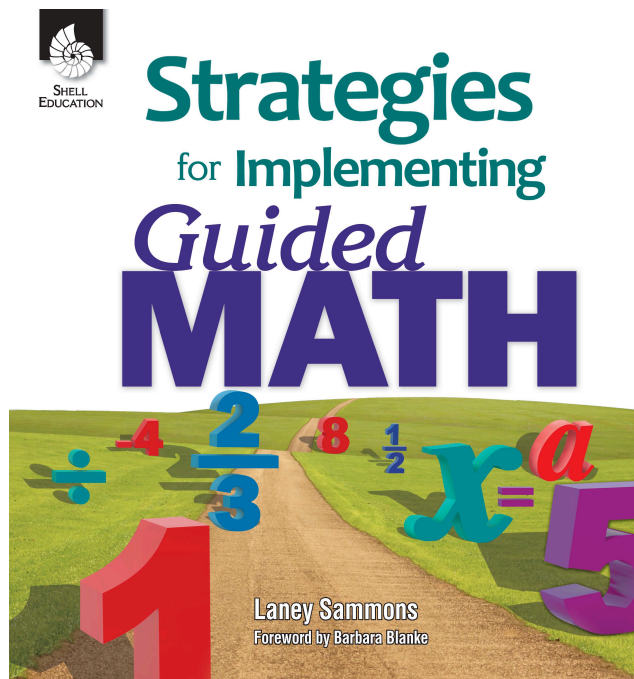


Sample Pages from
Strategies for Implementing Guided Math



The following sample pages are included in this download:

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Implementing Math Workshop

During Math Workshop, students are assigned different types of independent work in the form of workstations so that the teacher can meet with small groups to support their unique learning needs and differentiate instruction. Depending on the grade level, Math Workshop can last between 40 and 60 minutes, and students can participate in a variety of and varying number of workstations.

Math Workshop is one of the most versatile components of the Guided Math framework. It can accommodate a vast array of learning tasks. Students work independently—either individually, in pairs, or in other groupings—on math workstation tasks designed to reinforce, maintain, or extend their previously mastered knowledge or skills and improve computational fluency. These tasks may vary—mathematical investigations, paper-and-pencil assignments, math-fact fluency practice, mathematical games, explorations, problem-solving challenges, content writing in Math Journals, work with technology tools, or even mathematics activities connected to other content areas. Because students are engaged in meaningful independent work, the teacher is able to work with small groups or confer with students uninterrupted. As such, Math Workshop is the key to success in a Guided Math classroom.

Strategies for Organizing the Classroom

The organization of Math Workshop can make it or break it. When Math Workshop begins, math workstations should be ready with clear, student-friendly directions for their use, and locations for each workstation designated so that students can get the materials they need, move to their work spaces, and start to work.

To prepare for an organized Math Workshop environment in the classroom, begin with these steps:

1. Create workstation containers (e.g., bins, folders, or other containers).
2. Define workstation locations.
3. Display workstation boards with student or group assignments.

Workstation Containers

For an efficient method of housing the materials needed for math workstations, use stackable bins with lids, colored or labeled folders, or other containers that are easily transported around the classroom. Label the bins, folders, or containers for easy identification. Workstations may be numbered, assigned colors, named by math domains, or labeled by any other method that makes sense for the teacher and students. It is important that when students are assigned to a particular station, they can independently and easily locate the bin holding the materials for that station and move it to the designated workstation location.

Implementing Math Workshop *(cont.)*

Workstation Locations

For each workstation bin, designate a specific work location. Clearly label the location in the same way the corresponding bin is labeled. Before implementing Math Workshop, show students where each workstation area is located. Have students practice getting bins for their assigned workstations and taking them directly to the designated work locations. If definite areas are not assigned, students waste valuable work time trying to decide where they want to work and end up in less-than-ideal locations.

Be sure the designated locations can accommodate the number of students who will be working at the stations and that they are clearly visible from the small-group area. Try to maximize the distance between workstation locations so that student groups can work without disturbing other groups. Make efficient use of space in the room, including desks, floor space, computer areas, and the area around the interactive whiteboard. In some circumstances, the small sizes of classrooms and large class sizes make choosing locations for workstations difficult. Nevertheless, make the best of the situation by carefully planning the overall workstation layout to create a productive work environment that minimizes congestion and maximizes the ability of students to work without distractions or interruptions.

