Investigations in Number, Data, and Space®

An Overview of Kindergarten: 2nd Edition[1]

The Kindergarten curriculum is organized into 7 units that offer from 3 ½ to 5 weeks of work, focused on the area(s) of mathematics identified in the unit's subtitle. Because units build on each other, both within and across strands, they are designed for use in the sequence shown.

Unit Title	Number of Sessions
Who Is in School Today? Classroom Routines and Materials	**18**
Counting and Comparing Measurement and the Number System 1	**24**
What Comes Next? Patterns and Functions	**22**
Measuring and Counting Measurement and the Number System 2	**26**
Make a Shape, Build a Block 2-D and 3-D Geometry	**20**
How Many Do You Have? Addition, Subtraction, and the Number System	**26**
Sorting and Surveys Data Analysis	**17**

Note that the Kindergarten *Investigations* curriculum assumes that each school day includes 40-60 minutes of math: 30-45 minutes on the day's Session, and 10-15 minutes on the Classroom Routine. Designed to fit within the calendar of a typical school year, Kindergarten includes a total of 153 sessions (or approximately 31 weeks of work). This provides some leeway for going further with particular ideas and/or accommodating local circumstances. Although pacing will vary somewhat in response to variations in school calendars, needs of students, your school's years of experience with the curriculum, and other local factors, following the suggested pacing and sequence will ensure that students benefit from the way mathematical ideas are introduced, developed, and revisited across the year.

[1] This document applies to the 2nd edition of *Investigations* (2008, 2012). See http://investigations.terc.edu/CCSS/ for changes when implementing *Investigations and the Common Core Standards*.

An Overview of the Math in Kindergarten*

Number and Operations: Whole Numbers Students develop strategies for accurately counting quantities to 10 and beyond. They have many opportunities to count and create sets (objects, people, drawings, etc.), to count aloud, and to write and interpret numerals in a variety of contexts. They develop visual images for quantities and a sense of the relationship between them (10 is more than 5; 4 is less than 6; each counting number is one more, etc.). The counting work also serves as a bridge to the operations of addition and subtraction. Students have repeated experiences joining two or more amounts, removing an amount from a whole, and decomposing a number into two or more parts.

Measurement Students are introduced to length as a dimension, and use direct comparison to compare the lengths of objects. Throughout, there is a focus on language for describing and comparing lengths. Later, students use multiple nonstandard units (e.g. cubes, craft sticks) to quantify length, and consider whether particular measurement strategies (e.g. different start and end points, units laid out in a crooked line or in a line with gaps and/or overlaps between units) result in accurate measurements.

Patterns and Functions Students sort related objects into groups and identify attributes, as they begin their work with patterns. They consider which attribute (such as color or shape) is important as they construct, describe, and extend various patterns, determine what comes next in a repeating pattern, and begin to think about how two patterns are similar and different. Students also analyze the structure of a repeating pattern by identifying the unit of the pattern.

Geometry As they identify 2-D and 3-D shapes in their environment, students describe and compare shapes. They discuss characteristics such as size, shape, function, and attributes such as the number of sides or faces. Students construct 2-D and 3-D shapes, and combine shapes to make other shapes. The optional *Shapes* software extends and deepens the 2-D geometry work.

Data Analysis Students sort objects according to their attributes and organize data (i.e. favorite lunch foods) into different categories. As students collect data about themselves, they develop strategies for keeping track of who has responded to a survey, and for recording and representing data. Students begin to understand the processes involved in data analysis by choosing and posing a question, determining how to record responses, and counting and making sense of the results.

Ongoing Review and Practice

10-15 minutes per day is spent on one of four Classroom Routines. Students develop strategies for counting accurately as they count their classmates in *Attendance*. *Calendar* provides repeated practice with the counting sequence as well as experience with a real-world tool for keeping track of time and events. Students collect, count, record, and discuss data about themselves in *Today's Question*. In *Patterns on the Pocket Chart* students describe and extend repeating patterns, with a focus on determining what would come next if the pattern were to continue.

