Hands-On Standards®, Common Core Edition

Kindergarten

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hands-on learning for growing minds

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Kindergarten

hand2mind 78864

ISBN 978-0-7406-9429-5

Vernon Hills, IL 60061-1862
800-445-5985
www.hand2mind.com

Printed in the United States of America.

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Contents

Introduction

How do we help children find meaning in mathematics? That is, how do we give children more than a rote script for reciting facts and churning out computations? How do we help children develop understanding?

Hands-On Standards®, Common Core Edition Kindergarten is an easy-to-use reference manual for teachers who want to help children discover meaning in mathematics. Each of the manual's 43 lessons demonstrates a hands-on exploration using manipulatives. The goal is to help children get a physical sense of a problem–to help children get their hands on the concepts they need to know and to help them "see" the meaning.

Each lesson in ***Hands-On Standards*** targets a clearly stated objective. The main part of a lesson offers a story problem that children can relate to and has the children work on the problem using a hands-on approach. Full-color photographs demonstrate the suggested steps. In addition to the main activity, each lesson includes suggested points of discussion, ideas for more exploration, a formative assessment item, and practice pages to help children solidify their understanding. The instructional model is a progression from concrete to abstract.

The book is divided into five sections—Counting and Cardinality, Operations and Algebraic Thinking, Number and Operations in Base Ten, Measurement and Data, and Geometry. These correspond to the five content domains for Kindergarten as cited in the ***Common Core State Standards for Mathematics.***

Each lesson in this book uses one or more of the following manipulatives:
Attribute Blocks • Color Tiles • 1" Color Cubes • CounTEN® Sorting Tray • Frog Counters • Link 'N' Learn® Links • Pattern Blocks • Snap Cubes® • Sorting Circles • Tangrams • Three Bear Family® Counters

Read on to find out how ***Hands-On Standards, Common Core Edition Kindergarten*** can help the children in your class find meaning in math and build a foundation for future math success!

A Walk Through a Lesson

Each lesson in ***Hands-On Standards*** includes many features, including background information, objectives, pacing and grouping suggestions, discussion questions, and ideas for further activities, all in addition to the step-by-step, hands-on activity instruction. Take a walk through a lesson to see an explanation of each feature.

Lesson Introduction
A brief introduction explores the background of the concepts and skills covered in each lesson. It shows how they fit into the larger context of children's mathematical development.

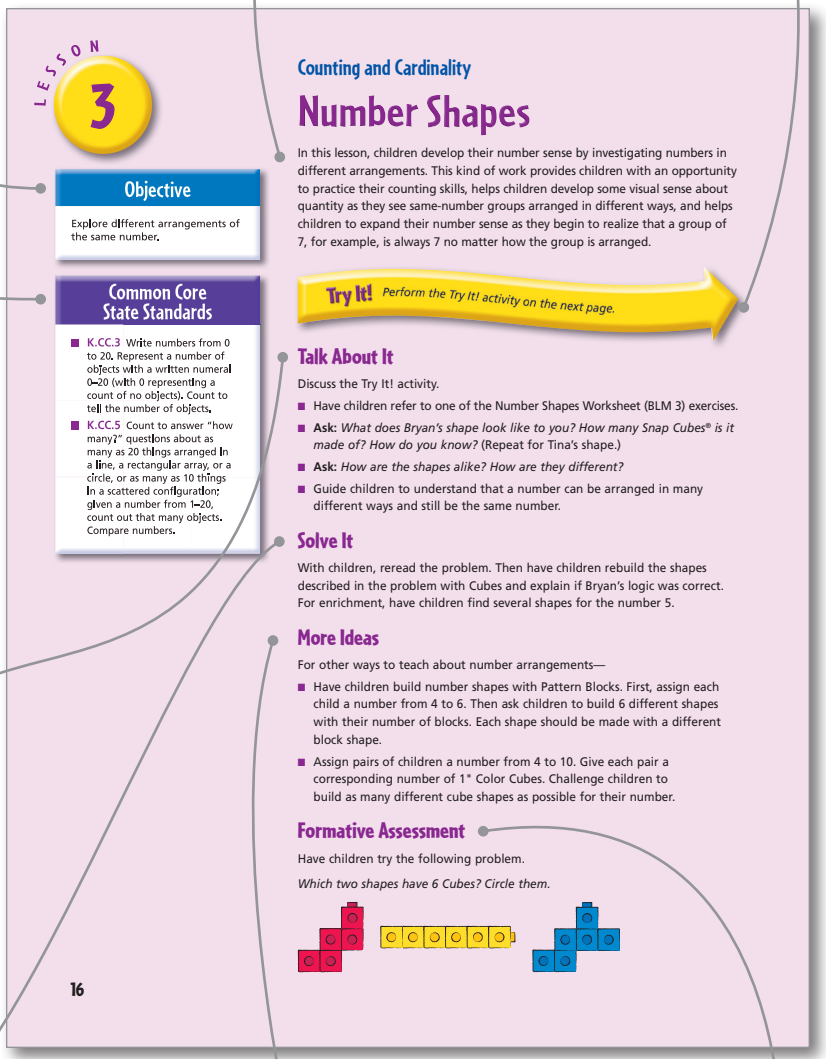
Try It! Arrow
In order to provide a transition from the introduction to the activity, an arrow draws attention to the Try It! activity on the next page. When the activity has been completed, return to the first page to complete the lesson.