Workstation Boards

Consider creating or purchasing a workstation board so that students know their math workstation assignments for the day or week. The workstation board may assign stations by teams, by pairs, or through an organizing structure, such as GUIDE (see page 226) that allows for one type of workstation to occur for each day of the week.

Workstation Boards for Math Teams

Create math teams by dividing the class into three to four heterogeneous teams. The teams stay together as they move from station to station, spending 15 to 20 minutes at each station. Instructional groups are flexibly and homogeneously grouped by students' needs. When it is time to meet with a small group for targeted instruction, call students from the stations where they are working to meet at the small-group area. As a result, some students may not participate in all stations. Because the stations are primarily maintenance and review work, it should not be a problem. Instead of engaging in the station work, these students benefit from intensive small-group instruction targeting their needs.

If you wish to differentiate the amount of instructional time you spend with your groups while still giving groups a consistent amount of time at each station, set a timer for the rotation of stations that is independent of the small-group instructional transitions. If students are working in small-group instruction when their teams move

Implementing Math Workshop *(cont.)*

to the next station, they simply join their teams at the end of their small-group lesson wherever the team happens to be working at that time.

Otherwise, align the rotations of teams from station to station with the lengths of time of your small-group lessons. When you finish with a group, signal all students to move to their next stations. With this kind of schedule, the amount of time teams spend at stations may vary according to the lengths of your small-group lessons.

Red Team	Blue Team	Yellow Team	Green Team
Tom, Carlos, Jasmine, Min, Sadie, Assad	Finn, Chastity, Fatima, Maria, Joseph, Lois	Sara, Pedro, Mimi, Matt, Krista, Ravi	Ash, Dempsey, Griff, Alice, Yoshi, Carmen
Games	Guided Math Group	Technology	Problem Solving
Building Fluency	Problem Solving	Games	Technology
Guided Math Group	Games	Problem Solving	Building Fluency
Technology	Building Fluency	Guided Math Group	Games
Problem Solving	Technology	Building Fluency	Guided Math Group

Workstation Boards for Pairs of Students

Instead of teams, math workstations may be assigned to pairs of students. This can often make classroom management easier, even though more stations will be going around the room because there are fewer students working on any one station independently. Working in pairs, students are apt to be more engaged in their tasks and less distracted. They tend to speak more softly as they talk about the math with which they are working. In order to cut down on the different kinds of workstations that need to be created, consider using duplicate stations. For example, if you need 10 workstations, you can have two sets each of five different stations.

When pairing students for Math Workshop, take into consideration their compatibility, both academically and socially. Periodically change the student groupings to allow learners to work with more than just one partner. So that no student is left to work alone at a station during Math Workshop, each pair of students working together should be in the same group for small-group instruction. If there is an odd number of students in the class, one of the workstation groups can have three students instead of two.

Implementing Math Workshop *(cont.)*

Student Pairs		Station 1	Station 2
Anuska	Michael	1	2
Tito	Meg	2	3
Chika	Juan	3	4
Skyler	Marta	4	5
Dylan	Shiro	5	6

With this workstation chart, students spend 30 minutes at each station. Every station has several activities that students complete during this time. During an hour of Math Workshop, the teacher may work with three or four groups of students for small-group lessons. With this management system, it is easy to differentiate the amount of time spent with each group because the pairs of students automatically switch stations after 30 minutes rather than having a rotation schedule that includes small-group time. While you will most likely plan to meet with as many small groups of students as possible most days, you may decide on some days to work with fewer or even no small groups. Instead, you can use the time for conferences with individuals or groups of students or for other informal assessments.

GUIDE Workstation Board

The weekly GUIDE board provides a simple and consistent organizational framework to *guide* students as they participate in math workstations for the week. This GUIDE acronym stands for:

- G Games for Mathematicians:** Math games to maintain previously mastered mathematics concepts and skills
- U Using What We Know:** Problem solving or other challenges in which students draw upon their mathematical understanding and skills
- I Independent Math Work:** Materials used to teach previously mastered concepts incorporated into station tasks; paper-and-pencil tasks may be included
- D Developing Fluency:** Tasks that help students develop number sense and mental math skills
- E Expressing Mathematical Ideas:** Focus on mathematical vocabulary and communication; may include use of Math Journals or math vocabulary notebooks

With this management system, students complete one of these stations each day of the week. By the end of the week, they will have worked at each station. The stations themselves include a menu of tasks from which students may choose. There are sufficient options to occupy students for the entire Math Workshop period.

