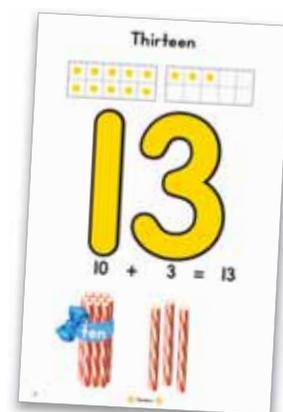
Materials

- Whiteboard, markers
- Backpack Bear's Math Big Book, page 30
- Backpack Bear's Math Workbook #1, page 29 and 30
- Crayons, pencils

3 Introduce 13

Select several volunteers to choose activities such as jumping jacks, touch toes, or hop, and the children perform each of the activities 13 times.

Indicate *Backpack Bear's Math Big Book*, page 30 and lead the children to discuss the representations of 13.



4 The Number 13

Distribute *Backpack Bear's Math Workbook #1* and instruct the children to turn to page 29.

If you have projection capabilities, project the workbook page to use as a guide.

Note: The following activity requires step-by-step teacher direction.

Say: **Put your finger on the number line at the top of the page.** (Check to see that the children do this.) **Now with your pencil, circle 13.** The children circle 13 on the number line.



Continue: **Now point to the word thirteen on your workbook page and circle the word thirteen.** The children do this.

- If you are able to project the workbook page, volunteers become number detectives and circle thirteens. They place an X on the boxes that do not contain a thirteen. The other children use the example as a guide to complete this section of the workbook page.
- If you are unable to project the workbook page, lead the children to determine which boxes contain the numeral 13.
- The children color the boxes that contain a 13 and place an X on the boxes that do not.
- They practice the numeral 13 by tracing over, and writing 13 in the spaces.
- Lead the children to complete the equation $10 + 3 = 13$.
- They trace the numerals that come before and after 13.
- The children color the ten-frames to indicate 13.



Formative Assessment

Number Boxes for 13

The children take turns sharing times they might see or use the number 13. Write their responses on the board. Instruct them to turn to page 30 and draw or copy the responses into their number boxes. (Examples: 13 years old, 13 cents, 13 miles, $13 + 0 = 13$, a dime and 3 pennies)



Guess the Pattern

Materials

 None

Choose a group of eight children to line up side-by-side.

Whisper an action that will result in a pattern to each child. (Example: clap, clap, snap, snap) On your signal the children perform their actions in turn to create the pattern.

Say: **Raise your hand if you can identify the pattern.** Volunteers respond.

Ask: **What would come next if we wanted to continue this pattern?**

Add volunteers to extend the pattern. Ask:

- **What is the rule of this pattern?** (clap, clap, snap, snap)
- **The pattern is two activities being done two times. What kind of pattern is it?** (AABB)

Repeat with other groups and different kinds of patterns.

Ask: **Who would like to work together to form a pattern?** Select volunteers to create a new pattern, with your help if necessary. Ask:

- **What is the rule of this pattern?**
- **What kind of pattern did the group create?**

Repeat with other groups.

Counting & Cardinality

A.3 - Write numbers from 0 to 20.

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

CC.1 - Identify numerals out of sequence.

Operations & Algebraic Thinking

OA.1 - Identify, describe, or extend simple patterns.

Number & Operations In Base Ten

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

Introduce 14

1 Tens and Ones

Ask: **Who can find the number 10 on the Number Line?** A volunteer uses a pointer to indicate the number 10.

Place the 1 through 13 Number Cards in a pocket chart.

Ask: **Who can point to the 10 Number Card?** A volunteer does this.

Ask: **What do you notice about the 10 Number Card?** (Volunteers respond.) **Right, it has a vertical stack of cubes. Remember, vertical means up and down.**

Choose ten volunteers to stand side-by-side in front of the class. The class counts the children as you tap each child on the head.

Say: **We have a set of 10 children. Let's bundle them!** The ten children form a circle holding hands.

Ask: **How many more children should we add to make 14? Right, 4 more.**

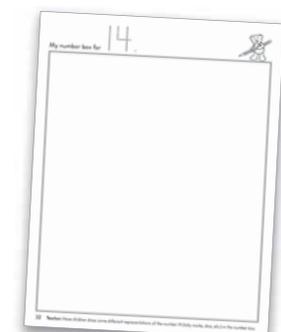
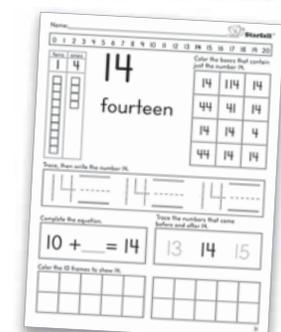
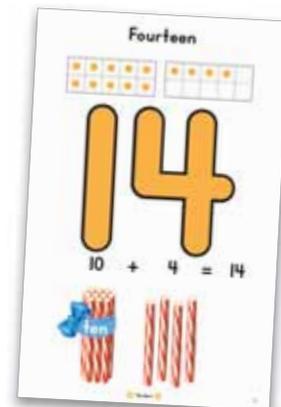
Materials

- Backpack Bear's Big Book, page 31
- Backpack Bear's Math Workbook #1, pages 31 and 32
- Number Cards 1 through 13
- Crayons, pencils
- Pocket chart

Choose 4 volunteers to come forward.

