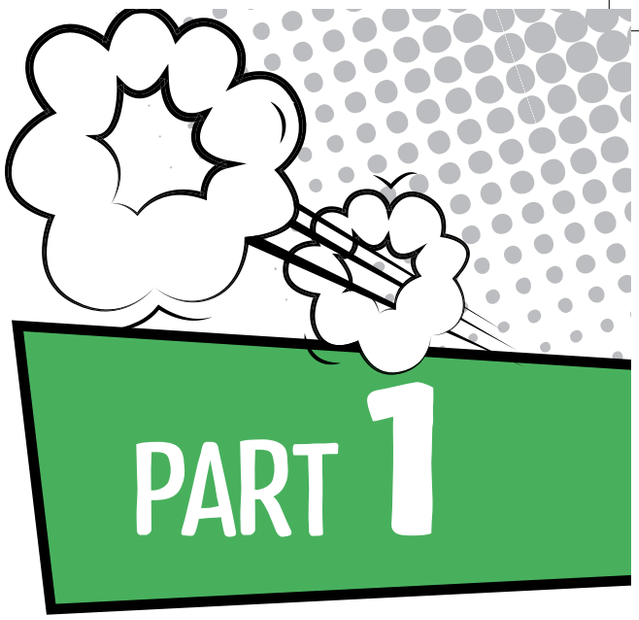


WHY JUMP-START ROUTINES?

THE FIRST FEW MINUTES OF MATHEMATICS CLASS

The opening few minutes of a mathematics class offer a rich opportunity to capture the attention of students and prepare them for the lesson ahead. As teachers, we must be aware, however, that students often walk into our classes with all of the distractions of their electronic lives as well as issues with friends, parents, or even health concerns. Their bodies may be in a room with us for the required time period, but their minds may be somewhere else entirely. The opening minutes are also the time when students' brains are freshest and they tend to remember more of what is being taught during this segment than at any other time during the learning episode (Sousa, 2007). That is why it is such a critical time to help students shed their distractions, capture their attention, and jump-start their brains. Engaging students immediately increases the likelihood that they'll stay engaged and motivated to learn throughout the lesson.

Why the Traditional Warm-Up Doesn't Work

Many times, the first 5 minutes of class are spent on logistical or low-level cognitive tasks such as taking attendance, reviewing homework, or completing problems that are identical to homework problems assigned the night before. While the goal may be to tap into prior learning, such problems are usually rote in nature and ask

students to perform simple tasks that often stress procedure and "correctness." A traditional sixth-grade warm-up might look like this:

1) Estimate the product by rounding each number to its greatest place value.

$2{,}342.7 \times 784.3 =$

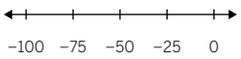
6.NS.3

2) What is the reciprocal of $5\frac{2}{3}$?

6.NS.1

3) Solve the inequality.

$-100 \_\_\_\_\_ -75$



6.NS.7a

4) What is the difference in elevation between High Point (673 feet above sea level) and Low Point (80 feet below sea level)?

6.NS.5

5) George ate 4 slices of pizza. If this was 25% of the slices at the dinner table, how many slices were at the table to start with?

6.RP.3c

Positioning warm-ups like these as the first "instructional" tasks presents challenges. It signals to students that mathematics is the pursuit of low-level answers and procedures. It suggests that mathematics is a collection of semiconnected ideas and steps. Students may infer that you value these sorts of problems more than others. Why else would you start with them? These problems tell your students that you need them to consistently review ideas because you aren't confident or convinced that they have mastered the skills within them. Such warm-ups may fail to take advantage of the moments in which your students' brains are most ready to learn. The most problematic aspect of these warm-ups may be that they fail to set the stage for engagement and discussion.

We know from experience that great lessons begin with a strong start. Many, if not all, of us would agree that the opening minutes of class have the potential to ignite engagement and take advantage of our students' brains being ready to learn. Conversely, a start to class that drags or is uninteresting can sabotage the rest of the period. The traditional warm-up often sets the stage for the latter. But what if it didn't?

