Number Recognition and Counting

Introduction

Children in kindergarten through second grade are expected to accurately and efficiently count sets of objects as well as produce sets of a given number. To do so, they need to develop a variety of counting skills and concepts.

Besides playing math games with their children, parents can support their children's mathematical growth at this age by counting things! Encourage your children to count all kinds of collections. Count marbles, silverware, Cheerios, paper clips, pebbles, stairs, French fries in your next fast food order, steps from the back door to the front door, cans in the pantry, furniture legs in the house, red cars on the road, buttons on clothes, things you have to plug in—anything!

Count collections by 1s, 2s, 5s, and 10s. Did the answer come out the same no matter how you counted it? This may seem obvious to adults, but to a child, it is a concept that needs to be learned.

These activities will provide children with rich opportunities to practice oral counting, develop more efficient counting strategies, group objects in strategic ways, and record numbers. The games will also give children chances to represent their thinking, which means they can talk about and use symbols or pictures to explain the mental methods they have used. This is important because adults can gain insight into what that child knows, understands, and is able to do.

Counting is one of the best ways to help children build number sense. Children need many experiences with counting to learn which number comes next, how this number sequence is related to the objects they are counting, and how to keep track of which ones have been counted and which still need to be counted.

Experience with counting provides a solid foundation for future experiences with addition, subtraction, multiplication, and division.

Five

The goal of the game is to be the first player to get the cards for 1 through 5 and to order them from smallest to greatest.

Number recognition and Sequencing to 5
Variation: Number recognition and Sequencing to 10
Kindergarten: CCSS.K.CC.C.7
Grade 1

Two players

Materials

- ten-frame cards 1–5, four of each,
  or the same if using a standard deck

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How to play

The cards are shuffled and each player gets five cards. The remaining cards are placed facedown in a stack. The top card is turned over to create a discard pile.

Player 1 takes the top card from the facedown stack or discard pile, fitting it into her hand. Player 1 then discards one card.

Player 2 proceeds in the same manner.

Players alternate turns until one player has cards for 1 through 5. That player shows the other player his hand. The cards must be in order with 1 on the left and 5 on the right.

Questions

- What numbers don't you need because you already have them?

- What number(s) are you looking for?

- Would the number you need come before the _____ or after the_____?

- Is _____ less than_____ or more than _____?

Variation: The game is played in the same manner but the cards 1 to 10 are used and each player gets ten cards. The object of the game is to be the first player to get the cards 1 through 10 and to order them from the smallest to greatest

Cover Up!

The goal of this game is to be the first player to put a counter on all six numbers.

Number recognition to 6
Kindergarten

Variation 1: Number recognition to 10
Kindergarten: CCSS.K.CC.C.7
Grade 1

Variation 2: Addition to 12
Grade 1: CCSS.OA.C.6
Grade 2: CCSS.OA.B.2

Two players

Materials

- one die
- paper
- pencils
- six counters for each player
- 1–6 number line for each player

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1	2	3	4	5	6

How to play

Player 1 rolls the die and puts a counter on that number on her number line.

Player 2 rolls the die and proceeds in the same manner.

If a player rolls a number that already has a counter on it, that player loses a turn.

The first player to cover 1 to 6 on the number line wins the game.

This game seems simple, but it helps young children recognize the dots on the die. When they begin, they may need to count the dots each time, but they will soon learn what number the dots represent without counting. The game also helps children learn to connect the counted number of dots to the numeral.

Variation 1: The game is the same but ten-frame cards 1 to 10, four of each, are used along with a 1 to 10 number line for each player.

1	2	3	4	5	6	7	8	9	10

Variation 2: In this variation, simple addition is required before placing a counter on a number. Two dice are rolled, and the numbers added. The counter is placed on the resulting sum. Each player uses a 1 to 12 number line.

1	2	3	4	5	6	7	8	9	10	11	12

After the children have played this game several times, ask them why no one was able to cover the 1 when using two dice. How can they solve that problem?

As children become proficient at playing Variation 2, have them record their rolls for each turn on a sheet of paper (see the sample below).

Turn 1	3 + 6 = 9
Turn 2	4 + 2 = 6
Turn 3	5 + 1 = 6
Turn 4	4 +5 = 9
Turn 5	1 + 1 = 2
Turn 6	6 + 6 = 12

Questions

- What are all the different number combinations you found that equaled the same sum? (For example, what different number combinations equaled 9 [3 + 6, 4 + 5, and so on]?)

- Were there any sums that had fewer possible combinations?

Twins

The goal of this game is to find as many "twins" (two 3s, for example) as possible.

