

# Number Sense and Sensibility

## Summary

A variety of activities in this lesson help students develop "number sense", learning to recognize numbers around them.

## Main Core Tie

Mathematics Kindergarten

[Strand: COUNTING AND CARDINALITY \(K.CC\) Standard K.CC.4.](#)

## Additional Core Ties

Mathematics Kindergarten

[Strand: COUNTING AND CARDINALITY \(K.CC\) Standard K.CC.3.](#)

## Materials

### Invitation to Learn

- [My Number Walk Observation Sheet](#) pdf
- Numbers All Around Me
- Clipboard for each student
- Pencil for each student
- Chart Paper
- Markers

### Center 1: Number Roll and Color

- [Number Roll and Color Recording Sheet](#) pdf
- Colored Cube with Numbers 1-6 (red, yellow, blue, green)
- Crayons- Color of the Cubes (red, yellow, blue, green)
- Red Fine Point Marker

### Center 2: Ice Cube Tray and Beans

- Ice Cube Tray with Numbers
- Container of Beans

### Center 3: Stamp-A-Number

- [Stamp-A-Number Recording Sheet](#) pdf
- for each student
- Assorted Small Rubber Stamps
- Stamp Pad
- Red Fine Point Marker

### Center 4: The 0-10 Number Mat

- Number Mat
- 55 Manipulatives for each student- Different types/colors

### Center 5: Toss and Color

- Felt Square
- Velcro®
- Cellophane
- Small rubber bands
- [Toss and Color Recording Sheet](#) pdf
- Crayons

## Additional Resources

### Books

- *Numbers All around Me*  
 , by Trisha Callella-Jones; ISBN 1-57471-377-9
- *More Than One*  
 , by Miriam Schlein; ISBN 0-590-10734-8
- *10 for dinner*  
 , by Jo Ellen Bogart; ISBN 0-590-71949-1
- *Moja Means One*  
 , by Muriel Feelings; ISBN 0-14-054662-6
- *Emeka's Gift*  
 , by Ifeoma Onyefulu; ISBN 0-14-056500-0
- *Ten Cats Have Hats*  
 , by Jean Marzollo; ISBN 0-590-47056-6
- *City By Numbers*  
 , by Stephen T. Johnson; ISBN 0-14-056636-8
- *One, Two, Skip A Few! First Number Rhymes*  
 , Illustrated by Roberta Arenson; ISBN 0-439- 22786-0
- *A-Counting We Will Go*  
 , by Rozanne Lanczak Williams; ISBN 0-916119-93-9
- *Ten Black Dots*  
 , by Donald Crews; ISBN 0-688-13574-9
- *Who's Counting?*  
 , by Nancy Tafuri; ISBN 0-590-48904-6
- *Ten Little Rabbits*  
 , by Virginia Grossman and Sylvia Long; ISBN 0-8118-1057-7
- *Count!*  
 , by Denise Fleming; ISBN 0-8050-4252-0
- *Feast for 10*  
 , by Cathryn Falwell; ISBN 0395620376
- *The Icky Bug Counting Book*  
 , by Jerry Pallotta; ISBN 0881066907
- *The Gummy Candy Counting Book*  
 , by Amy and Richard Hutchings; ISBN 0-590-34127-8
- *Anno's Counting Book*  
 , by Mitsumasa Anno; ISBN 0690012888
- *Count and See*  
 , by Tana Hoban; ISBN 0-02-744800-2

#### Media

- *Math Circus*  
 , by Leap Frog ([www.leapfrog.com](http://www.leapfrog.com)); ISBN 0-7907-9948-0
- *Winnie the Pooh 123's*  
 , by Disney Learning Adventures; ISBN 0-788-4998-0

#### Articles

- *How I Boost My Students' Number Sense*  
 , by Marilyn Burns; *Instructor Magazine* April 1997
- *Number Sense Growth in Kindergarten: A Longitudinal Investigation of Children at Risk for Mathematics Difficulties*  
 , by Nancy C. Jordan, David Kaplan, Leslie Nabors Olah, and Maria N. Locumiak; *Child*

