

MATH WORKSHOP: WHAT'S HAPPENING?

Math Workshop is a student-centered framework for math instruction. The teacher's role in this model is as facilitator, rather than "sage on the stage" and students are engaged in differentiated appropriate tasks based on their specific documented needs. Math Workshop looks slightly different in each teacher's classroom based on the class schedule, student needs, teaching style, and the goal of the instruction. Below each component of math workshop in my fourth grade classroom is described.

MATH ROUTINES

Each day, math workshop begins with some sort of brief math routine. These routines encourage problem solving, reasoning, and flexibility, while allowing students the opportunity to practice mathematical discourse in a setting in which they can receive immediate feedback. Students enjoy these quick routines and don't realize they are working their math muscles. The routines described below are just a few of the favorites that are in the rotation of math routines used to warm up during math workshop each day.

Which One Doesn't Belong

In this routine, students are presented with four numbers, equations, shapes, etc. and are challenged to determine which doesn't belong. They must provide justification for why their selected item doesn't belong with the others. The goal is that all four could be selected as the "oddball" for one reason or another. This routine has students thinking deeply and critically about values, attributes, operations, etc. and can incorporate multiple concepts within one routine. Christopher Danielson's book [Which One Doesn't Belong](#) is a great place to start with this routine. The [Which One Doesn't Belong site](#) has a bank of ready to use WODB examples. You also can find many other examples by searching #wodb on Twitter.



Number of the Day

Number of the day looks different from one class to the next, based on grade level, student needs, and teacher preference. In my classroom, the number of the day activities begin on day one and change throughout the year based on new concepts and areas of struggle for students. Place value concepts are always woven into the number of the day and then I incorporate the concept we are learning or a concept students are still struggling with. Sometimes the number of the day is also used to front load for what's coming next. For example, as a fourth grade teacher, I have students start finding factors and multiples with the number of the day long before this is ever taught as part of the curriculum. When we get to that strand, students already have a firm grasp and we are able to move quickly. Download my [Today's Number Freebie](#) for ideas.

What's The Question

In this routine, students are provided with a story problem situation without the question. Based on the information provided, students reason about an appropriate question that could match the problem situation. This routine helps students move beyond number picking from a word problem and carelessly performing an operation, challenging them to reason about the quantities and the context provided. It also provides opportunities for students to practice the various problem structures.

Number Talks

Number Talks are a great way to get students talking about their mental math processes and the computation strategies they use. For example, you may give students a problem like $12 \div 3$ and have them share how they mentally solved this problem. You record students' answers on the board and celebrate the variety of options. You can use this a time to discuss accuracy, flexibility, and efficiency with numbers. Check out Sherry Parrish's [Number Talks](#) book for full details. You may also want to read Parrish's [Teaching Children's Mathematics](#) article on number talks to learn more about how this routine helps students build numerical reasoning. Also, check out what Jo Boaler and Stanford's YouCubed have to say about [number talks](#).

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Other Favorite Math Routines:

Over, Under — Give students a goal number. Display expressions and have students justify if the solution to the expression would be over or under the goal/target number.

Why Is It Not — Given an expression, students justify why the solution/operation/situation is not _____. For example, $4 + 5 = 9$ — Why is it not a two-digit sum?

My Favorite No — The video shows this routine — an activity can be based on a warm up/morning work problem, an exit slip from a previous lesson, etc. that highlights the good work and misconceptions students have. This one is great to build growth mindset.

Tell Me a Story — Provided with an equation or quantity, students tell a story about what's represented by the equation or quantity. Another great way for students to practice reasoning about operations and quantities as well as practice different problem types.

Skip Count By... — Practice skip counting around the room to help students continue to build their concept of numbers. Skip counting can be by 2s, 5s, 1000s, fractional/decimal amounts, etc. — whatever fits the needs of the class.

Notices/Wonders — Students are provided with a picture prompt, sample of student work, equation, etc. and are challenged to share their notices and wonders as the teacher records these. Save these as going back to see prompts done earlier in the year yields powerful reflection from students about what they were thinking, what they know now, and can be added to based on new learning.

Estimation 180 — Students are given a picture prompt and they reason about what they see to estimate sizes, measurements, amounts, etc. This routine helps build number sense and gives students the opportunity to frequently practice a skill that is often weak. The linked Estimation 180 site is a great place to start with this routine before tweaking it to meet the needs of your students.

MINI LESSON

The mini-lesson in math workshop is a short, 10 to 15 minute lesson in which students are exposed to the basics for the math concept being discovered or explored. In the mini-lesson, a new concept is introduced through problem solving. Sometimes this is simply a contextual situation students work through in small groups to solve with teacher support. The situation can be based on a story problem, a picture, or just a situation. This is a time to introduce and begin applying new math vocabulary (adding to the math word wall and in student notebooks) and do any whole group think-alouds. This is typically followed by the guided math stations as outlined below.

