

Every Preschooler Counts: Counting Collections, Counting Centers, and Number Talks

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Which One Doesn't Belong www.woddb.ca

PreK Guidelines for Number and Operations

- V.A.1 Recognizes that things (or parts of things) can be counted
- V.A.2 Counting sequence to 30 (can start from a number other than one)
- V.A.3 Counts objects with one-to-one correspondence to 10
- V.A.4 Knows counting sequence is always the same, regardless of what is counted
- V.A.5 Knows last number said is the number in the set (cardinality)
- V.A.6 Knows items can be counted in any order
- V.A.7 Uses ordinal numbers (1st, 2nd, 3rd, etc.)
- V.A.8 Subitizes (know number in set without counting) up to five items
- V.A.9 Recognizes digits 0 to 9
- V.B.1 Verbalizes or uses objects to create word problems (adds up to 5)
- V.B.2 Verbalizes or uses objects to create word problems (subtracts from 5)
- V.B.3 Shares or divides up to 10 items equally

Components of Number Sense

1. An awareness of the relationship between number and quantity*
2. An understanding of number symbols, vocabulary, and meaning*
3. The ability to engage in systematic counting, including notions of cardinality and ordinality*
4. An awareness of magnitude and comparisons between different magnitudes
5. An understanding of different representations of number
6. Competence with simple mathematical operations
7. An awareness of number patterns including recognizing missing numbers

Counting Collections

<https://tedd.org/mathematics/>

Students work in pairs or small groups to count sets of small objects (cubes, flat sided marbles, gems, beads, craft sticks, elastic bands, erasers, etc.). If desired, they place groups of objects in a container (plastic cup, bowl, nacho tray) in subsets (2s, 5s, 10s) to make the count easier. Students can show/tell the teacher how they counted or record their count in writing/drawing using a recording sheet. As the teacher walks around, he/she can ask guiding questions and take notes using an anecdotal record sheet.

Guiding or Assessment Questions to Ask as Students Count

- Are students able to keep track of what is being counted? "How do you know which objects you've counted?"
- How are students keeping track? "How do you know which ones you've counted and which ones you haven't counted?"
- Are students working together? "It looks like the two of you are using different strategies. Do you have a plan for how you will add your totals together?"
- Are students beginning to group objects? If so, how? Do they combine groups to make larger groups? "Why did you decide to put these into ___ (cups of 5, 10, 50)"
- Can students count by 1s? 10s? 10s and 1s? "How many cups did it take to get to 50? If you made another cup, how many would you have?"
- What strategies are students using to count by sets? "What made this collection tricky to count?"

During the debrief, the teacher can have groups of students share strategies based on the mathematical or social goals that the teacher intended to highlight. These might include strategies for keeping track of how many we counted,

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strategies for grouping, strategies for counting sets of objects, compromising about a strategy, recording the count on paper, and so on.

Ordinal Number Activities

Disorderly School Day

If you typically post a schedule for the day (circle time, math, lunch, snack, specials, etc.) rearrange the order. Have students help you order the schedule. Emphasize the terms first, second, third, etc.

Ordinal Number Simon Says

Have children line up facing you. Establish which end of the line is the beginning (first position) and which is the end (e.g., tenth position). Give verbal commands such as, "Simon says, will the fourth person clap once." The children then determine who is the fourth child and he or she follows the command. It helps if the line is curved just a bit so that all of the children can see one another.

Old MacDonald's Ordinal Animals

Listen to a recording of "Old MacDonald Had a Farm" and order the animals according to the sequence presented in the song. You may use stuffed animals or pictures of animals. Label each animal with a word card indicating its ordinal position. For example, the cow was first, the sheep second, and so on. Practice the sequence from memory without the recording.

Facilitating Recognition of Digits 0-9

1. Post digits in the writing center so children may include them in their writing.
2. Number children's cubbies. Each cubby is probably already labeled with a child's name and photo, but adding a number gives children another opportunity to recognize the digits.
3. Make writing numerals meaningful such as in an address in the post office center or on a shopping list in the grocery center.
4. Play games that match the digit to the number of objects.
5. Use dice with digits along with dots.
6. Counting Collections two times a week can do wonders!

Tips for Teaching Counting

1. Capitalize on real-life counting situations ("Do we have enough snacks? Let's put a cracker on each napkin and count.")
2. Incorporate counting into transitions ("How long will it take us to clean up the blocks? Let's count." "Let's count to thirty while we wash our hands.")
3. Sing counting songs throughout the day ("One little, two little, three little children.")
4. Reinforce cardinality by saying, "So, how many do you have?" when children finish counting a set. You may also ask another child to tell how many without re-counting.
5. Use ordinal numbers to describe where children are in line. ("Joey is first. Mei is second. Who is third?")
6. Counting during whole-group activities such as calendar are not enough for children to become competent counters. Use centers and small-group instruction to help children get their hands and minds on counting. Create counting centers that are engaging and based on developmentally appropriate practice not just focused on "school skills" like writing numbers. Use the activities ideas in this handout to get started.
7. Read a variety of counting books. Stock the reading corner with counting books and manipulatives. Some picture books show so many details on a page that it can be hard to keep track of what has been counted. Encourage children to place a block on a picture to indicate that it's been counted.
8. Talk about math in a positive way! Encourage children to be curious and try to make sense of the mathematical world. Describe problem solving and reasoning approaches to everyday problems. ("I wonder if all of the blocks will fit in this tub. That is really a math problem, isn't it? Let's see if we can figure it out.")
9. Pump up the counting in permanent centers. For example, put up a little sign that says, "How many red pom poms can you find hidden in the sensory table?"

