

3–5 Years

Mathematics: Number Knowledge

Note: Procedures are provided for individualized assessments of the following number skills: one-to-one counting and understanding the last number counted indicates how many (Week 13); recognizing and naming numerals (Week 22); and understanding the concept of “one more” (Week 27). Observation of a child’s progress in developing one or more of these skills can be used as a complement to assessment information or as an alternative to an assessment. See the Individualizing Children’s Learning Experiences section of the *ELM Curriculum User Guide: 3–5 Years*.

WHEN INTRODUCED AND EMPHASIZED: Weeks 1–3, 6–8, 11–13, 16–18, 21–23, 27–32, and 34–36

BEHAVIORS TO OBSERVE

- Understanding Small Numbers
- Comparing Quantities (including use of comparison words)
- One-to-One Counting
- Understanding that the Last Number Counted Indicates “How Many”
- Recognizing and Naming Numerals
- Understanding the Concept of “One More”

OBSERVATION OPPORTUNITIES

Understanding Small Numbers

What level of understanding of small numbers does the child demonstrate as he/she:

- identifies how many counters are hidden under a box without counting; counts how many counters there are after the box is removed from the counters (Week 1, Day 4 group activity)?
- matches ping-pong balls in a sensory table by number of dots on the balls (Week 2, Day 4 center activity)?
- makes groups of 2, 3, or 4 as he/she plays (any free play period after Week 3, Day 3)?
- identifies a group of 1–4 food items or milk cups on the table (any mealtime after Week 3, Day 3)?
- decides on a number of different facial features, counts that many items, and glues them to a monster face (Week 3, Day 4 group activity)?

Comparing Quantities (including use of comparison words)

In what ways does the child show emerging skill in comparing number quantities as he/she:

- compares quantities of toys or blocks while playing (any free play period after Week 3, Day 3)?
- compares quantities of dots on dominoes (Week 3, Day 4 center activity)?
- tells which die has more; tells which die has fewer (Week 6, Day 4 group activity)?
- clips a number of clothespins on the dot card equal to the number of dots on the card (Week 7, Day 2 center activity)?

One-to-One Counting

In what ways does the child show emerging skill in one-to-one counting as he/she:

- selects items according to how many are needed (any free play period after Week 7, Day 1)?
Examples: Child draws four circles, then counts out four markers and says "I am using four markers to color my four circles."; Child places three dolls at the table to eat and says "I need three plates for my three babies" and counts "one plate, two plates, three plates. Three plates and three babies."
- matches counters to the number of spots on each animal card (Week 8, Day 3 center activity)?
- matches the amount of pennies to the dots on the dot cards (Week 8, Day 4 group activity)?

Understanding the Last Number Counted Indicates "How Many"

In what ways does the child show an understanding of how to determine "how many" as he/she:

- determines how many children are present in the room (after Week 11, Day 1)?
- determines the total steps taken to reach the circle where the bean bag is located (Week 11, Day 2 center activity)?
- counts out the correct number of circles (Week 11, Day 4 group activity)?

Recognizing and Naming Numerals

How does the child demonstrate an emerging skill in identifying numerals as he/she:

- describes how two numerals look the same and different from each other; names numerals (Week 13, Day 3 group activity)?
- attaches the correct number of clothespins to each numeral card (Week 16, Day 2 center activity)?
- names numerals 0–8 posted around the classroom; names numerals 0-8 on the clock; writes numerals; (any free play period after Week 16, Day 4)? Example: Child points at clock on the wall and says "I see numbers on the clock. There is 1, 2, 3, 4, 5, 6, 7, and 8. I don't know what the other numbers are."

Understanding the Concept of “One More”

What level of understanding of “one more” does the child demonstrate as he/she:

- counts snack items and then determines what is “one more” (any mealtime after Week 21, Day 1)?
- places a beanbag on the number that is one more than the number he/she chose from the basket (Week 21, Day 4 group activity)?
- fills plastic cups with “one more” than the previous cup (Week 22, Day 4 center activity)?

FOLLOW-UP LEARNING SUPPORTS

Reinforce

The following activities are designed to support the ongoing development of number knowledge.

Understanding Small Numbers

- Encourage a child to make a group with a specified number of counters and describe how he/she knew that he/she had formed a group of the specified number.
- Encourage a child to count how many children are waiting for their turn to wash hands or go inside.
- Invite a child to count items as he/she plays with the items. Examples: Invite a child to count the number of blocks used to build a tower. Encourage a child to count the number of plates on a dramatic area table. Invite a child to count how many puppets were used in a puppet show.

