

Learning With Dice

Summary

The students will be able to represent whole numbers with objects, pictures and symbols; and develop their number sense with manipulatives, pictures and symbols.

Main Core Tie

Mathematics Grade 1

[Strand: NUMBER AND OPERATIONS IN BASE TEN \(1.NBT\) Standard 1.NBT.2](#)

Additional Core Ties

Mathematics Grade 1

[Strand: OPERATIONS AND ALGEBRAIC THINKING \(1.OA\) Standard 1.OA.1](#)

Mathematics Grade 1

[Strand: OPERATIONS AND ALGEBRAIC THINKING \(1.OA\) Standard 1.OA.5](#)

Mathematics Grade 1

[Strand: OPERATIONS AND ALGEBRAIC THINKING \(1.OA\) Standard 1.OA.6](#)

Mathematics Grade 1

[Strand: OPERATIONS AND ALGEBRAIC THINKING \(1.OA\) Standard 1.OA.7](#)

Materials

Lakeshore Number Grid

One hundred chart

Dice

Manipulatives

Books:

- *Mouse Count*
, by Ellen Stoll Walsh; ISBN: 9780152002237
- *Elevator Magic*
, by Stuart Murphy; ISBN: 9780064467094
- *Every Buddy Counts*
, by Stuart Murphy; ISBN: 9780064467087
- *Dinnertime!*
, by Sue Williams; ISBN: 9780152164713
- *Ten Sly Piranhas: A Counting Story in Reverse*
, by William Wise; ISBN: 9780142400746
- *Each Orange Had 8 Slices*
(A Counting Book), Paul Giganti, Jr.; ISBN: 9780688139858
- *One Hundred Hungry Ants*
, Elinor J. Pinczes; ISBN: 9780395971239
- *The Grapes of Math*
, by Greg Tang; ISBN: 9780439598408
- *Mission: Addition*
, by Loreen Leedy; ISBN: 9780823414123
- *M&Ms Count to One Hundred Book*
, Barbara Barbieri McGrath; ISBN: 9780439643931

- *Starry Arms: Counting by Fives*
 , Michael Dahl; ISBN: 9781404811249
- *Splash!*
 , by Ann Jonas; ISBN: 9780688152840
- *My Little Sister Ate One Hare*
 , by Bill Grossman; ISBN: 9780517885765

Organizations:

[National Council of Teachers of Mathematics](#), 1906 Association Drive, Reston, VA 201911502, 800 2357566

Background for Teachers

Number sense is critical to the development of a child's understanding of mathematics. A number can be an object, a picture, and a symbol. Number sense develops over time. Understanding how numbers relate and their characteristics is important. Children need a great deal of time to explore with manipulatives. Some manipulatives that are very useful are Unifix cubes, pattern blocks, two colored counters, transparent chips, centimeter cubes, place value blocks, dominoes, buttons, spinners, and dice. Time needs to be given to freely explore the manipulatives that you will have available. This will allow the children to get "the play out" so that they will be better able to focus on the math concepts when using the manipulatives. Usually one to two weeks is sufficient time for the children to freely explore. As the children explore, the teacher can be individually assessing the children on counting by memory, onetoone correspondence, instant recognition, numeral formation, and counting backwards.

When using manipulatives, there are two rules that the children need to follow: (1) Whatever you get out, you put away, and (2) Never throw manipulatives. Remember to have a specific place that the manipulatives are always returned to when the children are finished with them. Start out free exploration with only two or three of the different types of manipulatives.

According to Mary BarattaLorton, author of *Mathematics Their Way*, there are three levels of abstraction -- concept, connecting, and symbolic. At the concept level, children are building concrete models with manipulatives and using language to describe what they have created. At the connecting level the children are still building models, but they are now connecting written numbers that have been written down for them. At the symbolic level, the children write the numbers or equations to represent the concrete model.

Intended Learning Outcomes

1. Demonstrate a positive learning attitude.
2. Develop social skills and ethical responsibility.
5. Understand and use basic concepts and skills.
6. Communicate clearly in oral, artistic, written, and nonverbal forms.