Say: **There are 10 children plus 4 more.** Write $10 + 4 = \underline{\quad}$ on the board and read the equation.

Ask: **How many children are there altogether? Right, 14. $10 + 4 = 14$.** Write 14 to finish the equation.



2 Introduce 14

Say: **Today we will learn about the number fourteen.**

Indicate *Backpack Bear's Math Big Book*, page 31 and lead the children to discuss the representations of 14 on this page.

3 The Number 14

Distribute *Backpack Bear's Math Workbook #1* and instruct the children to turn to page 31.

If you have projection capabilities, project the workbook page to use as a guide.

Note: The following activity requires step-by-step teacher direction.

Say: **Put your finger on the number line at the top of the page.** (Check to see that the children do this.) **Now with your pencil, circle 14.** The children circle 14 on the number line.

Continue: **Now point to the word fourteen on your workbook page and circle it.** The children do this.

- If you are able to project the workbook page, volunteers become number detectives and circle fourteens. They place an X on the boxes that do not contain a fourteen. The other children use the example as a guide to complete this section of the workbook page.
- If you are unable to project the workbook page, lead the children to determine which boxes contain the numeral 14.
- The children color the boxes that contain 14 and place an X on the boxes that do not.
- They practice the numeral 14 by tracing over, and writing 14 in the spaces.
- Lead the children to complete the equation $10 + 4 = 14$.
- They trace the numerals that come before and after 14.
- The children color the ten-frames to indicate 14.



Formative Assessment

Number Boxes for 14

The children take turns sharing times they might see or use the number 14. Write their responses on the board. Instruct them to turn to page 32 and draw or copy the responses into their number boxes (Examples: 14 years old, 14 cents, $10 + 4 = 14$, 1 dime and 4 pennies)

Count By Fives

Materials

 None

Divide the class into groups of four.

Say: **Today we will work in groups to practice counting by fives. You will begin counting at negative 5 and stop at 50. What strategy can you use to help us count? Right, you can use the Number Line.**

Continue: **When you hear the signal your group will begin. Clap once if you can hear me.** (The children do this.) **Clap twice if you can hear me.** (The children do this.) **Ready, set, begin.** Circulate and assist when necessary.

When the children have had ample time, signal them to stop counting. (Say: **Clap once... Clap twice...**) Two groups at a time take turns counting by fives until all groups have a turn.

Counting & Cardinality

A.3 - Write numbers from 0 to 20.

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

CC.4 - Count to 100 by twos and by fives.

Number & Operations In Base Ten

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

Introduce 15

Materials

- Backpack Bear's Math Big Book, pages 13, 14, and 32
- Backpack Bear's Math Workbook #1, pages 33 and 34
- Crayons, pencils
- Ten pennies
- Three nickels

1 Review the Penny, Nickel, and Their Values

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

Review the "Penny, Penny" and "Nickel, Nickel" rhymes.

Choose ten volunteers to move to the front of the classroom, and give each child one penny.

Ask: **If there are ten children and each child has a penny, how many pennies are there altogether?** (Volunteers respond.) **Let's count to be sure.** Do this.

Ask: **Did we count by ones or fives? Right, we counted by ones because each penny is worth one cent.**

The ten volunteers return to their seats.

Choose two new volunteers to come forward and give each child a nickel. Ask:

- **How much is a nickel worth?** (Volunteers respond.) **Right, a nickel is worth 5 cents.**
- **There are 2 children and each child has a nickel. How many nickels are there altogether?** (Volunteers respond.) **Right, two.**
- **How can we tell how much 2 nickels are worth?** (Volunteers respond.) **Right, if each nickel is worth 5 cents, we can count by fives 5, 10.**
- **How many more nickels would we need to make 15 cents?**

Choose a volunteer to come forward and give him or her a nickel. Say: **Let's count how much money these children have now, 5, 10, 15. They have 15 cents. Today let's learn about the number 15.**



2 Introduce 15

Indicate *Backpack Bear's Math Big Book*, page 32 and lead the children to discuss the representations of 15 on this page.

3 The Number 15

Distribute *Backpack Bear's Math Workbook #1* and instruct the children to turn to page 33.

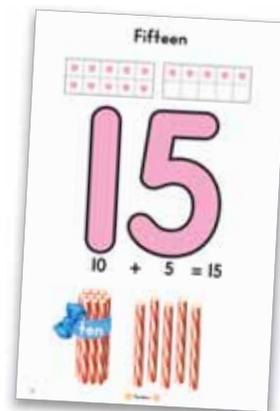
If you have projection capabilities, project the workbook page to use as a guide.

Note: The following activity requires step-by-step teacher direction.

Say: **Put your finger on the number line at the top of the page.** (Check to see that the children do this.) **Now with your pencil, circle 15.** The children circle 15 on the number line.