Comparing Quantities (including use of comparison words)

- Encourage children to use comparison words at mealtimes. Examples: Invite a child to determine who has more snack/food items on their napkin or plate. Ask the child how he/she knew who has more. Invite a child to determine whether he/she has fewer food items than the child sitting next to him/her. Ask the child how he/she knew whether he/she had fewer. Encourage a child to look around the table and find someone who has an equal amount of a food item. Ask the child how he/she knew the amounts were equal.
- Encourage children to notice differences in quantities of items as they play. Ask questions, such as “Are there more trains on the train track or in the container?” “Are there fewer food items on the table or in the refrigerator?” “Who in our group has equal amounts of the same thing?”

One-to-One Counting

- Invite a child (vs. staff) to count objects during staff-initiated activities. Draw attention to how a child counts one object before moving to the next object.
- Encourage a child to count materials during free play time, or count children during transition times.

Understanding that the Last Number Counted Indicates “How Many”

- Invite a child to say what is one more than the number counted.
- Invite a child to set the table for a pretend meal for 3–4 people. Then explain that one more person is joining the meal and an additional set of eating items will need to be added to the table (cups, napkins, plates, utensils, etc.).

Recognizing and Naming Numerals

- Support children in making their own counting book. Write (or encourage the child to write) one numeral on each page of a child’s book and then draw as many objects or shapes as specified by the number.
- Provide numeral cards 1–10. Invite a child to place the numerals in order. For additional challenge, encourage a child to start at 10 and work to one.

Understanding the Concept of “One More”

- Provide the number list from Week 17, Day 4, a sticky note, and a spinner with numerals 1–2. Invite children to move the sticky note from one to 10, beginning at one. Encourage children to say “One more” (or “two more”) after the spinner stops and then says the number to which they move their sticky note number on the number line.
- For children who demonstrate strong understanding of “one more,” ask quantity questions about “two more.”

Reintroduce

The following activities are designed to support the development of number knowledge among children who seem to need additional support for understanding numbers and counting. These activities are also appropriate for all children.

Understanding Small Numbers

- Repeat the Week 1, Day 1 group activity to emphasize what it means to count and what a number is.
- Repeat the Week 1, Day 2 group activity to support children in counting materials used in an activity.
- During a snack or mealtime, help children count small numbers of food items on their napkin or plate, such as carrots or crackers.
- Repeat the Week 3, Day 2 group activity, offering a child the number of counters he/she can successfully identify without counting.
- Sing counting songs or say counting rhymes, while moving a counter or raising a finger as the numbers increase in the song or rhyme.

Comparing Quantities (including use of comparison words)

- Review the Week 3, Day 3 group activity to support children in making and comparing groups of items of interest to children.
- Repeat the Week 6, Day 4 group activity to help children understand the meaning of fewer.

One-to-One Counting

- Repeat the Week 7, Day 1 group activity to provide practice in counting.
- Repeat the Week 7, Day 3 group activity. As you lead children in counting, point to items on the pages of *Ten Little Fish* by Audrey Wood.
- During outdoor play, help children count a small number of items in a group, such as pebbles, leaves, or buckets in a sandbox.

Understanding That the Last Number Counted Indicates “How Many”

- Repeat the Week 11, Day 1 group activity and emphasize that the last number counted tells us how many we have.
- Repeat the Week 11, Day 2 group activity, again emphasizing that the last circle counted represents the total amount.
- During a snack or mealtime, support children in counting the number of food items and emphasize that the last number tells how many there are.

Recognizing and Naming Numerals

- Repeat the Week 13, Day 5 group activity to promote understanding of numerals 1–4.
- Repeat the Week 16, Day 5 group activity to promote understanding of numerals 5–8.
- Repeat the Week 17, Day 5 group activity to strengthen understanding of numerals 1–10.

Understanding the Concept of “One More”

- Repeat the Week 21, Day 1 group activity to promote the concept of “one more.”
- Read a counting book that starts at one and goes to five or 10. Encourage children to predict what number will be on the next page after reading a page about a given numeral. Remind children that the number that comes after a number is one more. Some book options include: *Butterfly Colors and Counting* by Jerry Pallotta, *We All Went on Safari* by Laurie Krebs, and *Octopuses One to Ten* by Ellen Jackson.