## Web sites

- <http://www.drmaggieallen.net>
- <http://www.mathsolutions.com>
- <http://www.mrspohlmeyerskinderpage.com/mathsense.html>
- <http://www.toddlerivillage.net>
- <http://www.littlegiraffes.com>
- <http://www.theteacherscorner.net/lesson-plans/math/numbersense/index.htm>
- [http://lessonplanz.com/Lesson\\_Plans/Mathematics/\\_Grades\\_K-2/index.shtml](http://lessonplanz.com/Lesson_Plans/Mathematics/_Grades_K-2/index.shtml)
- [http://www.kidport.com/GradeK/Math/NumberSense/MathK\\_Sequence.htm](http://www.kidport.com/GradeK/Math/NumberSense/MathK_Sequence.htm)
- <http://www.kidport.com/GradeK/Math/NumberSense/MathKNumbers.htm>
- <http://www.funbrain.com>

## Organizations

[National Council of Teachers of Mathematics](#), 1906 Association Drive, Reston, VA 20191-1502 (703) 620-9840

## Background for Teachers

What is number sense? Number sense is the ability to see the relationship between numbers and then understand how these numbers are used in our everyday lives. Number sense is at the core of all mathematics. Numbers are all around us! Students must have a way of organizing these numbers so that they are useful in their lives.

How do we teach number sense to our students? We must allow our students opportunities to explore numbers through hands-on activities and have them ask lots of questions! We must become their number coach and give them lots of practice manipulating objects and numbers. For numbers to become meaningful to students, we must engage them in the mathematical process.

## Intended Learning Outcomes

1. Demonstrate a positive learning attitude.
5. Understand and use basic concepts and skills.

## Instructional Procedures

### Invitation to Learn

Share the book *Numbers All Around*. Have students look around the classroom. Ask if they can see numbers. Tell them that there are numbers all around them. All they have to do is take a look and they will see that numbers are everywhere! Each student is given a clipboard with the *My Number Walk Observation sheet* attached. Students are asked to look around the classroom for numbers. They are asked to write down the numbers that they see and if possible draw a picture of the location of that number. Give the students about 15 minutes to make a quick sweep around the classroom looking for numbers. Gather the students together and ask them where they found numbers in the classroom. Make a chart with the class of all the places that they found numbers in the classroom. Post the chart and encourage the students to continue looking for numbers around the room. This chart may be brought out occasionally and other locations may be added to the chart. Upon completion of this activity the students are invited to go to number centers.

### Instructional Procedures

#### Center 1: Number Roll and Color

Procedure: Each student will need a *Number Roll and Color recording sheet*. Four different colored cubes are placed on the table. Each cube is numbered from 1-6. Crayons that match the colored cubes are also on the table. Each student picks up a cube and rolls it on the table. The student gets

the crayon that matches the color of the cube they have just rolled. On the recording sheet, they write the number that was rolled and they color in that number of squares to represent that number. This process continues by picking up a different colored cube and repeating the procedure until the recording sheet is complete. Numbers should be written correctly and the numbered squares should match the written number on each line. Students can use the red marker to correct their answers.

#### Center 2: Ice Cube Tray and Beans

Procedure: Each student will have an ice cube tray with numbers written in each section of the tray. A container of beans is available for the students in the middle of the table. The students fill each individual section of the ice cube tray with the number of beans specified in each individual section. Students should be asked to check the beans upon completion for accuracy.

#### Center 3: Stamp-A-Number

Procedure: Each student will receive a *Stamp-A-Number recording sheet*. The recording sheet is divided into different sections. A number is written inside each section of the recording sheet. Different types of small rubber stamps and stamp pads are located in the center of the table. Students are instructed in the procedure of how to use the stamp pads and the small rubber stamps. Students look at the numeral in each section and stamp that number of objects. The process is continued until the recording sheet is completed. Students are then encouraged to go back and count to make sure that they have the number correct. If students stamp too many objects, they are to cross out the incorrect stamps with a red marker.