Continue: **Now point to the word fifteen on your workbook page and circle it.** The children do this.

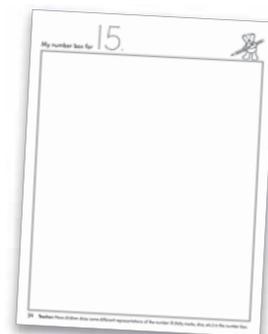
- If you are able to project the workbook page, volunteers become number detectives and circle fifteens. They place an X on the boxes that do not contain a fifteen. The other children use the example as a guide to complete this section of the workbook page.
- If you are unable to project the workbook page, lead the children to determine which boxes contain the numeral 15.
- The children color the boxes that contain 15 and place an X on the boxes that do not.
- They practice the numeral 15 by tracing over, and writing 15 in the spaces.
- Lead the children to complete the equation $10 + 5 = 15$.
- They trace the numerals that come before and after 15.
- The children color the ten-frames to indicate 15.



Formative Assessment

Number Boxes for 15

The children take turns sharing times they might see or use the number 15. Write their responses on the board. Instruct them to turn to page 34 and draw or copy the responses into their number boxes. (Examples: 15 years old, 15 cents, 15 inches)



Writing Numerals

Distribute math mats, individual whiteboards, and markers. Instruct the children to place the whiteboards on top of their math mats.

Materials

- Whiteboards, markers
- Math mats

Say: **Today we will write different numbers on our whiteboards. We can use lots of strategies to help us remember how to write the numbers. Who can think of one strategy we can use?** (Volunteers respond.)
Right, we can look at the Number Line, the hundreds chart, our math mats, and the Number Cards.

Say: **I will say a number and you write that number on your whiteboard. Ready?** Say a number and the children write it.

Continue: **Now hold your whiteboard up for all of us to see.** The children do this then erase the numbers before the next number is given. Use several numbers including 11, 14, 12, 10, and 13.

Counting & Cardinality

A.3 - Write numbers from 0 to 20.

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

CC.1 - Identify numerals out of sequence.

Number & Operations In Base Ten

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

Introduce 16

1 "Listen and Count"

Say: **Today let's do number exercises! Listen for a number and an exercise then see if you can do the exercise the correct number of times. Let's practice. The first number is 9 and the exercise is tap the top of your head. Who can repeat the exercise? How many times should we tap our heads?** (Volunteers respond.)

Repeat with the following numbers and exercises, or create your own:

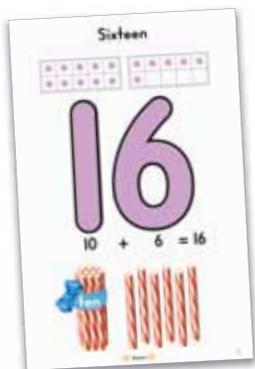
- 12 — Pretend to jump rope.
- 14 — Touch your toes.
- 13 — Hop up and down.

Materials

- Backpack Bear's Math Big Book, page 33
- Backpack Bear's Math Workbook #1, pages 35 and 36
- Two "Race to 20" game boards, playing pieces, dice
- Crayons, pencils

2 Introduce 16

Indicate *Backpack Bear's Math Big Book*, page 33 and lead the children to discuss the representations of 16.



1 Computer

The children explore:

- Monthly calendar
- Numbers: "11-16"
- Add & Subtract: "Word Problems"
- Add & Subtract: "Addition Practice"

Materials

- Computers navigated to *Starfall.com*

Counting & Cardinality

A.3 - Write numbers from 0 to 20.

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

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

Number & Operations In Base Ten

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

Measurement & Data

A.1 - Describe measurable attributes of objects.

2 Number Cards

The children place the Number Cards face down in a stack.

- ONE child draws a card for the group.
- Each child forms the numeral with play dough.
- Each child counts out the corresponding number of manipulatives and places them on his or her math mat ten-frame.
- The children compare their answers.
- They replace the play dough, shuffle the Number Cards, and the next child draws a card.
- The children repeat the activity as time permits.

Materials

- Math mat for each child
- Container of cubes or counters
- One set of Number Cards 11-16
- Play dough



3 "Race to 20"

The first player rolls the dice and moves his or her playing piece the corresponding number of spaces on the "Race to 20" game board.

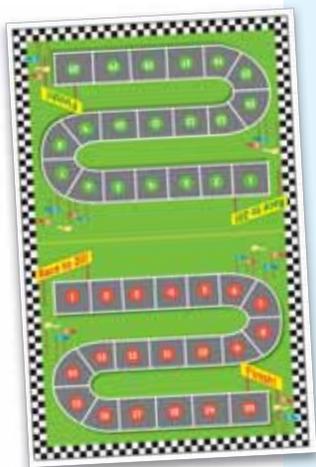
The second player rolls the dice and moves his or her playing piece the corresponding number of spaces.

Play continues until a player reaches 20. A player must roll the exact number to land on 20 in order to win the game.

The children repeat the game as time permits.