Instructional Procedures

Content Connections:

Literacy Choose books from the school's leveled library that have a focus on number sense for small group instruction. Choose books that have a math focus for browsing books. Use time in the computer lab and have children compose number sentences that they will illustrate with clip art and/or using programs such as Kid Pix Deluxe 3X.

Invitation to Learn:

Tell the children that numbers often play an important part in books. Ask them if they have noticed that three is very important in fairy tales/folk tales. For example -- Goldilocks and the Three Bears, the Three Billy Goats Gruff, Rumpelstiltskin, and the Three Little Pigs. Of course, other numbers are also

important. Ask if they can tell you about any books in which numbers are important. Next, tell the children that you are going to read *Mouse Count*. Ask them to listen carefully for numbers in this story. Number plays an important part in this story and in our lives. Numbers surround us. All you have to do is look for them.

Instructional Procedures:

After finishing the book, ask the children, "Were numbers important to the story? Why?" Read the story a second time and use a number line as a model for the story. Ask the children, "Was the number line helpful in understanding the story?" Also, ask them, "How many mice did the snake catch the first time? The second time?" Point out to the children how the snake counted on when he placed mice into the jar. Tell the children that counting on is one way to count items more efficiently.

Give each child a die to roll. Have the children stand and then roll their die until they roll a three (this is the number of mice that the snake caught the first time in *Mouse Count*).

Once each child has rolled a three, he/she may sit in his/her seat.

Next, have them roll the die until they roll a four. Ask the children if there is a number that they seem to roll more often. Ask them how they might be able to figure this out.

Using the classroom number line as a focus, start at one and have the children roll their die.

What is the highest number the children think they can roll?

Lesson and Activity Time Schedule:

Reading and discussing the book *Mouse Count* and the discussion will take approximately 55 minutes.

Playing Snake takes about 15 minutes. Snake needs to be played a few times each time that it is played.

Playing Dice Advice takes about 15 minutes. It needs to be played a few times each time that it is played.

Activity Connected to Lesson:

Snake -- this is a wholeclass activity.

Use the [Snake blackline](#) (pdf) or pass out a fivecolumn folded piece of paper to each child. If you use a prefolded paper, have them write an S at the top of the first column, an N at the top of the second column, an A at the top of the third column, a K at the top of the fourth column, and an E in the last column.

The children stand up to begin the game. The teacher rolls the die. All the students record the number rolled in the S column with tally marks.

Tell the children that if they are standing and you roll a one, they lose all the points in that column.

Each child then has the choice to remain standing and continue the round or sit down and be finished with the round of rolls for S.

Play continues until a one is rolled.

When a one is rolled, those standing lose all of their points for that round. They place a large X on the column. Those who were sitting get to keep their points.

The next round begins for the N column with everyone standing. Play continues as before; if a child thinks that one will be rolled, he/she sits down for that round and totals his/her points.

Anyone standing when one is rolled gets zero points for that round and places a large X on the column.

Play a round for each letter in "snake." The winner is the child with the highest total points.

Example of a child's snake paper. First (for the s column) a three was rolled, and then a one was rolled. Next, all children stood and a four was rolled.

Extensions

Play Dice Advice. Each child is given a [Dice Advice strip](#) (pdf) and nine small manipulatives.

Have the children place their nine counters on any of the numbers.

Next the teacher rolls the pair of dice. She calls out the number on each of the die. The children add the numbers and call out the sum.

If a child has a manipulative with that sum, he/she remove it. If he/she has two manipulatives with the same number, he/she only removes one of them.

The first child to remove all nine of his/her manipulatives from the Dice Advice strip calls out "Dice Advice!" and the game is over. Play it again and again.

This is a problemsolving activity, which you will play later on in the year. Children should realize that some numbers seem to be rolled more often than others.

Family Connections:

Send home a copy of the Dice Advice strip for the children to play at home with their parents.

Assessment Plan

The teacher needs to observe how well the children recognize the dots on the die. Do they count them each time? Do they have instant recognition? The teacher should individually assess counting by memory, one to one correspondence, instant recognition, numeral formation, and counting backwards. Do the children seem to be using their prior knowledge of numbers to develop a deeper understanding of numbers?

Authors

[MARY LOU DAMJANOVICH](#)