The Problem With Going Over Homework

Research on the effectiveness of homework suggests that doing homework *can* improve academic achievement for middle school students. However, according to two studies of middle school and high school mathematics classrooms, 15 to 20 percent of class time tends to be spent reviewing homework (Grouws, Tarr, Sears, & Ross, 2010; Otten, Herbel-Eisenmann, & Cirillo, 2012). We fundamentally believe that reviewing homework for any significant amount of time in class is an ineffective way to begin class.

For many teachers, reviewing homework is an unwritten obligation for planning mathematics class. It is where math should start or something that should be done after a warm-up. But it is not a requirement for effective mathematics instruction. In fact, it can contribute to the opposite of effective mathematics instruction. So why is going over homework problematic?

First, remember the intended purpose of homework. Homework should be designed and used for practice of previously learned skills and concepts that students are able to complete independently. Unfortunately, we often see homework becoming the fulfillment of a lesson that a teacher was unable to complete in class. Not only does that unfairly put the burden of independent learning on students, but the teacher is then in the position of reviewing and grading work that students have to complete without enough knowledge. This usually results in follow-up instructional time needed to troubleshoot and clarify. It can also create a culture of assessment based on minimal or incomplete teaching.

Second, even if homework is set to practice skills taught completely that particular day, specific items within a homework assignment can sometimes be problematic. These items may be uniquely complicated or simply missed by everyone in the class. As the teacher then explores these items, it suddenly becomes necessary to conduct an ad hoc mini-lesson to clarify something that was really a weakness in the assignment itself. In no time, significant instructional time has been lost, regardless of students' performance or understanding.

Third, and just as important, even having students complete and turn in their homework can be a problem. Some students forget their homework. Others are unable or choose not to do it because of circumstances at home. Incompleteness of homework means that class time dedicated to reviewing it is already compromised. And even those who complete it may not have done so independently as some students have better access to support. These students may have no better understanding than their classmates but their "work" shows otherwise.

The bottom line is that if homework is used appropriately to reinforce existing knowledge and help students keep skills fresh, then it shouldn't need much, if any, class time for review. Instead, we propose using that time more productively. Starting math class with number sense and reasoning routines that can engage students and foster their curiosity and creative thinking immediately will allow you to take back the time lost to rote warm-ups and review of homework.

JUMP-START ROUTINES: NEW WARM-UPS FOR A NEW ERA

The routines in this book are designed to jump-start mathematics class. They are new warm-ups for a new era. They are engaging opportunities for students to work with and discuss interesting prompts. The routines are designed to develop students' reasoning, critical thinking, and/or sense making. They aim to improve students' number sense. They are a makeover for the beginning of class as they replace traditional warm-ups and homework review with meaningful, engaging, quality practice. These routines can repair or instill mathematics confidence in our students.

These routines are

- practical and easy for teachers to implement each day,
- meant for the first 5 to 7 minutes of class,
- thinking exercises meant to ignite thinking and reasoning skills,
- open and flexible in nature, and
- modifiable to work with almost any content.

These routines create an environment in which the Common Core State Standards for mathematics (Governors Association Center for Best Practices & Council of Chief State School Officers, 2010) come to life. Though specific practices are linked to each routine throughout the book (listed as **MP**), in general students

1. make sense of problems and persevere in solving them,
2. reason abstractly and quantitatively,
3. construct viable arguments and critique the reasoning of others,
4. model with mathematics,
5. use appropriate tools strategically,
6. attend to precision,
7. look for and make use of structure, and
8. look for and express regularity in repeated reasoning.

Concretely, these routines are designed to get students reasoning and thinking. Specifically, they help students

- enhance their ability to determine reasonableness of answers or solutions;
- examine errors in given problems, explaining what's wrong and why;
- reason metacognitively about the *strategies* that they are using; and
- communicate their solutions and reasoning to others.