Number recognition to 6
Variation: Number recognition to 10
Kindergarten
Grade 1

Two players

Materials

- ten-frame cards 0–6, four of each,
  or a standard deck 1–6, four of each

- one die

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How to play

The cards are shuffled and placed facedown in a stack. Player 1 rolls the die and takes that number of cards from the facedown stack.

Example
Player 1 rolls a 4 and takes four cards from the stack.

If Player 1 has a set of twins, he lays the twins faceup and tells the other player what he has, for instance, "I have two sixes."

Player 2 proceeds in the same manner.

Players alternate turns until all the cards from the facedown stack are depleted.

The player with the most sets of twins is the winner.

Because number recognition is the goal of this game, children must verbalize the name of the number they are laying down. If you know that the child already knows the number names, then this is unnecessary.

Variation: The game is played in the same way, but ten-frame cards 0 to 10, four of each, are used.

Questions

- What numbers do you already have?

- What numbers do you need?

Twins Concentration

The goal of this game is to find like-numbered cards; for example, two 4s.

Number recognition to 10
Kindergarten
Grade 1
Grade 2

Two players

Materials

- ten-frame cards 0–10, two of each,
  or a standard deck 1–10, two of each

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How to play

The cards are shuffled and placed facedown in a grid of four rows with five cards in each row and a last row of only two cards if using ten-frame cards.

Player 1 turns over any two cards, keeping them in place. If they are the same number, Player 1 tells Player 2 what the number is, for example, "I have two 4s," and then keeps the pair. If they are not the same number, Player 1 still verbalizes the numbers, but then turns the two cards back over.

Many games allow the player who finds a pair to immediately take another turn. I have discovered that this is not an effective strategy for keeping both players engaged. Make sure that players keep rotating turns.

Player 2 proceeds in the same manner.

Players alternate turns until no cards remain in the grid. Players then count their cards, and the player with the most cards wins.

Make sure that the cards stay in a fairly orderly grid. If the players turn over a card and leave it in exactly the same spot, it is easier to find a card that has been previously turned over. Children will often pick the card up as they turn it over and then put it back down in a different space. This leads to confusion.

Question

- You just turned over a _____. Where did you just see another _____?

Speed

The goal of the game is to sort the cards by number and order them from least to greatest.

Number recognition	**Sequencing numbers from 1 to 10**
Kindergarten	Kindergarten: CCSS.K.CC.C.7
	Grade 1
	Grade 2

One or more players

Materials

- deck of ten-frame cards for each player

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How to play

The players shuffle their cards and place them faceup in a pile. The parent or teacher says go, and players sort their deck into piles according to number. When done, the stacks must be put into consecutive order from 1 on the left to 10 on the right.

The first player to sort all their cards correctly wins. All other players must complete the sorting and ordering of their cards.

Play this game over and over. Usually children begin by using very inefficient strategies. For instance, it is not uncommon for a child to spend a great deal of time hunting for all the 6s, then all the 2s, and so forth. As they continue to play, they begin to realize that there just might be a faster, more efficient way to accomplish the task. Encourage them to play this game with other children if possible. In observing the strategies of other children, they begin to notice and develop more efficient ways to sort.

Be careful not to tell them what to do. If they continue to use inefficient strategies to sort their cards, that's acceptable as long as they are gaining familiarity with the numbers and are able to sort them more quickly each time.

Questions

- Is there another way to sort the cards? Why don't you give it a try? Was it easier or faster?

Fifteen

This is a counting and strategy game. The goal of the game is to force the other player to take the last (fifteenth) counter.

Counting
Kindergarten
Grade 1
Grade 2

Two players

Materials

- fifteen counters

How to play

All the *counters* are placed between the two players. Players take turns removing only one, two, or three of the counters at a time.

Example
Player 1 chooses to take three counters. Player 2 chooses to take two.

The winner is the player who forces the other player to take the last (fifteenth) counter.

Variation 1: The game is played in the same manner, but the winner is the player who takes the last counter.

Variation 2: The object of the game remains the same, but any number of counters can be used.

This game encourages children to think ahead and develop strategies.

Questions

- Did you find any strategies that helped you win this game?
- Can you find a pattern you can use to make sure that you always win?

Exactly 20

The object of the game is to reach 20 exactly.

Number recognition and Counting
Kindergarten
Grade 1
Grade 2

Two players

Materials

- one die
- one game piece for each player
- 0–20 number line for each player

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0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

How to play

Each player puts his game piece on 0. Player 1 rolls the die and moves her game piece the number of spaces rolled, and says to the other player, "I landed on___." Player 2 rolls the die and proceeds in the same manner.

