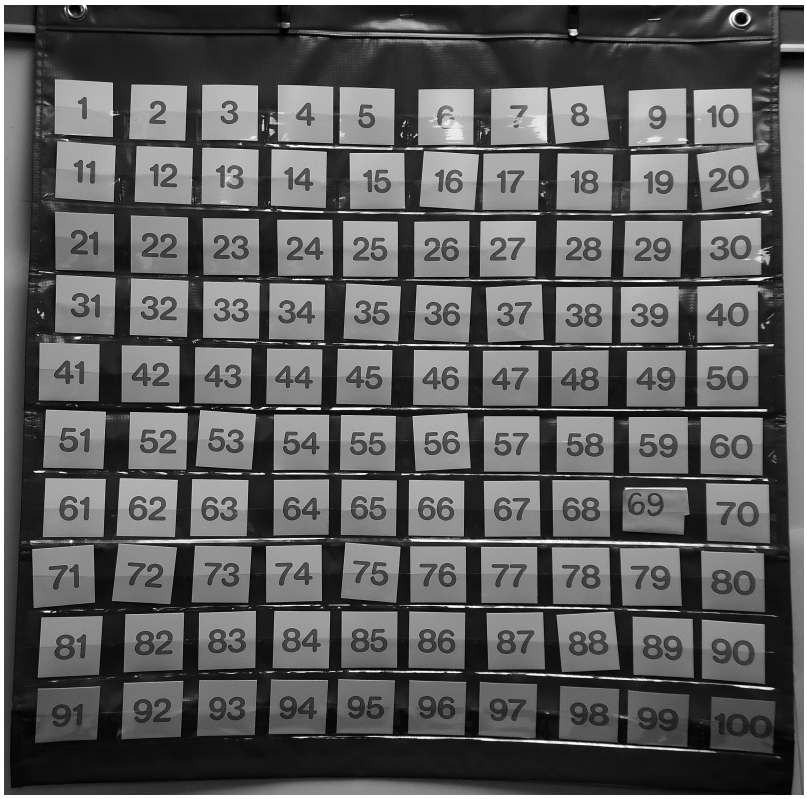
How to Use This Resource

What is a hundreds chart?

A hundreds chart is a 10-by-10 grid with the numbers one to one hundred printed in the squares. A hundreds chart can be sized so that each student has her or his own hundreds chart, or it can be poster-size for use with the whole class. Some hundreds charts have clear pockets stitched onto vinyl or fabric to allow easy insertion and removal of number cards. We refer to these charts as *pocket hundreds charts* throughout this resource, and recommend the use of them; moveable numbers transform a hundreds chart into a highly engaging manipulative. A hundreds chart that can be photocopied is provided in this resource as Reproducible A.



A pocket hundreds chart filled with number cards 1 through 100.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

A version of the hundreds chart for individual use (available as Reproducible A).

Why use a hundreds chart?

The purpose of a hundreds chart is to provide a framework for students to think about our base ten number system and to allow students to build a mental model of the mathematical structure of our number system. Hundreds charts allow children to explore concepts from counting to adding two-digit numbers.

The Common Core State Standards (CCSS) for Mathematical Practice note that "mathematically proficient students look closely to discern a pattern or structure." *It Makes Sense! Using the Hundreds Chart to Build Number Sense* includes lessons that help students look for and make sense of the pattern and structure of the hundreds chart intentionally to become computationally flexible and fluent. Furthermore, the CCSS for Mathematical Practice states, "proficient students are sufficiently familiar with tools appropriate for their grade to make sound decisions about when each of these tools might be helpful." The lessons in *It Makes Sense! Using the Hundreds Chart to Build Number Sense* transform a hundreds chart from a poster on the wall to an interactive tool used and internalized by the students.

In addition to the Common Core, the National Council of Teachers of Mathematics (or NCTM) document *Principles and Standards for School Mathematics* states, "In prekindergarten through grade 2 all students should use multiple models to develop initial understandings of place value and the base-ten number system." The hundreds chart is one such model—in fact, one of the most valuable ones.

Why these lessons?

The lessons and games we selected for *It Makes Sense! Using the Hundreds Chart to Build Number Sense* are student-tested favorites. We have taught them time and time again in our own classrooms and in the classrooms of other teachers who invite us to share model teaching with them. The lessons are designed intentionally to provide students with opportunities to think, reason, and communicate about numbers. Many of the lessons and games are intended to be revisited throughout the school year to give students repeated experiences in building number sense. Most of the lessons also build on each other, or provide alternate ways of approaching the same concept, giving students multiple ways to access mathematical knowledge.

In our classrooms, hundreds charts are always available to our students, whether in the form of a pocket chart, individual laminated copies placed in an easily accessible location, or paper copies glued inside each student's math journal. Our students add to their own repertoires of techniques and strategies as they became comfortable playing the games and thinking about the lessons they've encountered.