Routines for Reasoning in Mathematics

You can think of reasoning as the process of drawing conclusions based on evidence or stated assumptions. Although reasoning is an important part of all disciplines, it plays a special and fundamental role in mathematics. In middle and high school mathematics, reasoning is often understood as engaging in *formal reasoning*, or formulating proofs, in which students draw conclusions logically deduced from assumptions and definitions. However, mathematical reasoning can take many forms, ranging from informal explanation and justification to formal deduction as well as inductive observations. Reasoning often begins with explorations, conjectures at various levels, false starts, and partial explanations before there is ever a result. As students develop a repertoire of increasingly sophisticated methods of reasoning and proof during their time in high school, "standards for accepting explanations should become more stringent" (National Council of Teachers of Mathematics, 2000, p. 342).

Yet reasoning is compromised as students accept rule and procedure without investigation of *why*. They then practice these rules and procedures so much that the mathematics and reasoning within them fades away. Their task at hand becomes

nothing more than completing a collection of problems. Over time, they generalize that this is what it means to do mathematics.

Today, technology makes it possible to solve or complete almost any calculation quickly. But how do students know that the result is reasonable? How do they know that a solution displayed on a calculator or monitor is correct? Determining reasonableness is a collection of abilities and skills, which are much different from procedural calculation. These skills include critical thinking, reasoning, problem solving, and communicating. In fact, these more complex skills are more desired by Fortune 500 companies than those skills, such as calculation, that were once considered desirable (Boaler, 2015a).

The routines proposed here help students develop complex, essential skills through daily, engaging activities that represent quality practice. The strategies, approaches, and reasoning that they develop during these routines will serve them for a lifetime of everyday mathematics.

Routines for Improving Number Sense and Fluency

The National Council of Teachers of Mathematics (1999) identifies five components of number sense: number meaning, number relationships, number magnitude, operations involving numbers, and referents for numbers and quantities. Fennell and Landis (1994) describe number sense as "an awareness and understanding about what numbers are, their relationships, their magnitude, the relative effect of operating on numbers, including the use of mental mathematics and estimation" (p. 187). Students with number sense understand relationships between numbers. They estimate. They make use of the properties of operations. They manipulate. Fennell and Landis also describe number sense as "the foundation from which all other mathematical concepts and ideas arise" (p. 188). And every mathematics teacher relates to their noting that "students with number sense show a good intuition about numbers and their relationships" (p. 187).

Fluency is much more than the quick recall of basic facts. It is being accurate, efficient, and flexible with thinking and computation (Kilpatrick, Swafford, & Findell, 2001). Students show it when they add up or subtract to find the difference between two integers. They show it when they think about 109.7 + 13.5 as 110 + 13.2. They might show it through their ease of effort when completing a procedure. But we should also help them pursue it as mental mathematics.

There is likely no correlation between the number of problems on a page and the level of one's number sense or fluency. Students don't develop these skills by completing a certain quantity of problems. Instead, you can help your students develop them through rich, engaging problems and tasks, through exposure to others' sense and reasoning, and with sound understanding and lots of opportunity for meaningful practice. Routines can be part of that opportunity.

Number sense and fluency extend far beyond whole numbers and basic facts to fractions, decimals, ratios, percentages, and much more. Most, if not all, mathematics teachers would identify number sense and fluency as two of the things that matter most. They might also identify them as two of the biggest challenges their students face in mathematics. Because of this, number sense and fluency are the targets of every routine in this book.

Building Number Sense and Fluency Over Time With Routines

Certain mathematical "big ideas" are critical. They involve concepts and essential skills having to do with fractions, decimals, percentages, ratios, proportions, integers, equations, and many more. Students cannot truly develop or fully understand these ideas in a single unit of study or just a week or two of instruction. Mastery evolves. Students develop mastery over long periods, through frequent use and application in varied situations. They develop mastery through discussion and through brief, consistent, engaging, and meaningful practice. Daily routines enable students to develop, practice, and reinforce understanding of essential skills and concepts over time.