Implementing Math Workshop *(cont.)*

The teacher may offer students the choice of where they will work each day, or he or she can make team assignments. If students choose their stations, give them a weekly checklist on which they can mark the stations they have completed and clearly see which ones they still need to complete before the week ends. The grouping at these stations may be heterogeneous. When students are called for small-group lessons, they leave their stations for the duration of the lesson and then return when the lesson is over.

The GUIDE chart remains the same throughout the week, with only the team assignments changing daily. Because many of the station tasks may be revisited repeatedly, only some of them need to be changed weekly.

	G Games for Mathematicians	U Using What We Know	I Independent Math Work	D Developing Fluency	E Expressing Mathematical Ideas
Monday	Red Team	Blue Team	Yellow Team	Green Team	Orange Team
Tuesday	Orange Team	Red Team	Blue Team	Yellow Team	Green Team
Wednesday	Green Team	Orange Team	Red Team	Blue Team	Yellow Team
Thursday	Yellow Team	Green Team	Orange Team	Red Team	Blue Team
Friday	Blue Team	Yellow Team	Green Team	Orange Team	Red Team

Strategies for Managing Math Workshop

Develop guidelines for Math Workshop that instill the work habits students need for academic achievement and for being a part of a genuine learning community. Let these principles guide you in building a sense of community among your students that supports a vibrant and engaging environment for Math Workshop (Fountas and Pinnell 2001):

- All members take responsibility for their own learning and for helping others to learn.
- All members take responsibility for managing their time and activities productively.
- All members learn self-management as part of the curriculum delivered by teachers.
- All members understand that keeping materials orderly helps everyone learn.

Implementing Math Workshop *(cont.)*

Developing Routines and Procedures

The routines and procedures that are established set the tone for Math Workshop. These strategies will help with the important task of developing the following guidelines for students:

- 1. Check with other teachers to see what routines and procedures they have set for independent work by students.** Based on their experiences, what has worked well? What has not?
- 2. Consider your own teaching style and classroom environment preferences.** How much student movement can you tolerate when you are teaching small groups? How much structure do you prefer for the student activities in your classroom? How much responsibility are you willing to have your students assume?
- 3. Envision how you would like Math Workshop to look in your classroom and then reflect on what students must know and do to make your vision a reality.**
Develop routines and procedures for:
 - Transitions (e.g., orderly traffic patterns, signal to change stations)
 - Paper management (e.g., how to turn in finished work, what to do with unfinished papers)
 - Cleaning up work areas
 - Noise levels (e.g., acceptable level, how to signal that the noise level is too loud)
 - Access to materials not in the workstation bins
 - Emergencies (e.g., what is considered an emergency and what students should do if one occurs)
 - Questions about workstation tasks (e.g., unclear directions, tasks that are too difficult, pieces missing from games or other materials)
 - Sharing/working with others
 - Proper use of manipulatives, work mats, and math tools
 - Completion of math-station work
 - Technology failures
 - Interpersonal squabbles
- 4. Transform your expectations into a set of routines and procedures that your students know inside and out by taking the time to teach them and having students practice them.**

Implementing Math Workshop *(cont.)*

Teaching Routines and Procedures

Attempting to implement Math Workshop without thoroughly teaching students the routines and procedures is unlikely to be successful. Students can only follow routines and procedures when they know what those expectations are. Taking the time to follow these steps for teaching routines and procedures leads to a more manageable Math Workshop.

