

## Early Number Sense and Counting (1-20)

1. **Count, count, count.** Anything can, and should, be counted! Count steps from the classroom to your tutoring location, children in the classroom, dots on dominoes, any physical objects available, pictures of objects on a page, etc. Once a set has been counted, help the student practice writing the number. *The objects don't need to be 'mixed up'. Encourage the student to move them as she counts, cross them out, arrange them in a nice pattern for counting, or whatever helps her be accurate.*
2. **Count forwards and backwards** to and from a given number to practice using numbers words in both directions. Start at a number other than 1 some times. For example you might ask the student to count from 1 to 6 and back again: 1, 2, 3, 4, 5, 6, 6, 5, 4, 3, 2, 1. Or from 3 to 7 and back: 3, 4, 5, 6, 7, 7, 6, 5, 4, 3. *Counting is not just about saying the words, but the student must be very familiar with the words. Make it fun by clapping/singing as you go or trying to do it as fast as possible.*
3. **Counting on.** Start with a set of counters. Cover some up with a card or piece of paper and leave the others showing. Tell the student how many are under the card, and ask how many there are in all. Your goal is to have the student start with the known number under the card and count on from there to get the total (rather than start counting at 1).
4. **Develop spatial relationships.** This is recognizing sets of objects in patterned arrangements and telling how many without counting. The dots on dice or dominoes are examples. Play dominoes. Be sure to have the student tell you how many dots on the ends he matches. After a while, he'll know how many without counting. Use dice to practice 'counting on' or simple addition by rolling a pair of dice and asking what numbers are showing, as well as for the total of the dots. *Make flash cards with dot patterns (Some are available here.). Show the student a card for 1-3 seconds and have him draw it and/or tell you how many dots. Talk about the pattern and his reasoning.*
5. **More, Less, Same.** A simple starter activity would be to show the student a set of counters and have her create a set that is more, a set that is less, and a set that is the same. Or, make two sets of objects and ask for the relationship between the sizes of the two sets. Play a version of the card game 'War': divide the cards evenly between the two players. (You may want to remove the face cards.) Players turn over one card each. The player whose card is more (or less) wins that round and keeps the cards. If there is a tie, the winner of the next round gets all four cards. At the end of the game, practice counting to see who has collected the most cards and wins. *Students have more real-life practice with the idea of 'more' and will probably do better with that question early on. 'Less' is harder for many to grasp. If the student says something like '9 is more than 3', point out to him that this means '3 is less than 9'. You'll notice more difficulty if the numbers are close together. Challenging variations: Make a 'more/less' spinner (or flip a coin) before each round of the game to decide whether more or less wins that round. Play 'Double War': turn over two cards and the winner is the one who has more total. Students should look for ways to figure out the winner without simply counting for the total. **Ordering** (three or more) sets from largest to smallest, or smallest to largest, is related. Practice this with cards, dot cards, small sets of counters, numbers, number words, etc. Older students should use the symbols **greater than (>), less than (<), and equal (=)**. *Notice the symbol points to the smaller #.**
6. **One and two more or less.** Play a game of dominoes where, instead of matching ends, a domino can be played if its end is one more than the end on the board (or one less, two more, two less). Make a matching game where the student matches a number to the number that is one more (or one less, two more, two less). *These relationships will be very important for addition, subtraction and many other math skills.*

7. **Ten-frames:** A  $2 \times 5$  array in which counters or dots are placed to illustrate numbers. *Very useful in seeing numbers and their relationships to 5 and 10.* Basic rules: Only one counter per space. Fill the top row first, starting from the left. When the top row is full, use the bottom row, beginning on the left again.
- Give the student a blank ten-frame (available here) and have him show a number on the ten-frame with counters. Repeat, repeat, repeat. Watch the student's reasoning develop. In the beginning, he may count every counter and/or remove all the counters and start completely over for each different number you call out. Eventually, he will probably use the row of five at the top without counting it and begin to remove/add pieces only as necessary. Don't pressure him. Do be sure to talk about his reasoning. *Visualizing numbers this way helps with counting on and back, basic subtraction and addition, and other concepts.* Once the student is comfortable with the ten-frame try to get him to tell you, before changing his ten-frame for the next number, how he needs to change it. For example, to go from 8 showing to the 6 you've just called for, you want him to say 'minus two'.
- Try ten-frame flash cards: hold up a ten-frame and have the student tell you the number represented; push for speed! Variations (depending on the skill level of the student): Have the student tell you the number of leftover spaces on the card. Have the student tell you the number one more than the number of dots showing (or one less, or two more/less). Have the student tell you a related ten fact such as 6 and 4 make 10 or 10 minus 6 is 4 left. *Some pre-made little ten frames are available here.*
- Begin the idea of making ten: Call out a number such as 8 and ask how many more are needed to make 10. The ten-frame provides a perfect visual for this.
- Relationships to 10, for numbers between 10 and 20:** Use two ten-frames to model this. For example, 16 is 10 and 6 more. So you would have a full ten frame and 6 in the second. You don't need to talk place value; just work on the realization that all the numbers from 10 to 20 are 10 and some more. Model a number, say 6, on a ten frame and then model 16 on a pair of ten frames. Ask questions about the number that is one more/less or two more/less than each number shown.
8. **Part-part-whole relationships:** *Important for number sense, addition, subtraction...*
- Build a number in parts: For younger children, start with 4 or 5. Have them show with counters all the different ways to make the number. For example, 5 is 4 and 1 more or 2 and 3, etc. Move onto larger numbers through 12. You want the parts to look different (stand out), so use counters of different colors or types, color squares of graph paper different colors, borrow multi-colored snap blocks from the teacher, count the total number of dots on a domino, etc.
- Play "I wish I had...": Here is how this might work: Give the student 4 counters and say I wish I had 6. Her job is to tell you how many more you need.
- Covered Parts: Let's say you are working on the number 8. Give the student 8 counters and cover them up. Now pull out into view all, some or none. Suppose you pull out 6. You want the child to think 6 and 2 is 8, so 2 must be hidden.
- Your ultimate goal is to have the child know not just the number 8, but the parts that make it up as well. There may be a lot of counting at first, but with practice these relationships become automatic. These skills will make addition and subtraction much easier.*
9. Learning about **doubles:** Help students learn to visualize doubles such as 5 and 5 or 3 and 3 with pictures (5 fingers on a hand, two hands; 3 legs on each side of a bug, etc). *This is needed for addition facts, multiplication facts, ...*
10. Add some **units:** 9 dollars is very different from 9 pennies. 9 elephants would be a lot heavier than 9 mice. 9 of your footsteps would probably take you farther than 9 of the student's footsteps.