Homework is provided when appropriate. Each investigation includes a page for Daily Practice that can be used either for homework or for in-class practice. The *Student Math Handbook Flipchart* illustrates important math words and ideas can be used for review.

*** Note**: For more detailed information on the math at this grade level, see *Mathematics in Kindergarten* and *Kindergarten Scope and Sequence* in *Implementing* Investigations *in Kindergarten.*

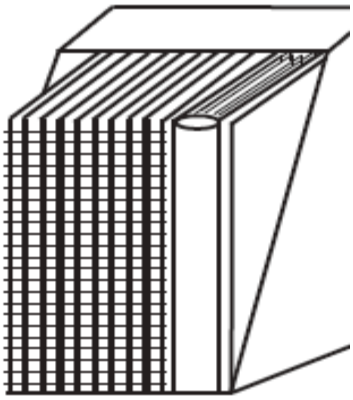
Over the course of Kindergarten, students…

- Make a Counting Book.
- Investigate the number of objects they can grab in one (or more) handful(s).
- Count, compare, and order the number of letters in their names.
- Make and record patterns.
- Measure the length of shoe outlines and of different parts of their bodies.
- Retell, act out, model, solve and record their work for a variety of addition and subtraction story problems.
- Find many different ways to arrange sets of 5-10 tiles, and to think about how numbers and notation can be attached to those arrangements.
- Use a 2-D shape to make a picture for the class Shape Book.
- Make a class mural using shapes.
- Use Geoboards and clay to make a variety of 2-D and 3-D shapes.
- Solve problems like, "I have Five Crayons in All. If some are red and some are blue, how many of each could I have? How many reds? How many blues?"
- Develop familiarity with the combinations of 6 as they play *Racing Bears* and *Total of 6*, and as they work on *Toss the Chips* and Six Crayons in All.
- Think about the number of students, noses, and eyes there are in their class, and collect data to figure out if there are enough chairs for a class.
- Sort objects and categorical data about their favorite lunch food, and conduct "Do You Like…?" surveys.

The Components

In order to teach the Kindergarten curriculum, a teacher needs the Core Curriculum Package, Student Activity Books, and the Kindergarten manipulatives. The following section describes all of the components available at Kindergarten.

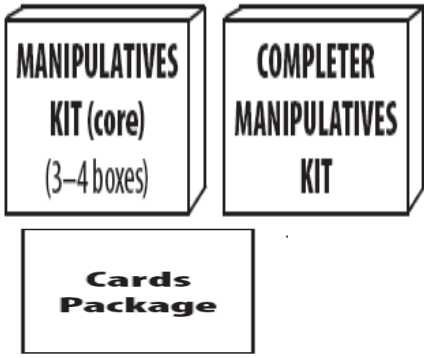
The **Core Curriculum Package** at Kindergarten includes:



- the seven **curriculum units** listed above.
- ***Implementing* Investigations *in Kindergarten***. This book helps teachers get started and provides useful ongoing support.
- a **Resources Binder**. Available in English or Spanish, this contains all of the transparencies and masters (e.g. assessment masters, game directions, family letters), in hard copy and on a CD. It also includes the *Shapes* software, used in the Kindergarten Geometry unit.

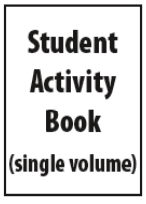
Also available separately: a **Spanish Teaching Companion** that presents vocabulary and teacher dialogue in Spanish, and an **Answer Key.**

There are three kits available for a class of 24 students:



- The Kindergarten **Manipulatives Kit** includes all of the student and overhead manipulatives needed to teach the Kindergarten units.
- The Kindergarten **Manipulatives Completer Kit** includes only the materials that are new to the second edition.
- The Kindergarten **Cards Package** provides manufactured decks of the most-used card sets. (These can also be made from Masters in the Resources Binder.)

The following resources are available for students:



- **Student Activity Book** (one per student). This consumable resource with perforated sheets contains all of the pages students need, including: activity sheets, recording sheets for math games, homework sheets, and practice pages. It is available in English or Spanish.
- A **Student Math Handbook Flip Chart**. This big book illustrates math words and ideas. It is also available online and in Spanish.