- 1. Create an anchor chart with the class that lists what they need when working independently.** Have students brainstorm what their needs are when they are working independently in Math Workshop. Record their ideas on an anchor chart to post in the classroom for future reference, particularly at the beginning of the year or when routines and procedures begin to break down.
- 2. Introduce and model the routines and procedures you establish through mini lessons.** Link them to the anchor chart the class created to explain the rationales for them. Clearly demonstrate for students what they look like and sound like.
- 3. Ask several students to role-play Math Workshop behavioral expectations.** For example, have students demonstrate how to clean up at a workstation. Ask the class to critique these scenarios. What was done well? How could they be improved? When students are involved in assessing the role-playing, they further reflect on the established routines and procedures and as a result begin to internalize them. Additionally, the critiques provide the kind of immediate and specific feedback that helps students learn to successfully follow the expectations.
- 4. Have students practice.** Provide simple math workstations for students to complete independently and uninterrupted for 15 to 20 minutes as you silently observe their work. During this practice time, students are to behave as if you were teaching a small-group lesson and could not be interrupted. After the practice time, provide specific feedback on students' adherence to the Math Workshop routines and procedures. Over several days, steadily increase the length of the independent work time to build their stamina.
- 5. Implement Math Workshop when students know and can follow the routines and procedures.** Do not rush this process. It often takes two weeks for students to be able to assume responsibility for working independently.
- 6. Be consistent in your behavioral and academic expectations for students.** If, at any time, student performance during Math Workshop becomes a problem, bring the workshop to an end. Revisit the anchor chart and/or the routines and procedures you have taught. Repeat Steps 3 and 4 as needed to ensure that students are ready to work independently.

Implementing Math Workshop *(cont.)*

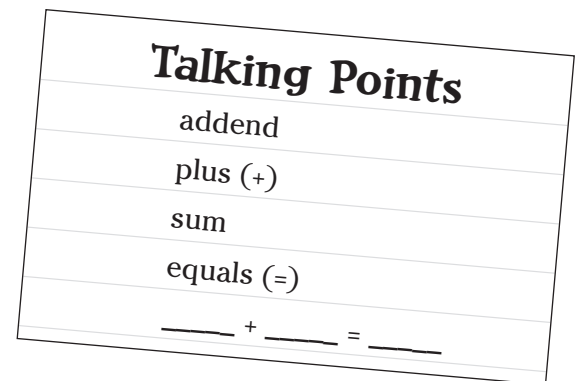
Strategies for Creating Effective Math Workstations

Another factor in the successful implementation of Math Workshop is the quality of the math workstations. Independent work should be challenging but not frustrating for students. Provide directions for stations that are inclusive yet clear and concise. Teachers know the needs of their students and can develop tasks that most effectively strengthen their mathematical understanding and skills. Workstations should help students maintain mathematical understanding, practice skills, and build computational fluency. Consider the following strategies for creating math workstations:

- **Begin with academic goals in mind.** Each math workstation should align with and reinforce mathematical content from grade-level standards.
- **Workstations should use simple materials and have simple procedures.** Students should be familiar with these materials so that they require very little introduction when used in workstations.
- **Workstation tasks do *not* have to be changed weekly.** Each math workstation should contain a series of related tasks that can be revisited over several weeks. Later in the year, they can be used again to help students maintain their understanding of the concepts or skills addressed.
- **Create workstation tasks in which the mathematical content may vary, but the games or procedures remain constant.** An example of this is the game of Concentration. Students might be asked to match equivalent fractions, addition facts with their sums, analog and digital displays of time, fractions and decimal equivalents, mathematical vocabulary words and their definitions or representations, and so on. Students already know how to play the game so when the station is introduced, it is not necessary to teach its rules. This way, students spend less time trying to figure out how to play the game and more time actually engaged in the game itself.
- **Workstation tasks may provide practice, review, or maintenance but should not offer practice of the immediate instructional focus.** Students should be able to independently and correctly carry out the tasks they are assigned. Refrain from assigning practice of the content currently being taught. If students are already able to do that work accurately and independently, you would not be teaching it. Later, as students master parts of a concept or skill, tasks related to it can be included.