10. Keep the pan balance out—all the time. In addition to comparing weights, the balance is great for building ideas about number and equality (“Two baby bears are equal to one papa bear.” “This side has 3 cubes. This side has 7 cubes. What do we have to do to make the balance equal?”)
11. Use numbers and counting to communicate mathematical ideas. (“How much time until snack? How many kids in our class like chocolate ice cream better than vanilla?”)
12. Encourage children to write numbers in context of play such as in the dramatics play center’s grocery store, bank, or shoe store.
13. Pose counting problems at other centers. (“How many scoops of sand will it take to fill the can? Do you think the jar will hold more or less sand than the can?”)
14. Plan intentional counting activities and games like those in today’s workshop.

Counting Games and Centers

Block Towers

Materials: blocks, die

Instructions: Children roll a die and place that many blocks on their tower. They notice that some blocks are better suited to building than others (the pointy cone, for example). When the tower inevitably topples over, the children say, “Oh, well” in a sing-song voice and start over.

Snowball Hunt

Materials: twelve cotton balls, egg carton with the egg cups numbered from 1 to 12

Instructions: Hide the cotton-ball “snowballs” around the room. Give child an empty egg carton. Let the children walk around the room looking for the hidden “snowballs.” Encourage them to fill the egg cups in order from 1 to 12. The child can then hide the snowballs for the next student.

Pizza, Pizza

Materials: paper plates, red construction paper cut into circles (to represent pepperoni), index cards numbered from 0-9, glue

Instructions: Children draw a card and create a pizza with the number of pepperoni slices as shown on the card by gluing the construction paper circles (pepperoni) to the pizza (paper plate). Children glue the numbered index card to the back of the paper plate. (This can also be done with English muffins and real pepperoni.)

Trains to Twelve

Materials: ruler, 1” tiles, die labeled 0, 1, 2

Instructions: Partners take turns rolling die and adding that number of tiles along ruler. The partner who reaches 12 first wins. Then play Trains to Zero and remove tiles until all are gone. Who wins the removing tiles game more easily? Why is this?

Linker Cubes Friends of 10

Materials: linker cubes, name tags numbered 0-10 (you may need multiple sets)

Instructions: With students, make a stick of ten cubes then set it on front table. Give each child a name tag with a number 0-10. Students makes stick to match their number then walk around room and find partner whose number plus theirs sums to 10. Students double check by comparing their stick to the stick on the front table.

The Disappearing Train

Materials: 20 cubes, die

Instructions: Build a train 20 cubes long. Players take turns rolling the die and removing that number of cubes from the train until there are no cubes left. The player who has the most cubes in their pile is the winner.

The Disappearing Train

Materials: 20 linker cubes, die

Instructions: With a partner build a train 20 cubes long. Take turns rolling the die and removing that number of cubes from the train. The person who removes the last cube is the winner.

Wrapping Paper Sets

Materials: wrapping paper scraps, markers

Instructions: Have children circle sets of two objects, such as two teddy bears, two presents, or two balloons—whatever pattern is found on the wrapping paper. Next time, have students circle sets of three, four, or five.

Number Talks

What is a Number Talk?

- A short, ongoing daily routine (5-10 minutes) that provides students with meaningful practice with number
- Students find relationships between numbers (number composition/decomposition) & operations (+ and -)
- Learn to communicate mathematically as they express and clarify their thinking
- Use tools such as Rekenreks, ten frames, dot cards, and counting books

Talk Moves to Facilitate Number Talk Discussions with Preschoolers

- Who would like to share their thinking?
- Who did it another way?
- How many people solved it the same way as Knox? (use “me too” hand signal)
- Does anyone have any questions for Knox?
- Knox, can you tell us where you got that 5?
- Who can tell us in their own words what Knox just said?
- What was the first thing your eyes saw, or your brain did?
- I think what you are saying is _____. Is that right?

Number Talks with a Hundred Chart (my favorite type is pocket chart style)

1. Leave a number out and have students identify it and tell how they know.
2. Mix up the cards and have children “fix the chart” and tell how they know.
3. Play Mystery Number. “I’m thinking of a number greater than 5 but less than 10.” Children turn over the number cards it could be.
4. Ask the children to complete a row or column on the chart. (The column one is tough!)
5. Play One More/Two More and One Less/Two Less games.
6. Struggles with teens? Build chart to 20. Flip teens to red side. Ask what patterns they see. Talk about how teens are “ten and some more.” Remove teens and have students build them by following patterns they see down the columns.

A Few Favorite Counting Books to Use with Number Talks

- *1 Smile, 10 Toes* by Nelleke Verhoeff
- *10 on a Train* by John O’Leary
- *1, 2, 3* by William Wegman
- *Mis Numeros* by Rebecca Emberley
- *There was an Old Lady Who Swallowed a Fly* by various
- *1 2 3: A Child’s First Counting Book* by Alison Jay
- *How Do Dinosaurs Count to Ten?* By Jane Yolen and Mark Teague
- *My Very First Book of Numbers* by Eric Carle
- *10 Little Ladybugs* by Melanie Gerth
- *Soup Day* by Melissa Iwai

Other Tips for Sharing Counting Books

1. Read the book all the way through as the author intended to enjoy the cadence, rhyme, and/or story.
2. Ask students if they noticed anything special about the book. It had a lot of numbers!
3. Place the book in a math center with a bucket of cubes. Students can count the items on each page by placing a cube on each item.