#### Center 4: The 0-10 Number Mat

A number mat is made from a shower curtain. There are 11 circles drawn in a line on the shower curtain. Each circle is then numbered from 0-10 under the individual circles. In a container, there should be a different type of manipulative for each individual student (e.g. paperclips, cubes, bugs, tiles, chips, etc.).

Procedure: Each student counts out the manipulative that they have selected and places it on the circle with the appropriate number of objects. The student continues this process until they have completed the entire number mat from 0-10. The objects can be placed in any desired circle. This should help avoid a traffic jam at the mat. Students can stand on all sides of the mat. Upon completion, the group should count the manipulatives as a group to see if everyone counted correctly. The group can make changes if the number of manipulatives is incorrect. This process can be repeated by students clearing the number mat and choosing a new manipulative to place in specific boxes.

#### Center 5: Toss and Color

A large piece of felt (or several small pieces of felt hooked together) is divided into 11 sections and the numerals 0-10 are written in individual sections on the felt. Darts are made from a 4" by 4" piece of cellophane, 1 tsp. of popcorn kernels, a small rubber band to close the cellophane, and a small piece of Velcro®.

Procedure: The felt grid is put up on a wall with easy access for the students. Each student is given one dart for this activity. Students will take turns throwing their darts at the felt grid. After each student has thrown their dart, they will get the *Toss and Color recording sheet*. Students will then write the numeral that their dart landed on and color in that number of squares on the recording sheet. Students can use any color of crayon to represent the number on the recording sheet. This process is repeated until the *Toss and Color recording sheet* is completed.

#### Extensions

All students can use these centers. Adaptations in quantity of numbers can be adjusted to meet the specific needs of special needs students. You might want to keep the number from 0-5. These center activities should be taught to the whole group and then placed in a center for the students.

## Family Connections

Send home a *My Number Walk Observation Sheet* to be done at home.

Math Night- Parents would be invited to make the math activities for their homes.

## Assessment Plan

Student watching is the observation and recording of student's interactions during regular instructional activities. This can be recorded on small sticky notes or an [Observation Sheet](#) pdf.

Make notes about students that need to be pulled into a small group for extra help.

Ask probing questions to focus children's thinking when using manipulatives.

Have students share their thinking about the activities.

Collect the *Number Toss and Color*, *Stamp-a-Number*, and *Toss and Color* recording sheets.

This will give you time to make an in-depth assessment of the students number sense.

## Bibliography

### Research Basis

Sutton, J. & Krueger, A. (Eds.). (2002). *ED Thoughts: What we know about Mathematics teaching and learning*. Aurora, CO: Mid-continent Research for Education and Learning.

Mathematical learning in young children is strongly linked to sense perception and concrete experience. Children move toward an understanding of symbols, and eventually abstract concepts only after they have first experienced ideas on a concrete level.

All students need to approach the learning of mathematics by actively doing mathematics. Through the use of manipulatives, various senses are brought into play. When students can touch and move objects to make visual representation of mathematical concepts, different learning modalities are addressed.

Using manipulatives in combination with other instructional methods can enrich and deepen students' understanding. Appropriate use of concrete materials should be one component of a comprehensive mathematics education program.

Waite-Stupiansky, S., & Stupainsky, N.G. (1998). *Math in Action, Minds-On Math. Instructor*, Volume 108, Issue 3

Many math classrooms bustle with manipulative and hands-on activities, as they should. Yet busy hands don't always mean busy minds. We need to analyze what we ask our children to do in "hands-on" math, and make sure that they are not simply "going through the motions".

Some Guidelines For Planning Hands-On, Minds-On Math

Dialoguing: Plan for opportunities for students to share their thinking about hands-on activities through oral and written communication.

Questioning: Ask probing questions to focus children's thinking when using manipulatives.

Integrating Manipulatives and other Tools: Think about appropriate places in lessons for students to use hands-on tools. Always try to use them to stretch their thinking.

The Use of Writing: Introduce opportunities for children to write during math activities. Ask them to record their thinking or even make diagrams as they work through a problem.

Evaluating: When evaluating a hands-on activity, focus on children's learning. Ask yourself if students were engaged mentally, as well as physically, in the activity.

## Authors

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