

How to Use This Resource

*What we want from children who play games is for them to construct insights into the games, create mathematical strategies for winning the games, explain those insights and strategies to others in their own words, have good reasons for believing in their insights and that their strategies work, and respond appropriately to challenges to the adequacy of those reasons and strategies. **These are important skills to acquire not only for mathematics but also in life in general.***

—Michael S. Schiro, Associate Professor,
Boston College and author of numerous games articles

Why These Games?

The Selection Process

The games in this resource have been selected carefully through a three-step process:

1. First, each game was chosen for its success, time and time again, in helping students build their number sense. In *Math Games for Number and Operations and Algebraic Thinking*, you will find all-time favorites such as *Circles and Stars*, *Leftovers*, *Cross Out Singles*, and *Tens Go Fish*. You will also find games that you've likely not encountered before, as well as twists on some of your personal favorites!
2. Second, the list of games was narrowed to those games that can be played successfully by learners on their own, in math workshops, or at workstations.
3. Third, every game was considered carefully within the context of the Common Core State Standards, resulting in those that strongly support teaching with the Common Core (see the connections on pages xv–xxi).

My Story

When I first began teaching, I was constantly looking for resources to support my students' learning in the area of number. My search often led me to Math Solutions' publications. In later years, I became a consultant for Math Solutions. As I led professional development courses across the nation, I found that much of my time was dedicated to developing capacity and depth in the area of number. Teachers near and far wanted ways to support their learning as well as their learners in number sense.

Most recently, in my district I facilitated professional development for implementing math workshops. One component of a math workshop is games that support students' learning in number. I pulled some games from my library of resources and shared them enthusiastically with the workshop participants, who looked like children in a candy store! However, their excitement quickly turned to exasperation when they realized how much time it would take them to sift through their own resources to find more games. I went home that evening and mused over my stacks and stacks of books—some for certain grade

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bands; others for measurement, geometry, data, and number; and still others with a month-by-month approach. So many books to sift through, yet so little time to do it! I understood completely the exasperation of the workshop participants.

This was my cue. I needed to create a resource that offered a collection of games that focus on supporting number sense—a collection drawn from my more than twenty years of teaching experience. Hence, *Math Games for Number and Operations and Algebraic Thinking* was born.

Do I Have Time for These Games?

The instruction of each game takes approximately one math lesson or 60 minutes (some are slightly less than an hour and others are slightly more). The independent play of each game takes twenty to thirty minutes on average. It's important to note that every game is designed so students can ultimately play them independently, freeing you for time to do small-group instruction and more.

Do These Games Support My Curriculum?

The games offered within this resource support and sustain a math workshop model while complementing any math curriculum. The games support standards, with an emphasis on the Common Core State Standards.

How Is This Resource Organized?

Step-by-Step Instructions

The format of this resource is intended to be friendly and accessible for you, the teaching professional. Each game features step-by-step instructions, organized in four steps:

Part I: The Connection: Relate the game to students' ongoing work.

Part II: The Teaching: Introduce and model the game to students.

Part III: Active Engagement: Engage students to ensure they understand how to play the game.

Part IV: The Link: Students play the game independently.

These steps are adapted from the Math Solutions resource *From Reading to Math: How Best Practices in Literacy Can Make You a Better Math Teacher* by Maggie Siena (2009).

Tips

Various tips are included in the margins of each game for quick reference; these tips are intended to facilitate the teaching of the game, and give insights into managing game materials, how students might experience the game, how technology might assist when modeling the game, and more.

Key Questions

Every game includes key questions to ask students as you observe them playing. Asking these questions assists you in understanding how or whether students are developing strategies. By asking questions, students are given the opportunity to hear each other's thinking and to develop their own understanding of the content even further.

Learning Targets

Each game includes learning targets. The learning targets are guided by the Common Core State Standards for Mathematics. They are written for the student in a way so that students have a clear

understanding of the content knowledge required of them in the game. I recommend sharing learning targets and posting them where the class can easily see and refer to them as the game is played.

Differentiating Your Instruction and Assessments

Every game includes insights on how it can be modified according to the levels and needs of your students. Differentiation occurs when you alter content, process or product. In some cases, assessments are also included.

Reproducibles

As often as possible, game materials—especially game boards and recording sheets—are provided in reproducible format at the end of this book. As you might imagine, recording sheets encourage students to record their thinking; it is important for students to be able to articulate how they compute. It is equally valuable for other students to see how their partner is computing. Numeral cards and hundreds chart reproducibles are also included.

Game Directions

At the end of the resource, you will find a condensed page of each game's directions written for students (these reproducibles are numbered starting with the letter G). These directions can be reproduced and handed out as needed to facilitate the game, especially during math workshops. The directions support students' success in playing each game.

Get Started!

The games can be accessed in any order. To help you find the game you want as quickly as possible, three contents lists are provided:

1. Alphabetical List: Games Ordered Alphabetically by Title with Grade-Level Indications xiii
2. Connections Lists: Teaching with the Common Core State Standards for Mathematics

Kindergarten	xv
Grade 1	xvi
Grade 2	xvii
Grade 3	xviii
Grade 4	xix
Grade 5	xxi
3. Materials List: List of Games by Materials Used xxii

This resource is written for professionals who wish to support students' understanding in learning about how numbers work. It's written to help students explore numbers by using materials, interacting with peers, talking about numbers, and deepening their understanding. This resource is written for us—the teachers and teaching professionals who want their students to succeed in mathematics. It is written with a love for learning, compassion for colleagues, and dedication to students past, present, and future. My hope is that *Math Games for Number and Operations and Algebraic Thinking* enriches the understanding of your students while minimizing your planning and preparation time. It's all here, so roll the dice!