Materials

- 1 or 2 "Race to 20" game boards
- Playing pieces
- Pair of dice



Week 12 Summary

The children will be introduced to the numbers 17, 18, and 19, the last of the “troublesome teens.” They will learn about estimations and making smart guesses. The children will also:

- Check their estimates by counting the objects
- Learn to distinguish “smart guesses”
- Measure using nonstandard measurement units
- Answer “Number Riddles”
- Act out number stories

Preparation

DAY 1

No additional preparation is needed.

DAY 2

You will need two large empty clear plastic jars (pickle or peanut butter) of the same size. Place 10 cubes in one jar and 18 in the other. Create an Estimation Chart similar to the one pictured. Save the chart after today’s lesson for reference on **Day 3**.

You will need two sets of Number Cards 10 – 17.

Jar	Estimation	Actual
1		
2		

DAY 3

Prior to today’s Magic Math Moment, read the introduction to *Estimate with Backpack Bear* to determine how best to use the book.

Reference the estimation activity and chart from **Day 2** as you introduce *Estimate with Backpack Bear* by Pam Ferguson. Plan to read the poem on page 3 and do a few of the activities, being sure to discuss with the children how they arrived at their estimates.

Note: *Estimate with Backpack Bear* is not meant to be read from cover to cover in one sitting. Instead use the book during transitional periods to continue to practice estimation skills throughout the school year.

DAY 4

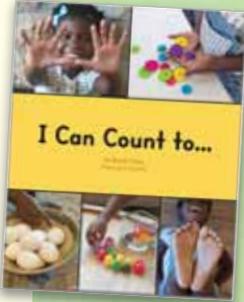
In today's Magic Math Moment you will introduce *I Can Count to...* by Brandi Chase. Due to the difficulty for many children of the concept of teen numbers, revisit this book as often as possible throughout the school year in order to review. You will need 6 Bingo cards and several counters, pennies, or Bingo chips to demonstrate how to play Bingo. You will also need a set of Number Cards 1–20.

DAY 5

Activity Center 1 — Navigate classroom computers to *Starfall.com*.
Activity Center 2 — The children will need a “A Walk in the Park” game board, playing pieces, and a set of Number Cards 1-20.
Activity Center 3 — The children will use Bingo cards and several counters, pennies, or Bingo chips to play Bingo. They will also need a set of Number Cards 1–20.
Activity Center 4 — Prepare materials for this week's Teacher's Choice Activity.
Summative Assessment — The children will complete *Backpack Bear's Math Workbook #1* page 45, “Dot-to-Dot” 1-20. To perform this week's Summative Assessment you will need a set of Number Cards 11-20 and a Summative Assessment Checklist for Unit 5, Week 12.

Looking Ahead

- In preparation for the next unit, you will need the following items:
- Wooden or plastic three-dimensional shapes (**Weeks 13 and 14**)
 - A container of connect cubes for each table of children (**Week 13**)
 - Objects representing three-dimensional shapes: *cone, cube, rectangular prism, cylinder, pyramid, and sphere* (**Week 13**)
 - Small marshmallows and toothpicks to construct 3-D shapes (**Week 14**)



Summative Assessment
Unit 5 - Week 12

DAY 1

DAY 2

Daily Routines

- Calendar
- Weather
- Number Line
- Count coins to match the date
- Place Value
- Hundreds Chart

Magic Math Moment

Smart guesses

Smart guesses (estimation)

Math Concepts

Making smart guesses – realistic estimates

Graph estimates and actual numbers - compare

Practice different ways of counting

Review numbers 10 – 17

Introduce

17

Introduce

18

The Number 17

The Number 18

Before and after 17

Before and after 18

Representations of 17

Representations of 18

Discriminate 17

Discriminate 18

Write the numeral 17

Write the numeral 18

Formative / Summative Assessment

List times the number 17 might be seen or used

List times the number 18 might be seen or used

Workbooks & Media

Workbook pages 37 and 38

Workbook pages 39 and 40



DAY 3

DAY 4

DAY 5

- Calendar
- Weather
- Number Line
- Count coins to match the date
- Place Value
- Hundreds Chart

Introduce *Estimate with Backpack Bear*

Make estimates and compare to actual numbers
Number Riddles

Introduce 19
The Number 19
Before and after 19
Representations of 19
Discriminate 19
Write the numeral 19

List times the number 19 might be seen or used

Workbook pages 41 and 42



Introduce *I Can Count to ...*

Solve number stories by acting them out

Introduce 20
The Number 20
Before and after 20
Representations of 20
Discriminate 20
Write the numeral 20

List times the number 20 might be seen or used

Workbook pages 43 and 44



Learning Centers

1
Starfall.com:

- Monthly Calendar
- Numbers: "17-20"
- Addition & Subtraction: "Word Problems"
- Addition & Subtraction: "Compose and Decompose"

2
"A Walk in the Park" Game

3
"Bingo"

4
Teacher's Choice

5
Complete 1-20 Dot-to-Dot
Identify numbers 11-20 in random order

Smart Guesses

Materials

None

Say: **Today we will learn to make smart guesses.**

You make a smart guess when you don't know the exact answer, but you use the information you have to estimate what the answer is. I will estimate, or make a guess, about how many children there are in our class. I think there are 100 children. Stand if you think my estimate is correct. The children do this.