10,000 Hours of Practice

In his book *Outliers*, Malcolm Gladwell (2008) suggests that a person needs 10,000 hours of deliberate practice to master something. Though one might argue the exact amount of time, it is logical that the more people do something—the more they practice and experience something—the better they can understand and apply it. Take, for example, driving a car. Passing a written driver's exam doesn't mean someone is a proficient driver. Instead, it shows that they understand the rules of the road and the basics of how a car operates. Their ability to drive a car well is improved and enhanced as they do it more and more.

This analogy could be applied to number sense and reasoning. The theory here is that with foundational understanding and frequent, plentiful opportunities to practice, students can develop noticeable sense of number, reasoning, and justification. You might note that 10,000 hours seems impossible with limited instructional time and considerable skills and concepts already identified in your curriculum. However, with routines such as those presented in this book, your students can achieve a grand amount of "hours on the road" in just a few minutes a day. Consider this: your students could access 11,700 minutes of number sense practice through 5 minutes a day, for 180 days (in a school year), over a 13-year school career. That's 195 hours—or more than one instructional year—for just number sense and reasoning!

Routines That Satisfy the Need for Quality Practice

Quality practice is not defined by the number of problems students complete, the speed at which they calculate, nor the number of hours they spend doing mathematics. It is defined by what students do and how they are engaged. Quality practice should engage students in thinking. We mean for the routines in this book to provide quality practice. They offer distinctive, engaging, and diverse experiences that will help students develop their thinking skills. They are not repetitive nor mundane. They are not mindless drills. These routines provide the quality practice that can help our students perform better in class, outside the mathematics classroom, and even on standardized tests.

Routines for Achieving Improved Performance

Data from 13 million students who took PISA tests showed that the lowest achieving students worldwide were those who used a memorization strategy (Boaler, 2015b). Simply put, thinking and making connections improves students' success on standardized tests. Mental computation and estimation can improve students' speed and overall performance. This makes most sense when we consider that test makers

design distractors to mimic students' most common computational errors. It makes sense that students who estimate, discount possibilities, and make decisions about reasonable answers will reconsider their solutions when choices don't match solutions. Routines that develop reasoning and number sense help students gain confidence, practice thinking, and likely improve overall performance on standardized assessments.

Routines for Rehabilitating Number Pluckers, Pluggers, and Crunchers

One might say that traditional mathematics instruction has created a bunch of "pluckers": students who pluck key words or numbers from problems without thinking. It has created "pluggers" who plug numbers into formulas and equations without thinking. It has created "crunchers" who crunch numbers and blindly rely on the results as being correct. The creation of these pluckers, pluggers, and crunchers doesn't happen by accident. It can be the result of students who perceive mathematics to be a collection of procedures or the pursuit of answers.

Success can be fleeting for many, if not all, of our pluckers, pluggers, and crunchers. Their ability to complete a procedure with understanding can, and often is, lost without considerable practice and maintenance. Even then, proficiency can fade. Yet understanding is not lost. When students understand concepts, connect them to procedures, refine their understanding, and transfer it to new situations, they show that they never lose it. Routines build on their conceptual understanding and allow students to connect ideas, refine them, and transfer them to new situations. Routines build number sense and fluency. Routines can rehabilitate these students so that they rely on their own thinking instead of or in addition to someone else's rules and procedures.

Routines for a Growth Mindset

The idea of consistent, engaging practice to develop your students' number sense and reasoning promotes other prominent ideas about teaching and learning. One of those is a growth mindset. A growth mindset is an approach to teaching mathematics that emphasizes that mindset is more important than initial ability in determining the progress students can make in their mathematical understanding. Students with a growth mindset make better progress than those with a fixed mindset. Having a growth mindset means

- believing that talents can be developed and great abilities can be built over time,
- viewing mistakes as an opportunity to develop understanding,
- being resilient,
- believing that effort creates success, and
- thinking about how one learns.