Objective
The **Objective** summarizes the skill or concept children will learn through the hands-on lesson.

Common Core State Standards
Each lesson has been created to align with one or more of the **Common Core State Standards for Mathematics.**

Talk About It
The **Talk About It** section provides post-activity discussion topics and questions. Discussion reinforces activity concepts and provides the opportunity to make sure students have learned and understood the concepts and skills.

Solve It
Solve It gives children a chance to show what they've learned. Children are asked to return to and solve the original word problem. They might summarize the lesson concept through drawing or writing, or extend the skill through a new variation on the problem.



LESSON 3

Counting and Cardinality

Number Shapes

In this lesson, children develop their number sense by investigating numbers in different arrangements. This kind of work provides children with an opportunity to practice their counting skills, helps children develop some visual sense about quantity as they see same-number groups arranged in different ways, and helps children to expand their number sense as they begin to realize that a group of 7, for example, is always 7 no matter how the group is arranged.

Objective

Explore different arrangements of the same number.

Common Core State Standards

- K.CC.3 Write numbers from 0 to 20. Represent a number of objects with a written numeral 0–20 (with 0 representing a count of no objects). Count to tell the number of objects.
- K.CC.5 Count to answer "how many?" questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1–20, count out that many objects. Compare numbers.

Try It! *Perform the Try It! activity on the next page.*

Talk About It

Discuss the Try It! activity.

- Have children refer to one of the Number Shapes Worksheet (BLM 3) exercises.
- **Ask:** *What does Bryan's shape look like to you? How many Snap Cubes® is it made of? How do you know?* (Repeat for Tina's shape.)
- **Ask:** *How are the shapes alike? How are they different?*
- Guide children to understand that a number can be arranged in many different ways and still be the same number.

Solve It

With children, reread the problem. Then have children rebuild the shapes described in the problem with Cubes and explain if Bryan's logic was correct. For enrichment, have children find several shapes for the number 5.

More Ideas

For other ways to teach about number arrangements—

- Have children build number shapes with Pattern Blocks. First, assign each child a number from 4 to 6. Then ask children to build 6 different shapes with their number of blocks. Each shape should be made with a different block shape.
- Assign pairs of children a number from 4 to 10. Give each pair a corresponding number of 1" Color Cubes. Challenge children to build as many different cube shapes as possible for their number.

Formative Assessment

Have children try the following problem.