Players alternate turns.

If a player is getting close to 20 but cannot land exactly on 20, he or she must go back the number of spaces rolled on the die.

Example
Player 1 is on 18 and rolls a 4. Since a player must land on 20 to win, the 4 is too big a number, so instead of going forward, Player 1 must go back four spaces to 14.

Play continues until one player is able to land exactly on 20.

Because number recognition is one of the goals, it is important that children verbalize the number they have landed on each time they take a turn.

Questions

- As the children get closer to 20, here are some questions to ask:
- What do you need to roll to get to 20 exactly?

- Which numbers would be helpful but not get you all the way there?

- Which numbers would not be helpful because they would be too much?

- How likely is it that you will roll the ___ that you need?

Variation: Play the game until a player reaches 20 exactly; then reverse the goal to land exactly on 0.

Putting Pennies on the Plate

The goal of this game is to have the most pennies in the plate after five rolls of the die.

Number recognition and Counting to 30
Variation 1: Number recognition and Counting to 30
Variation 2: Number recognition and Counting to 60
Kindergarten: CCSS.K.CC.B.4a
CCSS.K.CC.B.5

Variation 3: Addition to 12	**Variation 4: Subtraction**
Kindergarten: CCSSK.OA.A.1	Kindergarten: CCSS.K.OA.A.1
Grade 1: CCSS.1.OA.C.6	Grade 1: CCSS.1.OA.A.1
Grade 2: CCSS.2.OA.B.2	Grade 2: CCSS.2.OA.B.2

Two players

Materials

- one die
- tub of pennies or other counters (at least 60)
- paper plate for each player
- pencils

How to play

Player 1 rolls the die, takes that number of pennies from the tub, and puts them on her plate. Player 2 checks to make sure Player 1 has counted correctly, and then rolls the die. Play proceeds in the same manner.

Players alternate turns until all players have had five turns. They then count their pennies. The player who has the most pennies is the winner.

It's important that children learn to count collections, such as the pennies, in different ways. Count them by ones, twos, threes, fives, and tens. Young children may not realize that the total should be the same no matter how it is counted. Ask them if the total number of pennies was the same or different when counted in particular ways. Many experiences with counting all kinds of things will lead children to the correct conclusion.

Questions

- If your goal is to have the greatest amount of pennies, which numbers do you want to roll?
- Will the same be true if you want the least amount of pennies?

Variation 1: The game is played in the same manner, but the winner is the player with the least number of pennies.

Variation 2: The game is the same, but each player takes ten turns.

Variation: 3 The object of the game is the same, but simple addition is required before taking any pennies. Two dice are used, and the numbers added together. The player takes the resulting sum of pennies.

With first and second graders, you might wish to have them record the equations generated by their turns on a sheet of paper.

Turn 1	2 + 4 = 6
Turn 2	6 + 3 =9
Turn 3	2 + 1 = 3
Turn 4	5 + 2 = 7
Turn 5	1 + 4 = 5

Variation 4: This game introduces the concept of subtraction with its goal of getting to 0 by taking pennies from the plate. Fifty (or any number chosen) pennies are placed on a plate. Players roll the die and remove (subtract) pennies from the plate. The first player to take away all the pennies, reaching 0, is the winner.

As you use this variation, be sure to use the words *subtract* and *take away* interchangeably. This will begin to cement an important mathematical term and its meaning in children's minds. Get to the point where *subtract* is the only word you use.

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1 to 30 Bingo

The goal of this game is to get four counters in a vertical, horizontal, or diagonal row.

Number recognition
Kindergarten
Grade 1
Sequencing numbers from 1 to 10
Kindergarten: CCSS.K.CC.C.7
Grade 1
Grade 2

Two players

Materials

- counters for each player
- 1 to 30 Bingo game board for each player
- number cards for teacher or parent
  (Cut apart one bingo board for cards.)

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13	2	7	25	18
9	22	15	4	30
19	6	24	17	10
1	20	27	8	16
12	3	26	14	29
5	11	21	28	23

This game is intended to be noncompetitive, so only one bingo board is needed. Allow the children to work together to find particular numbers. You will quickly discover which children need to play this game more than once.

How to play

The teacher or parent shuffles the cards and pulls one out. She calls out the number and holds the card up so it can be seen.

Since many children are visual learners, they need to be able to hear and see the numbers.

Players cover the number called with a counter. The first player to get four in a vertical, horizontal, or diagonal row wins the game.

Keep in mind that some young children have a hard time recognizing a row that is made diagonally.

Questions

- Looking at the numbers you already have covered, what numbers are you hoping get called?

- What numbers would not be particularly helpful?