Carol Dweck's (2006) work establishes that a growth mindset benefits students by empowering them to develop skills through dedication and hard work. For this to happen, you must provide them with worthwhile opportunities to engage in and discuss reasoning. Daily routines to work with interesting activities, to build number sense, and to improve reasoning about number and operation naturally complement the facets of a growth mindset. Routines reinforce that students' ability can be developed through continued practice and effort. They help students build confidence. They can undermine any students' notion that their mathematics ability is fixed.

Routines to Honor and Leverage Errors

A growth mindset is grounded in making and honoring mistakes. Honoring mistakes is much more than saying that it's OK to make a mistake in class. Honoring mistakes means that you also explore mistakes and consider why they happened. As Boaler (2015a) notes, mistakes help grow our brains. Routines are an opportunity for students to reason and make mistakes when doing so. Discussion about reasoning and mistakes helps students advance their understanding. As you facilitate discussions during routines, it is critical to pursue not only accurate and efficient reasoning but flawed reasoning as well. Exploring their reasoning and errors tells your students more than the fact that mistakes are OK. It tells them that you value mistakes.

As we know, it is more powerful to find our own mistake rather than being told that we are incorrect. During discussion with partners and the class as a whole, students have the opportunity to explain their thinking and thus catch their own mistakes. In some cases, exposure to others' reasoning and even others' errors helps students better understand their own reasoning and misconceptions. This can happen at any point during a math class. Starting with a routine built on reasoning and discussion increases, if not guarantees, the likelihood of discussion and exploration of errors or misconceptions.

Routines to Actively Develop Confidence

Blindly applying rules to mathematics without understanding can undermine students' confidence as they rely on disconnected steps without understanding (Van de Walle, Karp, & Bay-Williams, 2010). Stalled fluency erodes confidence. Perceptions of failure associated with making mistakes in mathematics or perceptions of "not having a math gene" damage students' confidence. Infrequent, disengaging, or disconnected practice challenges confidence. Yet jump-start routines can counter each of these challenges and in time enhance your students' confidence in themselves and in mathematics in general.

IMPLEMENTING JUMP-START ROUTINES

These routines are intended as practical ideas for jump-starting your mathematics class. They can be modified to work with any number concept and almost any mathematics concept in general. They can be adjusted to any amount of time allocated to begin mathematics class. They can be used with any level of student proficiency in mathematics and any level of student experience with routines. As they are implemented, routines become a rich opportunity for meaningful discourse in mathematics and windows into student thinking.

Routines That Are Ready for Use

The routines provided throughout this book are ready for use. Each routine is available as a downloadable set of PowerPoint slides.

All tasks can be downloaded for your use at **resources.corwin.com/jumpstartroutines/middleschool.**

Each can be edited or modified as needed for any classroom. The slides can be copied so that a routine can be extended to different types of numbers or concepts. Specific numbers, operations, or concepts are provided as examples of how a routine may be used. And additional examples are provided to give ideas about how the content might be modified.

Also, to help you get started, some of these routines have been recorded in real classrooms. The videos give you a sense of the timing for the routine. They provide insight into how students might reason about certain situations. They help you think about the questions you might ask your students during the routine. Seeing these routines in action can help you develop an understanding of how you might use them in your classroom. See page 17 for the full list. You can access these videos at resources.corwin.com/jumpstartroutines/middleschool

Flexible Use

We intend for the routines presented here to support high-quality mathematics instruction. There are no specific requirements. You can adjust the time allotted to a routine for all sorts of needs. You can adjust the number of prompts. You can use any routine, in any order, on any day. We offer ideas for using and adjusting routines throughout this book, but there are likely many other ways to adjust them. You can modify any routine however you see fit.

Timing of Routines: How Long? When?

You can manage how long routines last by adjusting the number of questions you ask or the number of student approaches you investigate. You can limit the number of problems or situations that students encounter. You can modify the complexity of the mathematics you present. You can cut or extend the amount of time students have to share their thinking with partners. Essentially, you control the amount of time allocated to your routine. Here is one guide for facilitating a routine:

- Students work with the prompt independently (about 1 minute).
- Students discuss their reasoning within a pair or triad (about 2 minutes).
- Teacher facilitates class discussion about strategies and reasoning (about 3 to 4 minutes).