Which two shapes have 6 Cubes? Circle them.

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More Ideas
More Ideas provides additional activities and suggestions for teaching about the lesson concept using a variety of manipulatives. These ideas might be suggestions for additional practice with the skill or an extension of the lesson.

Formative Assessment
Formative assessments allow for on-going feedback on children's understanding of the concept.

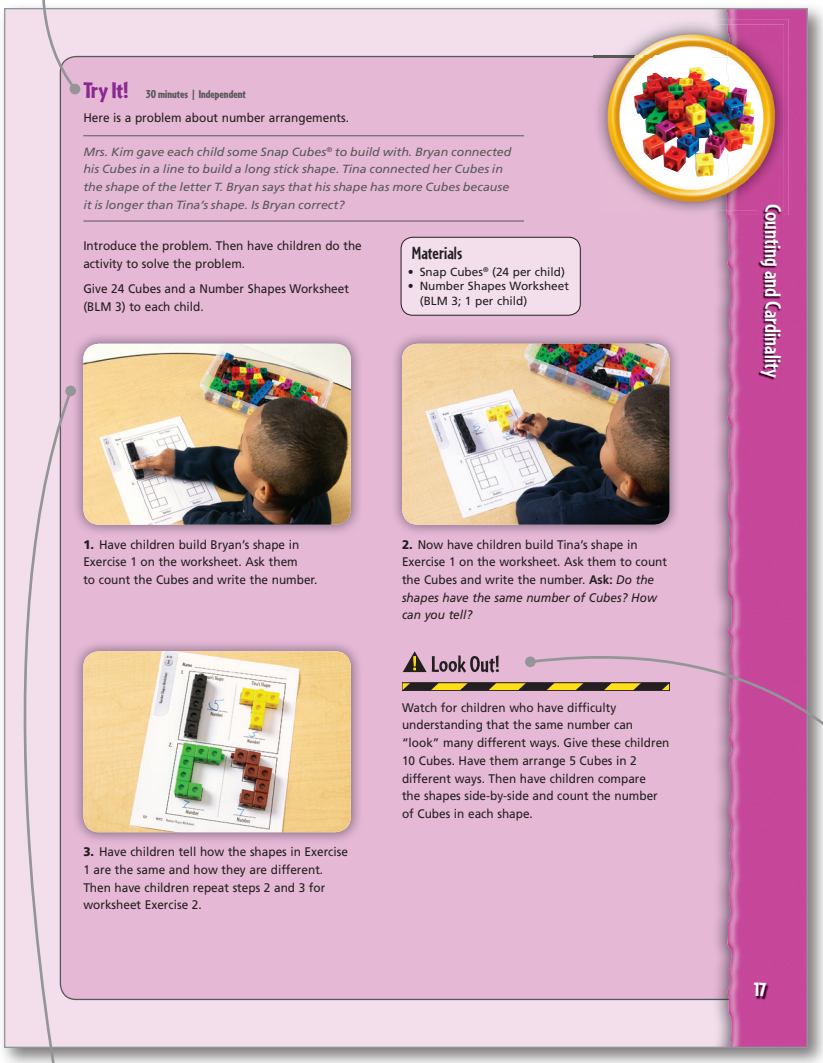
Try It!

The **Try It!** activity opens with **Pacing** and **Grouping** guides. The **Pacing** guide indicates about how much time it will take for children to complete the activity, including the post-activity discussion. The **Grouping** guide recommends whether children should work independently, in pairs, or in small groups.

Next, the **Try It!** activity is introduced with a real-world story problem. Children will "solve" the problem by performing the hands-on activity. The word problem provides a context for the hands-on work and the lesson skill.

The **Materials** box lists the type and quantity of materials that children will use to complete the activity, including manipulatives such as Color Tiles and Pattern Blocks.

This section of the page also includes any instruction that children may benefit from hearing before starting the activity, such as a review of foundational mathematical concepts or an introduction to new ones.