Ask: **Is my estimate too high or too low? How do you know?**

Discuss why 100 children would not be a "smart guess."

Ask: **What if I estimate there are seven children in our class? Put your hands on top of your head if you think that is a "smart guess." Is my estimate too high or too low?** Discuss why this would also not be a "smart guess."

Ask: **How could we determine exactly how many children there are in our class? Right, we could count.** Count the children in the class and discuss estimates that would be considered "smart guesses."

Counting & Cardinality

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

CC.1 - Identify numerals out of sequence.

Estimation

E.1 - Understand the meaning of estimation.

E.2 - Make predictions to determine reasonable answers.

Introduce 17

Materials

- Backpack Bear's Math Big Book, page 34
- Backpack Bear's Math Workbook #1, pages 37 and 38
- Crayons, pencils

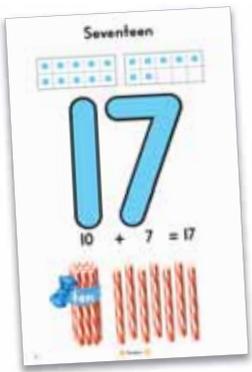
1 Introduce 17

Say: **Let's think of different ways we can count to 30.** Volunteers respond (ones, fives, tens, twos). After each, the class counts to 30 in the manner suggested.

Remind the children that they can use the strategy of looking at the Number Line or the Number Wall Cards. Use a pointer to touch each number as children count in the various ways.

Say: **Today we will learn about the number 17.**

Indicate *Backpack Bear's Math Big Book*, page 34 and lead the children to discuss the representations of 17.



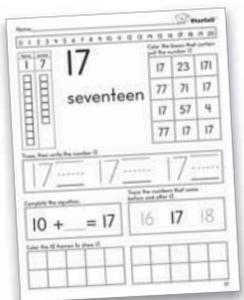
2 The Number 17

Distribute *Backpack Bear's Math Workbook #1* and instruct the children to turn to page 37.

If you have projection capabilities, project the workbook page to use as a guide.

Note: This activity requires step-by-step teacher direction.

Complete page 37 with the children as you have with similar workbook pages.

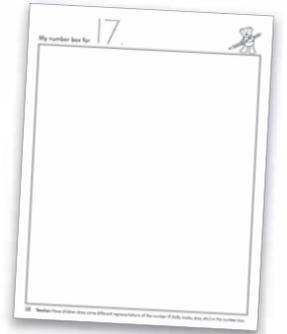




Formative Assessment

Number Boxes for 17

The children take turns sharing times they might see or use the number 17. Write several of their responses on the board. Instruct them to turn to page 38 and draw or copy the responses into their number boxes. (Examples: $10+7=17$, 17 cents, 17 miles)



Estimation

Essential Question: How do we estimate the amount of objects and compare them to the actual amount?

Materials

- Two clear plastic jars of the same size
- Ten cubes in one jar
- Eighteen cubes in a second jar
- Graph drawn on the board (pictured)

Display two clear plastic jars with cubes inside.

Ask: **Remember when we made a smart guess, or estimate, about how many children there are in our class? Today we will make a smart guess using these jars of cubes.** Indicate the estimation graph and explain that you will record the children's answers.

Jar	Estimation	Actual
1		
2		

Ask:

- **Who can make a smart guess, or estimate how many cubes there are in the first jar?** Record responses under "Estimation" Jar 1.
- **How can we check the estimates?** (Volunteers respond.) **Right, we can count the cubes.** A volunteer removes the cubes and counts them. He or she records the number under "Actual."
- **Look at this next jar. Let's do some smart thinking. Do you think this jar has more than 10 or less than 10 cubes? Why?**
- **Who can make a smart guess or estimate how many cubes there are in the second jar?** Record responses under "Estimation" Jar 2.
- **How can we check our estimate? Right, we can count the number of cubes in the second jar.** A volunteer removes the cubes and counts them. He or she records the number under "Actual."
- **How many more cubes are in the second jar?**
- **How did knowing the number of cubes in the first jar help us estimate the number of cubes in the second jar?**

Save the estimation chart for reference on **Day 3**.

Counting & Cardinality

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.

CC.1 - Identify numerals out of sequence.

Number & Operations In Base Ten

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

Estimation

E.1 - Understand the meaning of estimation.

E.2 - Make predictions to determine reasonable answers.



Introduce 18

1 Number Concentration

Display the Number Cards face down in a pocket chart. The children play "Concentration" to name and match the numbers from 10 -17.