That said, here are a couple of basic guidelines:

1. These routines are intended to be quick, engaging activities that foster number sense and reasoning. Typically, they should be no more than a few minutes. Most days they should last about 5 minutes. Other days they may be a bit more than 5 minutes. Occasionally, the discussion may be so vibrant and engaging that you find your class spending 10 minutes with the routine. The latter may not be ideal due to time and schedule challenges, but it's important to note that it may happen from time to time. It's also important to note that these rich discussions are exactly what you want for your students, so spending a few minutes more with them shouldn't be thought of as time lost or wasted.
2. We think these routines are best situated at the beginning of the mathematics class. You can establish protocols for students to enter class and prepare for the opening routine. In this way, they naturally replace

mundane warm-ups or review of homework. However, you can flexibly position routines throughout the class as well. In longer, double-block classes, you may decide that they are best used in the middle of the block as an opportunity for rekindling students' energy and engagement. In other cases, you may find that routines can be useful when offered at the end of the class. If you select the end of class, you must be sure to close instruction for the period early enough for the routine to take place. There is the obvious challenge of running out of time when planning for routines at the end of class.

Which Routines to Use?

We offer a selection of varied routines for use in the classroom. There is no suggestion of which to use, when to use them, or how to order them. There is no requirement for length of use or timing within the quarter or semester. The recommendation is to use routines that are most comfortable to facilitate and most interesting for your students to investigate. You should select a routine and use it for a few days or weeks before moving to another. You may circle back to the first routine after students have experienced other routines. It's important to remember that any routine can become stale with too much use. You can make subtle adjustments to the routine to keep it fresh. Even so, it will be wise to change out routines as needed.

Pages 14 and 15 offer a table that presents a brief description of each routine and its type. These types are noted as entry-level, mid-level, and advanced-level, and they indicate what amount of readiness students or you might need to use the routine.

- Entry-level routines are obviously good places to start. They are robust yet fairly easy to work with regardless of student experience. All students should be able to participate without any special understanding or training.
- Mid-level routines are high-quality reasoning activities that might be best used after students show some proficiency with reasoning and number. They focus on mental mathematics skills and operational sense.
- Advanced-level routines extend reasoning to slightly more complex situations.

These levels are simple suggestions. Keep in mind that every student and every class is different. Some entry-level routines may play out more as mid- or advanced-level due to student understanding of the concept or operation. Moreover, you can adjust any routine's featured concept. Doing so may impact how the routine works in your classroom.

PLAN FOR THE ROUTINE

While you should focus most of your planning energy on the core skills and concepts of the main lesson, you can incorporate short warm-up routines easily because they are designed for low-intensity planning. They are designed to be replicated with minimal change to develop student number sense and reasoning. You should be able to change out skills and concepts within the routine with little effort. However, there are some things to keep in mind when selecting and planning the routine.

Select the Routine and the Content or Concepts

Obviously, you need to know how to facilitate the routine. You must understand the basic tenets of the routine. You must also select skills and concepts that are appropriate for your students. You must decide whether you want to feature rational numbers or equations. You need to determine whether your students need help with operational sense or more general number sense. Experience will tell you this, but you also might take cues from class discussion, student work, or test results about what topics and ideas you need to develop with your students. Armed with this information, you can prepare the routine.

Use Routines to Set the Stage for Meaningful Discourse

Because discussion is such a critical component of the routines in this book, Smith and Stein's (2018) five practices for orchestrating productive discussions naturally outline how we can plan for routines. These practices remind us to anticipate, monitor, select, sequence, and connect.

1. *Anticipate What Students Might Do During the Routine*

Anticipating what students might do helps you consider how you will respond intentionally rather than randomly. Considering student ideas and misconceptions can also help you think about other prompts you might pose through the routine in subsequent days. You can start anticipating simply by thinking about how you would find the solution to the prompt. Throughout this book, you will find routines with particular skills and concepts, many of which share some of the reasoning and solutions your students may offer.

