

# Five-minute strategies to increase early number sense with struggling primary learners

**\*\*Activities can be used with the whole class, small groups, or in partners.**

## Dot Cards

1. **Use as Flash Cards:** Start with low numbers and add higher number cards as skill is developed. Ask, “How do you see them?”
2. **Counter Matching:** Student selects a dot card and counts out the number of counters to match.
3. **Number Matching:** Match dot cards to number cards. Try to do without counting.
4. **Matching:** Roll a number cube and have students match to a dot card. Try to do without counting.
5. **Ordering:** Put dot cards in order (least to most, most to least). Try to do without counting.
6. **Game of War:** Each student has a pile of dot cards and flips the top over. The student who has the greatest number wins the cards. Continue until one person has all of the cards.
7. **Memory Match:** Put a set of 20 dot cards upside down and have students find number matches.
8. **The “I Need” Game:** Teacher holds up a 5-dot card and says, “I need 7.” Students have to figure out how many more dots are needed to make the number. Then teacher shows the 7-dot card. Can also do for “I need less.”
9. **One-to-One Matching:** Have student put counters on each dot. Count how many. Move counters around. Ask, “Which has more?” Try with different dot cards.

## Base Ten Blocks

10. **Grab and Count:** Put some ten rods and units in a bag. Have student grab a handful and count using tens and ones. To extend, have students write the number or pick the number from a set of cards.

## Five- and Ten-Frame Activities

**\*\*The ten-frame activities can be modified to use with five frames to introduce students to frames.**

**\*\*\*Can increase the level of difficulty by adding more than one ten frame for each activity.**

11. **Fill the Frame:** Hand out blank 10-frames to each student. Teacher says, “Show me 5.” Students fill in five counters. Repeat with randomly called numbers. Look for students adding and subtracting counters instead of removing all counters each time. Goals are to recognize that top row is always five and to add on and take away.
12. **Flash Cards:** Use ten frames filled in with different numbers of dots. Use more than one ten frame per page to do larger numbers.
13. **Matching:** Roll one or two number cubes and have students find ten frame cards that match number/sum rolled.
14. **Game of War:** Each student has a pile of ten frame cards and flips the top card over. Then they say their number. The student who has the greatest number wins the cards. Continue until one person has all of the cards.

15. **Memory Match:** Put a set of 20 ten-frame cards (2 cards for each number) upside down and have students find matches.
16. **Go Fish Partner Game:** Need 2 sets of 10 frames. Deal 4 cards each (the rest go in a pile face down). Student asks partner for a match for one of the cards. If no match, student picks one up from the pile. Matched sets go on the table face up. (Extension: ask for a card that will add to yours to make 10)
17. **Sum Time:** Show 2 filled-in ten frames (of a variety of numbers) and have students add to find sum. Encourage students to group numbers in 5s or 10s.

## Connecting Cubes

18. **Stacking Cubes 1:** Give 10 cubes per student. Say, “Stack 4.” Then ask for students to “show 6.” Continue on with random numbers.
19. **Stacking Cubes 2:** Give 10 cubes per student. Say, “Stack two more than five.” Continue with asking students to stack more or less cubes. Ask, “How many do you have?”
20. **Tower Build:** Roll 1 or 2 number cubes. Build a tower of that number. Partner takes a turn. Continue until each has five towers. Now count number of cubes by making groups of friendly numbers (5/10). The student with the most cubes wins.
21. **Boxcar Mystery:** Player 1 makes a train with 5 or 10 cubes and hides train behind back. Then s/he snaps off cubes and shows Player 2 what is left. Player 2 has to guess how many cubes are hidden behind his/her back.

## Counters

22. **Learning Patterns:** Each student gets 10 counters. Show a dot card for 3 seconds. Say, “Using your counters, make the pattern you saw on the dot card.” Ask, “How many dots did you see? How did you see them?”
23. **Touch and Move:** Put a pile of counters (number depending on skill level) in front of student. Model how to touch and count counter, and move it away once counted. Teacher points, counts and moves, “1, 2, 3, 4. There are 4.”
24. **Hide and Count:** Player 1 (or Teacher) hides 3 counters under a paper or box and puts 4 out, and then says, “There are 3 counters under the paper. How many are there altogether?”
25. **Comparing:** Put out 2 different kinds of counters. Ask, “Is there enough of A for B?” Try with exact and non-exact numbers.
26. **Catch the Mistake and Make it Right:** Player 1 (or Teacher) miscounts counters (e.g., double counting, missing numbers). Player 2 has to find the mistake.
27. **What’s Missing?:** Materials needed are 10 counters and 1 paper cup. Player 1 turns around while Player 2 hides some counters under the cup. Player 2 counts the remaining counters and says how many are under the cup.
28. **Target Game Recording:** Choose a target number between 10 and 25 (e.g., choose a card from a pile of number cards). Each student reaches into a collection of counters and tries to grab the same number as the target number. Student counts the counters and states whether they have too many or too few.
29. **How Many?:** Put a handful of counters in a bag. Have a student pull out some and count. Partner covers counters and asks, “How many?” No re-counting.
30. **Who Has More?:** Put counters in a bag. Have one student pull out some counters and count. Repeat with partner. Who has more? How do we know?
31. **Counting On:** Show two distinct sets of counters (e.g., 5 and 3) Teacher says, “We know there are 5 here so we don’t need to count them. Five (sweep hand under counters), six, seven, eight.”