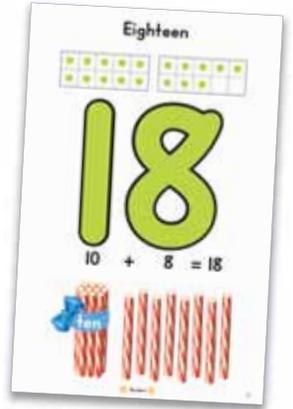
Materials

- Pocket chart
- Two sets of Number Cards 10-17
- Backpack Bear's Math Big Book, page 35
- Backpack Bear's Math Workbook #1, pages 39 and 40
- Crayons, pencils

2 Introduce 18

Say: **Today we will learn about the number 18.**

Indicate *Backpack Bear's Math Big Book*, page 35 and lead the children to discuss the representations of 18 on this page.



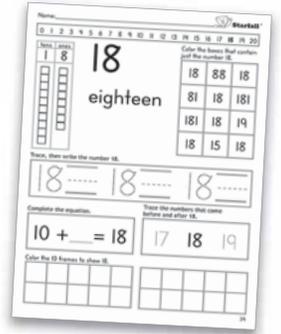
3 The Number 18

Distribute *Backpack Bear's Math Workbook #1* and instruct the children to turn to page 39.

If you have projection capabilities, project the workbook page to use as a guide.

Note: This activity requires step-by-step teacher direction.

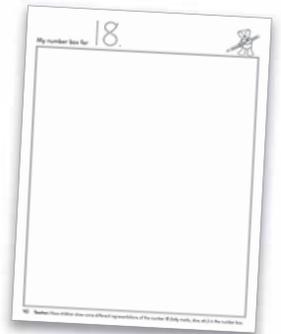
Complete page 39 with the children as you have with similar workbook pages.



Formative Assessment

Number Boxes for 18

The children take turns sharing times they might see or use the number 18. Write several of their responses on the board. Instruct them to turn to page 40 and draw or copy the responses into their number boxes. (Examples: $10+8=18$, 18 cents, 18 miles)



Introduce *Estimate with Backpack Bear*

Say: **Raise your hand if you remember the activity we did yesterday when we made smart guesses to estimate how many connect cubes there were in jars.**

Materials

- Estimate with Backpack Bear* by Pam Ferguson
- Estimation chart from **Day 2**

Indicate yesterday's estimation chart and continue:

We completed an estimation chart that showed our estimates, or smart guesses, and the actual number of connect cubes there were in the jars. Guess what! Backpack Bear is learning how to make smart guesses and estimate too!

Indicate *Estimate with Backpack Bear*. Say: **Here is a book that will help us learn to be better estimators along with Backpack Bear. The name of the book is *Estimate with Backpack Bear*. It was written by Pam Ferguson and it was illustrated by the people at Starfall.**

Read the poem on page 3 and do several examples with the children. Be sure to allow the children to discuss each page and explain the reasons for their guesses.

Note: Today's Magic Math Moment serves as a preview to *Estimate with Backpack Bear*. The book is not meant to be read cover to cover in one sitting. Instead, use the book during transition times throughout the year to practice the skill of estimation.

Counting & Cardinality

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

Number & Operations In Base Ten

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

Estimation

E.1 - Understand the meaning of estimation.

E.2 - Make predictions to determine reasonable answers.

Number Riddles/ Introduce 19

Materials

- Backpack Bear's Math Workbook #1*, pages 41 and 42
- Backpack Bear's Math Big Book*, page 36
- Crayons, pencils

1 Number Riddles (More/Less)

Say: **Today let's solve number riddles. What strategy can we use to help us solve them? Right, we can use the Number Line as a strategy to help us find the correct answers.**

Choose one volunteer to answer each riddle and another to confirm the answer by pointing to the numbers on the Classroom Number Line.

- **I am a number 1 less than 15. What number am I?**
- **I am a number that equals 12 plus 4 more. What number am I?**
- **I am a number 2 more than 11. What number am I?**
- **I am a number 1 less than 17. What number am I?**
- **I am a number 1 more than 18. What number am I?**

Say: **That's right, 19. Let's learn about the number 19 today.**

2 Introduce 19

Indicate *Backpack Bear's Math Big Book*, page 36 and lead the children to discuss the representations of 19.

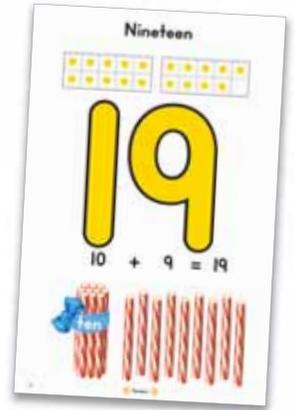
3 The Number 19

Distribute *Backpack Bear's Math Workbook #1* and instruct the children to turn to page 41.

If you have projection capabilities, project the workbook page to use as a guide.

Note: This activity requires step-by-step teacher direction.

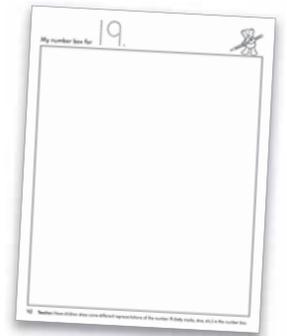
Complete page 41 with the children as you have with similar workbook pages.