Unfortunately, many times when we visit other teachers' classrooms we see that, although there may be a hundreds pocket chart or a poster on the wall, teachers aren't exactly sure what to do with it. Frequently, we find that the only use of hundreds chart in classrooms is to keep track of the number of days students have been in school. This is such a disservice to the value of a hundreds chart, and we're here to help! Every lesson and game included in this resource supports teachers in making the most of the hundreds chart, helping their students develop strategies and build concepts needed for a robust understanding of numbers and place value.

Every lesson features user-friendly directions and appropriate, clear questions to help teachers check for understanding and extend their students' thinking. Communication about students' thinking plays a key role in the lessons and is a goal stated in the CCSS for Mathematical Practice: "Mathematically proficient students try to communicate precisely to others." It is our hope that students return to the lessons and games again and again, each time gaining more facility with numerical reasoning, and improving their ability to communicate their understanding.

How do I use the lessons?

Two Categories

This resource is divided into two categories: lessons and games. The lessons feature activities that introduce students to the hundreds chart and its function as a tool for thinking about numbers, their magnitude, and their relationship to each other. The lessons also encourage the use of a hundreds chart as a framework for thinking about computation of one- and two-digit numbers. The games section offers games that help students develop numerical fluency, as well as challenge them to think strategically and play cooperatively.

Where to Start

In the "Related Lessons" section of each lesson and game, you'll get suggestions for what to teach next. When you first use the hundreds chart, we suggest starting with the lessons titled *Building the Hundreds Chart* (L-1 and L-2) and *Arrow Arithmetic* (L-3). All the other lessons use skills introduced in these lessons.

Lesson and Game Overview

Each lesson and game opens with an overview that gives you an opportunity to become acquainted with the mathematical goals of the lesson, as well as what students will be doing.

Time

The "Time" section of each lesson gives a general prediction of the time it will take to carry out the lesson. In general, each lesson takes thirty to forty minutes. Games usually take less time (ten to thirty minutes) to complete. Repetition is encouraged for many of the lessons and games.

Materials

The following is a basic list of materials needed for the lessons; each lesson and game opens with a specific list. When possible, reproducibles are provided for your convenience.

- a pocket hundreds chart with removable cards labeled *1* through *100* for whole-class use (cards can be created using Reproducible A)
- transparent markers for the pocket hundreds chart (These markers are available commercially through math catalogs, or can be made by cutting squares from a colored transparency the same size as the removable cards. As an alternative, you can cut squares of construction paper that are slightly larger than the removable cards to place behind the numbers to which you want to draw attention.)
- hundreds charts for individual student use (These can be printed on paper or cardstock using Reproducible A. Laminate the charts to help them last longer.)

- 20 counters for each student (For consistency, the term *counters* is used throughout this resource. There are a variety of options for counters: Snap Cubes, Unifix cubes, color tiles, or two-color counters. You may also consider using everyday objects such as lima beans, pennies, dimes, or small buttons. We recommend commercially available small, translucent discs, because students can still read the numbers under these counters when using the hundreds chart.)
- a projected hundreds chart (Some lessons require that the teacher use a projected hundreds chart, which can be a paper copy of a chart [Reproducible A] projected via a document camera or overhead projector. There are many hundreds charts available for use with interactive whiteboards as well. These can be found on the NCTM website [www.nctm.org] or through a quick Internet search.)

Key Questions

Each lesson offers key questions to promote student thinking, class discussions, and assessment of what students know. These carefully planned questions elicit deeper thinking and reasoning among students, and are meant to be asked throughout the lesson or game. Often, it is necessary to scribe or record student thinking. Recording student thinking connects a child's thinking to representations (such as pictures) or to symbols (such as numbers). It allows the student who is speaking, and others in the class, to observe their thinking visually.

Teaching Directions

The teaching directions are presented in a step-by-step lesson plan with references to when and how to use the key questions, and what a student might be thinking. Some of the lessons are divided into parts to make the planning process more manageable.

Additional Teaching Insights

In addition to what we have presented thus far, teaching insights are provided throughout the lessons in the following ways:

- "Math Matters!" sections provide an opportunity to deepen one's own math content.
- "Teaching Tip" and "Technology Tip" sections offer insights to help make the session run smoothly, including suggestions for using interactive whiteboards.
- "A Child' Mind . . ." sections give you an opportunity to read how or why your own students may think about a problem.
- "Differentiating Your Instruction" sections offer extensions or modifications to meet all learners' needs.

- "Time Saver" sections provide insights for saving time in lesson preparation.
- "Extend Their Learning!" sections are featured in some lessons to continue the learning of groups of students or the whole class.
- "Teacher Reflections" sections are included throughout the book to offer insight into experiences that have shaped our own thinking about teaching.

Connections to the Common Core State Standards

The CCSS focus on key concepts for teaching math at each grade level. Tables are included to help you connect the CCSS with the provided games and lessons. Using the tables alongside your own curriculum, standards, or pacing guides will help you determine which lessons meet the concepts and skills you are in need of addressing with your students.

More Resources in the Series!

We are excited to share this resource, *It Makes Sense! Using the Hundreds Chart to Build Number Sense*, as one of several resources in the It Makes Sense! series. For more titles, see www.mathsolutions.com.