32. **Sets of More/Less/Same:** Show a number card. Have students use counters to make sets of more, less and the same. Have them explain how they know.
33. **Number Conservation:** Make 2 rows of the same number of counters but spread one out (so it is longer). Have student count and say which row has more. Ask, “How do you know?” Try this with different sized counters. Does the student recognize that size doesn’t matter?
34. **Cardinality:** Teacher verbally confirms the last number of student’s counting. (e.g., Student counts, “1, 2, 3, 4, 5.” Teacher says, “You have 5 counters.”).
35. **Count to Answer “How Many?”:** Show up to 20 counters in different arrangements so each time the student counts, they look different. Have student count the number of objects. To extend, have students point to the number on a hundreds chart or write the number themselves.
36. **Who Has More?:** Student 1 grabs a handful of counters and Student 2 does the same. Ask, “Are your sets the same or different? How do you know?” Then have students arrange counters to compare (e.g., lines). Have students count to confirm.
37. **Who has more? Part 2:** Player 1 chooses a number card from a pile of cards with numbers 1-10 and counts out that many counters. Player 2 does the same. Ask, “Who has more? How do you know?” To extend, use greater numbers on cards or different sized counters.
38. **Make It Fair:** Put an even number of counters in a bag. Have a pair of students “share” out the counters so it is fair. Ask, “How do you know?” To extend, use an odd number of counters.
39. **How Many Altogether?:** Divided plates and a bag of mixed counters. Have students count how many altogether. Do they understand that even though the counters are different (e.g., size, colour), they have to count all of them?

### Verbal Activities

40. **Rote Counting:** To 5, 10, 20, etc.
41. **Counting On:** At a number greater than one.
42. **Counting back:** Starting at different numbers.
43. **Skip counting:** By 2s, 5s, 10s (also with using 100s chart, number lines).
44. **Counting Game:** Write the numbers 1-20 on index cards. Shuffle. Have a student choose a number card. Have students count on from that number to 20 (or higher). (e.g., If a 14 is turned, start counting at 15). Variations: Skip count, count backwards, start at one and count up to the number turned over.

### Kinesthetic Activities

45. Hundreds carpet (e.g., *The Learning Carpet*®).
46. Walk on number line.
47. Hopscotch.
48. Clapping, patting, snapping while counting on or back.
49. Jumping jacks.
50. Counting while matching students to chairs (student sits).

### Number Lines

51. Start at a number (e.g., chosen from a pile of number cards) and count onto a number. Or count back.

## Hundreds Chart

\*\*Start with number appropriate to level (e.g., 10, 20, 50)

52. **Find the Number:** Need counters to cover numbers. Teacher gives clues (e.g., 3 tens and 6 ones, two more than 24) and students cover the answer.
53. **Mix Up:** Teacher mixes up some of the numbers/cards on a hundreds chart and asks students to find and fix.
54. **What's Missing?:** Teacher leaves out numbers on the chart. Have students fill them in.
55. **Before and After:** Leave out columns. Ask what number comes before/after --?
56. **Secret Number:** Teacher thinks of a number between 1-20 (differentiate depending on level). Students ask questions that can be answered with yes or no, to eliminate numbers.
57. **Counting:** Count on and back from different places on the hundreds chart or by skip counting.

## Rekenrek

58. **Show Me a Number:** Call out a number from 1-20 and have students move the beads to the left side. For the next number, can the students add/subtract to the numbers on the left side?
59. **Show Me More Than/Less Than a Target Number:** Ask, "What number did you make? How do you know it's more than/less than?"
60. **Roll and Show:** Roll number cubes and show the number/sum with the beads.

## Other Tools and Activities

61. **Fingers:** Learn to use 5 fingers as a benchmark (don't need to count).
62. **Bead Necklaces/Strings:** (alternate colours: groups of 2s, 5s, or 10s). Use as a number line.

## References

### Books

- Burns, Marilyn. *About Mathematics: A K-8 Resource, Second Edition*. 2000.
- Clements, Douglas H. and Sarama, Julie. *Learning and Teaching Early Math: The Learning Trajectories Approach*, 2009.
- Ontario Ministry of Education. *A Guide to Effective Instruction in Mathematics: Number Sense and Numeration*, 2003.
- Small, Marian. *Making Math Meaningful to Canadian Students, K-8*. 2009.
- Van de Walle, John. *Teaching Student-Centered Mathematics: Grades K-3*, 2006.

### Online

- Kara Kolson, Suzanne Mole, and Manuel Silva. *The Numeracy Project: Dot Card and Ten Frame Activities*. Winnipeg School Division, 2005-06.
- Gwen Dewar. *Preschool number activities*. 2008 -2013.