Formative Assessment

Number Boxes for 19

The children take turns sharing times they might see or use the number 19. Write several of their responses on the board. Instruct them to turn to page 42 and draw or copy the responses into their number boxes. (Examples: $10+9=19$, 19 cents, 19 miles)



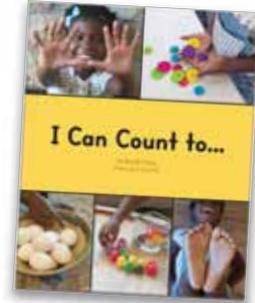
Introduce *I Can Count to ...*

Materials

- I Can Count to...*

Say: **Today we will listen to another book! It is called *I Can Count to...* It was written by Brandi Chase, and it has photos by P. Colin Hill. This is a book all about teens, so it will help us remember the teen numbers. We will listen to it several times this year so we will be experts at knowing the teens. Ready?**

Read *I Can Count to...*, stopping to discuss as necessary.



Counting & Cardinality

A.3 - Write numbers from 0 to 20.

Number & Operations In Base Ten

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

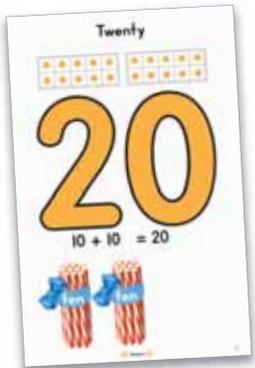
Materials

- Backpack Bear's Math Big Book*, page 37
- Backpack Bear's Math Workbook #1*, pages 43 and 44
- 6 Bingo cards
- Counters, pennies, or Bingo chips to cover spaces on Bingo cards
- Number Cards 1-20

Introduce 20

1 Introduce 20

Indicate *Backpack Bear's Math Big Book*, page 37 and lead the children to discuss the representations of 20.



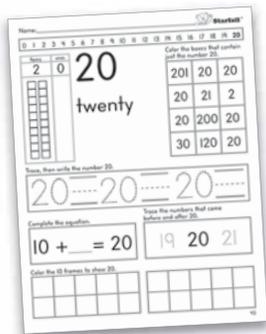
2 The Number 20

Distribute *Backpack Bear's Math Workbook #1* and instruct the children to turn to page 43.

If you have projection capabilities, project the workbook page to use as a guide.

Note: This activity requires step-by-step teacher direction.

Complete page 44 with the children as you have with similar workbook pages.





Number Boxes for 20

The children take turns sharing times they might see or use the number 20. Write several of their responses on the board. Instruct them to turn to page 44 and draw or copy the responses into their number boxes. (Examples: $10+10=20$, 20 cents, 20 miles, 2 dimes, two bundles of 10)



Introduce the Bingo Game

- Distribute Bingo cards and a set of counters to six children for demonstration.
- Place a set of Number Cards 1-20 face down in a stack.
- The first child reveals the top Number Card to the class. Together the children identify the number.
- The children who have that number on their Bingo cards place a counter on top of the number. The other children take turns to reveal Number Cards. Play continues until all numbers are covered on a card.



The children will play Bingo during Learning Centers on day 5.



Learning Centers

1 Computer

The children explore:

- Monthly calendar
- Numbers: "17-20"
- Add & Subtract: "Word Problems"
- Add & Subtract: "Compose and Decompose"

Materials

- Computers navigated to Starfall.com

Counting & Cardinality

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

CC.1 - Identify numerals out of sequence.

Operations & Algebraic Thinking

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

Number & Operations In Base Ten

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

Measurement & Data

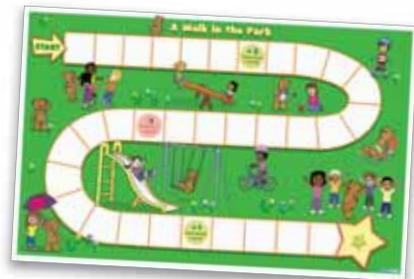
MD.1 - Identify and use time measurement tools.

2 "A Walk in the Park" Game

The children play "A Walk in the Park".

They place all of the Number Cards face down in a stack, then take turns to reveal the Number Cards and move their playing pieces the corresponding number of spaces.

The first player to reach the end wins (or the children may play until all players reach the end).

**Materials**

- Number Cards 1-20
- 1 or 2 "A Walk in the Park" game boards
- Playing pieces

3 Bingo

Each child selects a Bingo card. The first child reveals the top Number Card and together the children identify the number.

The children who have that number on their Bingo cards place a counter, penny, or Bingo chip on top of the number. The other children take turns to reveal Number Cards. Play continues until all numbers are covered on a card.

Materials

- Bingo card for each child
- Counters, pennies, or Bingo chips

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: Dot-to-Dot (1-20)

Distribute *Backpack Bear's Math Workbook #1* and instruct the children to turn to page 45.

Explain to the children that they are to use pencils to connect the dots from 1 through 20 then trace over the pencil line with a black crayon. Next they should use crayons to color the picture.