Try It! 30 minutes | Independent

Here is a problem about number arrangements.

Mrs. Kim gave each child some Snap Cubes® to build with. Bryan connected his Cubes in a line to build a long stick shape. Tina connected her Cubes in the shape of the letter T. Bryan says that his shape has more Cubes because it is longer than Tina's shape. Is Bryan correct?

Introduce the problem. Then have children do the activity to solve the problem.

Give 24 Cubes and a Number Shapes Worksheet (BLM 3) to each child.

Materials
- Snap Cubes® (24 per child)
- Number Shapes Worksheet (BLM 3; 1 per child)

1. Have children build Bryan's shape in Exercise 1 on the worksheet. Ask them to count the Cubes and write the number.

2. Now have children build Tina's shape in Exercise 1 on the worksheet. Ask them to count the Cubes and write the number. **Ask:** *Do the shapes have the same number of Cubes? How can you tell?*

3. Have children tell how the shapes in Exercise 1 are the same and how they are different. Then have children repeat steps 2 and 3 for worksheet Exercise 2.

Look Out!

Watch for children who have difficulty understanding that the same number can "look" many different ways. Give these children 10 Cubes. Have them arrange 5 Cubes in 2 different ways. Then have children compare the shapes side-by-side and count the number of Cubes in each shape.

Counting and Cardinality

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Look Out!

Look Out! describes common errors or misconceptions likely to be exhibited by children at this age dealing with each skill or concept and offers troubleshooting suggestions.

Step-by-Step Activity Procedure

The hands-on activity itself is the core of each lesson. It is presented in three—or sometimes four—steps, each of which includes instruction in how children should use manipulatives and other materials to address the introductory word problem and master the lesson's skill or concept. An accompanying photograph illustrates each step.

A Walk Through a Student Page

Each lesson is followed by a corresponding set of student pages. These pages take the child from the concrete to the abstract, completing the instructional cycle. Children begin by using manipulatives, move to creating visual representations, and then complete the cycle by working with abstract mathematical symbols.

Exercise
Concrete and **Representational** exercises (pictorial representations of the featured manipulative) help children bridge conceptual learning to symbolic mathematics.

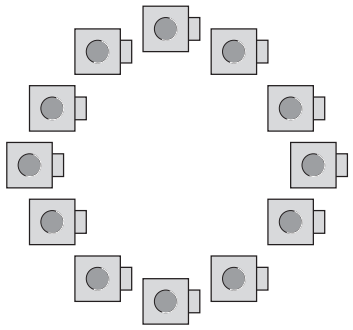
Performance-Based Tasks
Performance tasks are designed to allow children to demonstrate their understanding of the targeted math concept.

Teacher Direction
Teacher scripting is given so that teachers can administer tasks in a standardized manner.

Lesson 3 Counting and Cardinality

Answer Key

1.



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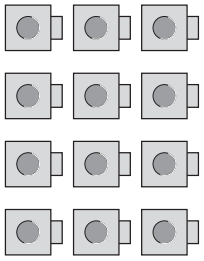

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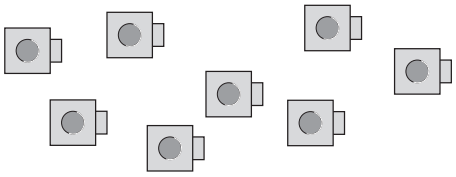
2.



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Directions
1. Write the number of Cubes in each group. **2.** How many cubes are there? Write the number.

Download student pages at hand2mind.com/hosstudent.

Extended Response
Performance-based exercises feature an open-ended, constructed-response task to help teachers gauge children's understanding.

Answer Key

Check children's work.

Answers for the Teacher
Answers are provided for teachers on the included student pages.

Challenge
Count 16 cubes. Make a pattern with the 16 cubes. Draw the pattern. Write the number of cubes.

Student Pages Download
Download clean copies of the student pages by visiting the URL listed.