2. *Monitor Student Discussions During the Routine*

Monitor means that you listen to students as they work on a problem or discuss their thinking, particularly when discussing with a partner or small group. Granted, it is unlikely that you can listen to every student conversation, but you can be strategic about the discussions you monitor. You may monitor discussions of targeted concerns. You may monitor discussions of students who have shown inconsistent performance with a specific skill or concept. You may monitor different groups on different days to balance whose conversations you listen to and focus on.

3. *Select Strategy and Reasoning to Promote During the Routine*

As with discussions during your core lesson, you have to be careful not to randomly select students for discussion during routines. A random selection may compromise the discussion. Anticipating what students might do or think during the routine can help you think about the conversations or ideas that you want to listen for when monitoring. This coupled with considering the strategies, reasoning, or possible misconceptions that you want to highlight can help you select students for sharing during whole-group discussion of the routine.

4. *Sequence Ideas During the Routine*

Strategies and ideas should be sequenced during discussion to advance student understanding. Sequencing may be most challenging during a routine. In fact,

careful, deliberate sequencing of ideas during a routine may be impossible due to time constraints or inability to monitor every discussion in the short amount of time. You may be able to offset some of the sequencing challenge with questions. To do this, pose questions that help students make connections between strategies, reflect on efficiency, and make use of structure and patterns within prompts. Here are some sample questions:

- How is ____'s strategy similar to ____'s?
- How is ___'s strategy different than ___'s?
- How does this idea connect to something we have discussed recently?
- Will this approach always work?
- If we think about efficiency, how do these strategies compare?
- What patterns do you notice in the expressions?
- How did you use patterns to help you find your solution?

5. *Connect Strategies and Concepts During the Routine*

Your questions during routines should help students connect solution paths or varied reasoning. They should help students see connections between concepts. They should also help students make connections between numbers, operations, and representations. You may even make decisions on the fly to extend student reasoning to new situations or problems through your questions. We offer questions for each routine in this book to support and guide you in facilitating discussion and connecting strategies, skills, or concepts.

PRACTICAL ADVICE FOR ROUTINES

Routines can be a component of your instruction that should require very little preparation. They should be both useful and practical. You should use them in ways that complement who you are as a teacher, what you value in mathematics, and what your students need. We note some important advice for working with routines below.

Modify, Modify, Modify

Routines work with any skill or concept. You can change the content to match your students' needs. Change it to meet a specific purpose. Modify how the routine functions. We present ideas about how a routine should unfold, but this is only a guide. Consistently monitor how students interact with the routine. Compare their work with the intent. Adjust or modify as needed.

Identify or Create the Content or Topics

Identifying or creating the content for the routines may be the most complicated aspect of routines. Topics should be those that students need to further develop or refine. We offer many examples and modifications throughout this book to ease that challenge. Yet there are other resources for creating examples. The prime resource is your students themselves. Having students create the number prompts may offer added benefit as it gives them an opportunity for thinking deeply about the identified concept. You can have students write or create routine situations as a homework assignment. You might also have students create routine situations as independent

work once they have completed an in-class assignment. Keep in mind that students should work with a routine before creating prompts or problems for it. Also keep in mind that students can design quite creative, complicated, or unique situations.

Use Routines Formatively

Routines are a good way to formatively assess students. They can help you determine student perspectives and reasoning. They can help you monitor student proficiency with previously learned skills and concepts. They can help you determine specific types of numbers and operations that you might reteach or revisit through mini-lessons and other activities.

Be Committed and Creative

It's possible that the first few times you use a routine, you might find the activity to be clunky. This is natural. Try to give the routine some time before cutting ties with it. You can also reflect on how you can make it better or how you might modify the content or process to improve its effectiveness. Be mindful, too, that reasoning, communicating about reasoning, and working with mathematics mentally may be new to your students. Because of this, it may take some time for them to get comfortable with a routine. As noted, you can creatively adjust or modify the routine to best meet the needs of your students and your style of instruction.