Implementing Math Workshop *(cont.)*

- **Create a Math Menu for each station.** List the task options for the station clearly. Laminate the menu (or place it in a page protector) and tape it inside the lid of the math-workstation bin. To differentiate the work for students to complete at the station, vary the materials or modify the directions by placing them in a separate plastic storage bag labeled to clearly designate the students who will use it.
- **Provide Talking Points to support mathematical communication by students.** For each station, develop a Talking Points card with the important mathematical vocabulary and symbols. Provide nonlinguistic representations for these terms to help students understand their meanings. Include sentence-structure guidance (_____ is greater than _____). If time permits, have students help decide on the words and representations for these cards. The adjacent Talking Points card provides an example for the *Go Fish for Tens* workstation (pages 232–233).
- **Make students accountable for their work at Math Workstations.** Students may record their work in their Math Journals or on the *Grades K–2 GUIDE Recording Sheet* (page 275) or the *Grades 3–8 GUIDE Recording Sheet* (page 276). Having some kind of accountability encourages students to stay focused and engaged. In addition, this type of content-area writing maximizes student understanding and leads to greater long-term memory. Although you may choose to check or grade the written work, this is not necessary. However, it is important to regularly look over this work to ensure that it is being completed and is being done well. These quick checks are also effective ways of assessing student understanding and identifying misconceptions.
- **Model and ask students to role-play the math workstation tasks when introducing a new station.** Help students see exactly what the work should look like and sound like by demonstrating it. Explain the work process as you work through it. After students role-play working at the station, have them reflect on what worked and what did not work to help shape academic and behavioral expectations.
- **Create a math workstations binder.** Retain each Math Menu and Talking Points card. Store them in the binder along with a list of materials needed so that you can easily use the station again.



Math Concentration

G: Games for Mathematicians

Grades 3-5 Workstation

Overview

This game is played by two students. They lay the cards facedown in rows and columns and then take turns trying to turn over two cards that match: one that has a problem and the other that has its solution.

Standard

Solves word problems and real-world problems involving number operations

Materials

- *Math Concentration Problem-Solving Cards* (pages 237–238), one set per pair
- *Grades 3–8 GUIDE Recording Sheet* (page 276) or Math Journals
- Manipulatives for problem solving (*optional*)

Procedure

1. Students lay a set of *Math Concentration Problem-Solving Cards* (pages 237–238) facedown on the table between them in rows and columns.
2. The first student turns over a card.
 - If the card is a **problem card**, the student solves it on the *Grades 3–8 GUIDE Recording Sheet* (page 276) and explains the solution to the other player. Then, he or she turns over another card. If the second card turned over has the solution to the problem, the student takes both cards and turns over a new card. If the second card turned over does not have the solution to the problem, both cards are turned facedown and the second player takes a turn.
 - If the card is a **number card**, the player turns over another card. If that card is also a number card, both cards are turned facedown and the play goes to the next player. If it is a **problem card**, the player solves the problem on the recording sheet and checks to see if the solution matches the number card. If the cards match, the player takes both cards and takes another turn. If not, the cards are turned facedown and the next player takes a turn.
3. The game ends when there are no cards left on the table. The player with the most cards wins the game.

Math Concentration *(cont.)*

Differentiation

Need for Rebuilding of Foundational Knowledge

Include a picture, diagram, or representation of the problem on the problem cards to support problem-solving efforts.

Need for Additional Challenge

Distribute *Blank Math Concentration Cards* (page 239) to students. Have them write their own problem and solution cards for a problem-solving game.

English Language Learners

Pair English language learners with a student who speaks English proficiently and have them read the problems together. Include a picture, a diagram, or a representation of the problem on the problem cards to further support comprehension and build vocabulary.

Math Concentration Problem-Solving Cards

Directions: Cut out the cards and distribute to students to play Math Concentration.

Lucy's cat had 6 kittens. She gave away $\frac{2}{3}$ of the kittens. How many kittens does Lucy have now?	2
Marco baked cookies for his mother's birthday. The cookies filled up 3 cookie sheets, with 4 rows of 3 cookies on each cookie sheet. How many cookies did Marco bake?	36
Jess weighs 83 pounds. She weighs 16 pounds more than her little sister. How much does her sister weigh?	67
Brandon flipped a coin 15 times. He got heads $\frac{1}{3}$ of the time. How many times did he get heads?	5
There are 10 horses and 5 chickens in the barn. How many legs are in the barn?	50

Math Concentration Problem-Solving Cards *(cont.)*

Chen has 3 shelves of books. Each shelf holds 15 books. How many books does he have on the shelves?	45
Trisha's family went on vacation. They drove to her cousin's house, then to the beach, and finally back home. Altogether, they drove 599 miles. If it is 210 miles to her cousin's house and 58 miles from the beach to Trisha's home, how many miles is it from her cousin's house to the beach?	331
Li is 16 years old. He is twice as old as his brother. How old is his brother?	8
Ariel is reading a book by her favorite author. The book is 183 pages long. So far, she has read 158 pages. How many more pages does she have to read to finish the book?	25
Emily is making bracelets for a fund-raiser. Each bracelet is made with 10 beads. She has 155 beads. How many bracelets can she make?	15