Sometimes, the mini-lesson will be a launch point for problematic tasks. When using problematic tasks, (Check out [Rock Hill Schools Problematic Tasks](#) or [Graham Fletcher's Blog](#) for more information) the mini-lesson time is for whole group discussion about a base context ([Act One](#)) and then followed by small groups working through the big problem (which is differentiated by their own entry points or by the questions they asked or that are asked of them) while the teacher is free to move from group to group, asking questions that guide students' thinking and providing the support needed by each group.

GUIDED MATH STATIONS:

Guided math stations are the time when students get targeted instruction and practice in small groups and continued practice, review, and extension through highly engaging and motivating tasks, including games, problem solving opportunities, fluency work, and digital games. In my class this takes place in three 15-minute stations daily. As you'll see referenced in the following descriptions, at my school we describe the time students spend in a teacher-led small group in terms of ice cream scoops — can you tell we like to eat? The scoops of small group instruction individuals receive is often discussed in student growth meetings (data PLC meetings), intervention meetings, when developing an academic plan (RTI), and if a student support plan needs to be put in place. The following descriptions give details about the stations used in my math workshop. These can change based on the needs of your students. For more information on guided math, check out [Dr. Nicki Newton's Guided Math In Practice book](#).

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Meet with the Teacher: During this group, the teacher provides targeted, small group instruction based on student needs as evidenced by pre-assessment data and formative data (exit slips, anecdotal records, observation, student self-assessment [Marzano levels, reflections]). This time can be used for re-teaching and re-assessing content not mastered by the student(s), providing direct instruction centered around the current standards addressed through the mini-lesson, extending upon the current standards addressed to provide more in-depth, rich problem solving opportunities, or pre-teaching to prepare students for new concepts. This is considered the students first scoop of small group instruction. Ideally, all students receive one scoop of small group instruction daily. If this isn't possible, I recommend at least 3 days of small group instruction daily.

Meet with the Interventionist: When students meet with the interventionist, they are being provided additional, targeted instruction based on their needs. Many times this block is spent targeting areas of weakness as evidenced by progress monitoring tools such as STAR math testing and [math running records](#). Additionally, the interventionist uses classroom assessment data to provide additional direct instruction as appropriate for each group. This station is dependent on the resources and scheduling at your school. If interventionists aren't available, students that need intervention can meet with the teacher for a second scoop of instruction. This extra scoop can also be creatively fit into the schedule - that pesky "morning work" time is great for providing an additional scoop for students who need additional instruction.

Problem Solving and Journaling: At this station, students focus on a differentiated problem solving task or an open task (allowing for natural differentiation). They may work with their group or independently (up to teacher discretion based on the group and their needs) to solve the problem (sometimes using multiple strategies) and then journal to explain their thinking. This is a time for students to apply vocabulary learned during mini-lesson and guided math group time. During group problem solving tasks, students are also able to continue the math discourse that allows them to challenge and deepen their own thinking and the thinking of others. This station is located by the math word wall to allow easy access to the current math vocabulary for journaling and discussion. At this station, a math tool box of various manipulatives, templates, etc. is available for student use as they solve. They are also provided highlighters to showcase their vocabulary in their journaling.

Game: At the game station students play a variety of self-checking games with their group members. Often these games are based on previously learned concepts in order to review or continue practicing these skills. Other times these games are modeled in small group or mini-lesson time and then used during rotations to practice the current focus concept. Students work together to play these games (ranging from basic games with dice, cards, or dominoes, to pre-created concept-centered math games, to task cards paired with games like Jenga - Check out this [blog](#) for ideas on how to incorporate board games for engagement). A math tool box is also available at this station for students to use as needed for support.

Digital: At this station, students use the classroom Chromebooks (or iPads) to practice current or previous math concepts. Many times they will work in the appropriate domain on [Front Row](#) - a FREE, highly motivational, and personalized math dashboard. Other times students work on interactive games from sites like [Sheppard Software](#). Links to games can be shared with students on Google Drive or put on a class [Symbaloo](#) for easy student access.

Fluency: During this station, students work on fluency games to practice their facts. These facts are determined from completing Math Running Records. Students have one set of facts to work on at a time (based on the recommendations of Van de Walle as outlined for [Addition and Subtraction](#) and [Multiplication](#)). They create their own flash cards for those facts and practice or do other fluency practice games like [Power Towers](#) or [War](#).

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DEBRIEF

After guided math stations, we take 5-7 minutes to debrief. During this time, students lead the discussion and share an Aha! moment, a notice, or a question that came up during their work that day. Sometimes, I ask students to share something I noticed in groups or through my engagement monitoring. Other times, students shout out something awesome they noticed from others. This is also a great time for an informal check for understanding (Fist to Four/Five, exit slip, etc.). This is our most sacred time in math workshop because it pulls everything together and gives students the opportunity to reflect on what they are learning – and what they aren't! The debrief helps inform what will take place in math workshop the following day.