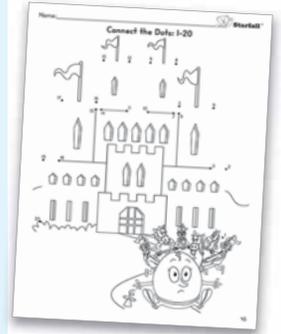
Optional: The children may use their math mats to reference the numbers 1-20.

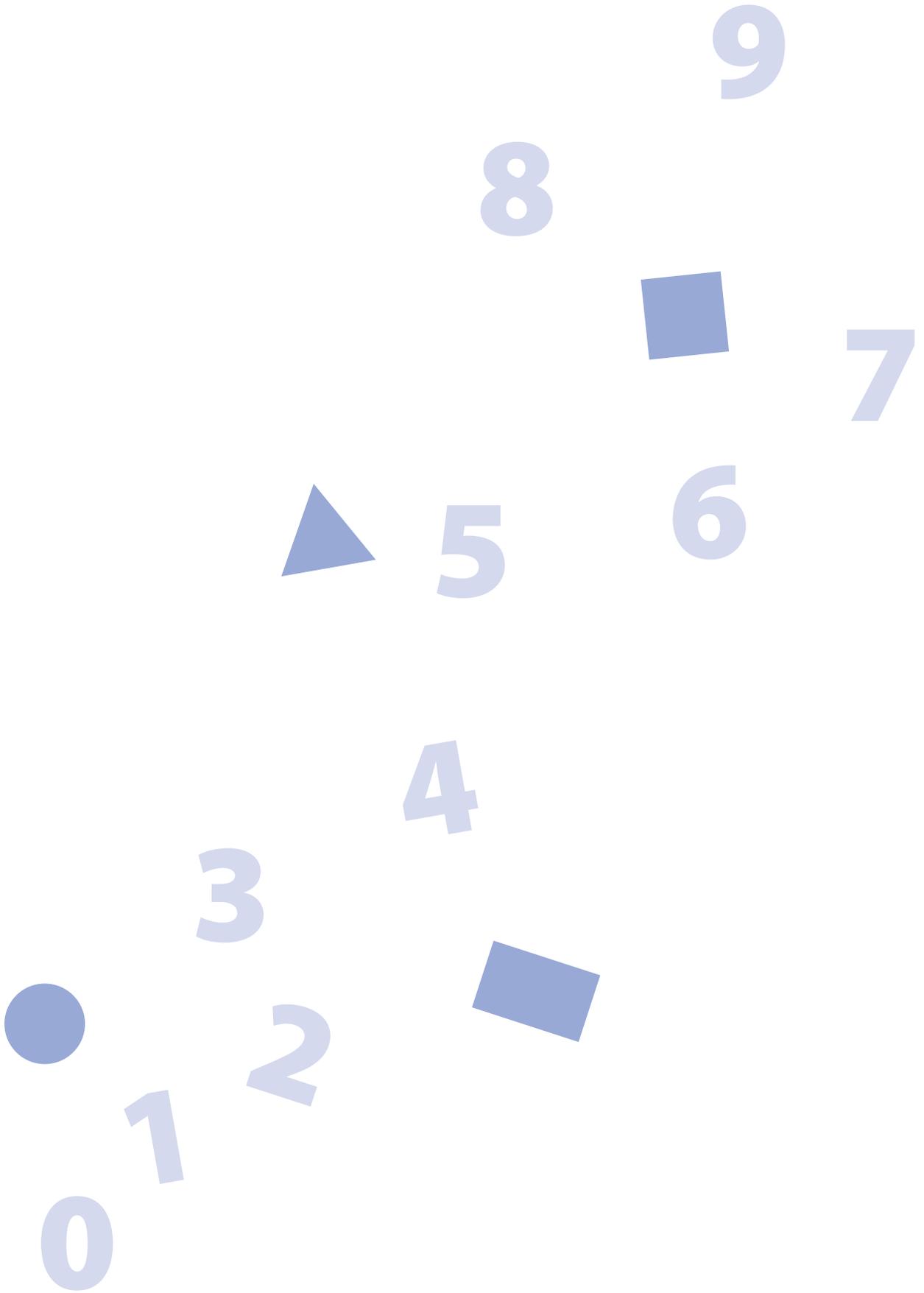
To perform this week's Summative Assessment, choose one of the children and show him or her the Number Cards 11-20 one at a time in random order. The child identifies the numbers. Record mastery on the Summative Assessment Checklist for Unit 5, Week 12. Repeat with each child in the group.

11	12	13	14	15
16	17	18	19	20

Materials

- Backpack Bear's Math Workbook #1*, page 45
- Number Cards 11-20
- Summative Assessment Checklist for Unit 5, Week 12
- Optional:** Math mats







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I Can Write My Numbers!

0 0 0 0 . .

1 1 1 1 . .

2 2 2 2 . .

3 3 3 3 . .

4 4 4 4 . .

5 5 5 5 . .

6 6 6 6 . .

7 7 7 7 . .

8 8 8 8 . .

9 9 9 9 . .

Teachers: Have children trace, and then write the numbers 0-9, starting at each large dot.