A NOTE ABOUT GROUPING

The beauty of math workshop is the time that students get to spend in small groups. It allows for more small group instruction time – which we all know is more effective than whole group – and is a way to ensure student engagement. I've noticed that on days when our schedule is wonky and groups get cut/cut short, the kiddos get so upset. They love their small group time and stations, often begging for more (all the heart eyes from this math nerd!). The question, then, is how are groups formed? The quick answer is – I use pre-assessment and formative data to group students by weaknesses and strengths based on concept/indicator. Then long answer – it changes...ALL. THE. TIME. Groups flex from week to week and sometimes day to day. These flexes are based on what I notice in small groups and formatives, along with student self-assessment. I'll come back to grouping in a few, though...

GUIDED MATH EVERY DAY? NAH.

The number one question I get from folks who haven't made the switch to math workshop yet is, "Do you do guided math groups every day?" The answer is a definitive no! Most days, yes, but not every day. Before I started guided math groups, I was using math workshop with a slightly different slant – a problematic tasks focus. It was amazing and the results were beautiful! That was in a self-contained Gifted and Talented class, though. When I moved back to a regular ed setting, I found that my kids needed the structure of guided math groups so I slowly made the switch. Now, I'm finding my groove with a hybrid that accomplishes both – small group direct instruction and time for problem solving together. This came from several notices:

1. Most students were thriving in guided groups and needed something different to enrich and switch it up a little.
2. Some students were receiving such intense intervention that they became dependent on a teacher and really struggled to find confidence and independence.
3. Selfishly, I missed the workshop in which students were daily engaged in problematic tasks and the flexibility it gave me to move from group to group as they worked.

So...these days we have one day per week with a task focus. Tasks are carefully selected from some of the resources shared later or are created so that they provide natural differentiation. On these days, students aren't necessarily grouped with their guided math group. I love to use random grouping for these tasks because it gives students the opportunity to work with others – sometimes folks they may never work with based on "data." The conversations are rich and the work is **good** – because the kids are engaged, they are reasoning and problem solving their little tushies off, and...they never know who will be asked to share during the debrief so *everyone* has to engage in the work. Another perk of #taskTuesday – okay, not always Tuesday – is it gives the teacher some freedom (not to sit at your computer, y'all). During this time, I love monitoring group conversations. The students often seek help when I'm visiting their group. My go to response: "Do you want a question (to spark thinking) or a hint (not an answer)? They hate this at the beginning, but quickly will begin to just ask what for what they really need (most often they just want a facilitative question) because they want to figure it out on their own. I also use this time to pull students for math running records or to confer with students (about portfolios/artifacts), formative/summative assessments). This time is also great for collecting data in the form of anecdotal notes, checklists, and engagement wheels.

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SPEAKING OF ENGAGEMENT

Sure this whole math workshop thing sounds great, but how do you make sure kids are engaged when you can't see them? I'll be honest – it takes some finesse and some time. It comes, though, I promise! First of all, the work they are doing in stations and through problematic tasks has to be engaging – not just a worksheet or workbook page, please. Students need to be playing games that practice skills and concepts but that are also fun. They want to be solving problems that are authentic and real world (cue [watermelons meme](#)). Additionally, I've found that students are more engaged when they have something to work towards. This is where math portfolios come in to play. Students keep a math portfolio for the year and they know for each unit they will be responsible for selecting specific artifacts (based on a rubric) that showcase their work as a mathematician. When they want their portfolios to be the best showcase of where they are as a growing mathematician, they work towards that goal even when no one is looking. Last, students know that I could be doing an engagement wheel at any point (from my guided group table, even) and they don't want to have that tough conversation during a conference.

GREAT PLACES TO START

These resources are great places to start when finding activities for guided math groups, problematic tasks, and stations that kids will love.

[Howard County Public School System Mathematics Department](#) – Find your grade level and marvel at the work this district is sharing for free. They have truly amazing assessments, games, and resources just a click away. This is my number one go-to when planning.

[Illustrative Mathematics](#) – Great resources for tasks to use or tweak for your kiddos.

[Dan Meyer's Three Acts of a Mathematical Story](#) – Great info and bank of ideas for Three Act Tasks.

[Graham Fletcher's Bank of 3-Act Tasks](#) – Another bank of 3-Act tasks that are excellent.

[Dr. Nicki Newton's Guided Math Blog](#) – Search this no-frills blog for the concept you are working with and you'll find awesome links to free resources and tons of ideas that will spark your thinking. Follow her on [Pinterest](#), too.

[Math Learning Center](#) – This site has great math apps for digital manipulatives and some good plans and resources.

[My Class Website](#) – Check out my website for other ideas, books to read, and (hopefully soon) the link to my new blog.

LET'S CONNECT

Have more questions? Want to see examples, videos, etc.? Contact me or connect on Social Media. I'd love to help in any way I can.



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LEARN.
LAUGH. LEAD.