Chapter 1

BEFORE THE CHILDREN ARRIVE

Providing effective mathematics instruction calls for thinking about what’s required to support and facilitate student learning—organizing the physical classroom, establishing a safe environment for learning, helping students establish productive learning habits, structuring effective lessons, and more.

About Teaching Mathematics
Burns 2007, 51
Planning Your Math Program

As you begin planning your math program, please remember that this book presents an overview of the mathematical concepts, procedures, and topics fourth-grade mathematicians may encounter in a given school year. It is not meant to be a prescribed curriculum, but rather a thoughtful collection of lessons and investigations based on topics and units covered in most fourth-grade classrooms as well as those recommended by the National Council of Teachers of Mathematics (NCTM) standards. It is my ultimate hope, however, that this yearlong overview will give you the opportunity to think about how to approach and develop the teaching and learning of mathematics in your classroom.

Chapter Focus and Time Span

The mathematical content covered in *Fourth-Grade Math* focuses on the following units of study commonly presented in fourth grade:

- problem solving and logical reasoning
- number relationships and operations
- geometry
- measurement
- multiplication
- division
- fractions and decimals
- algebraic thinking
- data collection and interpretation

The number of weeks devoted to each topic may vary from year to year and from class to class. You will also find that number relationships and operations (addition, subtraction, multiplication, and division) and algebraic thinking can spiral through each unit because of their connectedness to other concepts and procedures covered in the proposed units of study. Many of the concepts and procedures are introduced, practiced, or applied in a problem-solving context that can support and develop greater meaning of the mathematics. Following is a possible scope and sequence of an academic year:

**September** (4 weeks)

- welcome back activity
- problem solving
- algebraic/logical reasoning
- addition and subtraction fact review and yearlong extensions
- estimation strategies
October (4 weeks) numeration review and yearlong extensions
          multiplication and division fact review
November/December (6 weeks) geometry
          area/perimeter
          measurement
January (4 weeks) multiplication (multidigit)
February (4 weeks) division (long)
March (4 weeks) fractions
April (4 weeks) decimals
May (4 weeks) algebraic thinking
          data collection and interpretation
June (2 weeks) multiplication and division revisited

The following nine chapters are sequenced according to content. You may need to adjust the length of study or placement of various units within the year according to the needs, strengths, weaknesses, and interests of your particular class or school. It is important, however, to keep your yearlong syllabus in mind and plan accordingly as you move through each unit, whatever it might be. Your school or district may establish curriculum guidelines according to the scheduling of state-mandated or standardized testing. You may need to base your curricular decisions on those guidelines and time constraints. If you feel you can spend only four weeks on multiplication, then spend only four weeks on multiplication! And believe me, this is easier said than done.

As teachers of young children, we focus on teaching for understanding with meaning, passion, and creativity—and all of that takes time. In my perfect world, I would teach math for ninety minutes each and every day, but I have yet to teach in a school in which that has been possible or even plausible. Daily lesson planning and integration of math into other subject areas become increasingly important as we look at our yearlong itinerary and our commitment to its follow-through. Planning your math time each day may or may not be in your control, depending on the day-to-day logistics of your school. I would highly suggest devoting sixty minutes to math teaching each day. I also establish the flexibility of working through a ninety-minute block one day a week, which allows for longer and more in-depth investigations.

**TEACHER-TO-TEACHER TALK** I have recently discovered an inverse correlation between the number of years I have been teaching and the number of units I cover within any given year. As my years of teaching have increased, the number of units I cover within a year has decreased. NCTM's *Curriculum Focal Points for Prekindergarten Through Grade 8 Mathematics* (2006) proposes a similar pedagogical shift in thinking. This document presents a small number of significant mathematical targets for each
Chapter Structure

Each chapter is sequenced in a similar fashion and contains the following sections.

**The Learning Environment**

Each chapter begins with a discussion of the classroom climate and culture and its importance to the learning of mathematics. Different topics and different procedures often lend themselves to different teaching, learning, and communication styles and practices. Is this a day for small-group work? Or is this a day for individual paper-and-pencil work? Is this a day for student-led discussions? Or is this a day for teacher-facilitated conversations? How will misconceptions be addressed? How will varying abilities be accommodated? How will classroom discussions be fostered and nurtured? Research continues to remind us of the importance of context and natural learning environments to the teaching and learning of mathematics (Stoessiger and Edmunds 1993). What real-world and problem-solving contexts will you provide to help your students construct greater meaning of the mathematics? How will you establish expectations in regard to quality of work, achievement, participation, and behavior?

Not only do you need to establish a positive, challenging, and comfortable classroom climate in September, but you must maintain it throughout the year—and that can be the tricky part! Also, it’s important to set up those routines that make things run smoothly throughout the year. How will homework routines be handled? What about collecting and distributing papers? How will students put away manipulatives and other tools?

**The Mathematics and Its Language**

As children move through the fourth grade, the process and progress of mathematical learning becomes increasingly entrenched in the mathematical content. Because of this, a teacher’s understanding and identification of the mathematics being taught, explored, and discovered takes on significant
importance. The mathematics of each chapter is discussed as well as the possible misconceptions that may manifest themselves as children work with the material. It is your understanding of the mathematics and the pace at which your students are moving through it that will help to direct lesson planning. Exploring, defining, manipulating, and refining mathematical language help children learn with greater understanding and meaning. Children need to speak the mathematics, represent the mathematics, and write the mathematics. Acquiring the necessary vocabulary and language usage will help children develop the conceptual and procedural skills required for mathematical growth and success. This section also discusses how to introduce the mathematical language of the unit.

**Investigations and Literature-Based Activities**

Sample investigations, games, and literature-based activities are offered to support the unit of study. The investigations modeled in each unit may also help you develop activities of your own.

Some lessons are more traditional and teacher directed, while others are open-ended and student directed, depending on the mathematics being addressed. The questions that you pose to your students can often open up more traditional textbook lessons. Good questioning can expand a traditional lesson into a rich mathematical investigation. A listing of the mathematical objectives and materials is offered prior to the description of each activity.

**Games**

Frequent practice and application of skills is necessary as children strive to develop conceptual and procedural mastery. Games can offer a rich context for such practice and application. Not only are games motivating and challenging, but carefully chosen and constructed games can also support important mathematical ideas and help children further develop reasoning and procedural skills. Using games to practice number skills can greatly reduce the need for worksheets and rote practice of skills, which can be tedious and ineffective.

**Calculation Routines and Practices**

Paper-and-pencil routines and practices are shared in this section. The emphasis here is on the *representation* of the calculations and numerical reasoning, not necessarily on the repetition or drill of one specific algorithm. Calculation methods need to be appropriate to the numerical or problem-solving situation. There are certainly those times when calculation practice is needed as children work to master procedures. Arithmetic skills, however, need to extend beyond memorization and computational proficiency. Our students need to learn to use their calculation skills as they develop number sense and solve problems efficiently and accurately.
Mathematics Writing

Representing the mathematics is integral to the work students do in my classroom. This section discusses this important practice. How do your children document their thinking as they are working through a lesson? This includes not only writing about their thinking but also charting, drawing, and diagramming their thinking. As the year progresses, so too does its conceptual challenges. We need to offer opportunities for students to improve the sophistication of their mathematical representations in written explanations and recorded work. This is a tricky business! We need to listen to our students as they talk through the mathematics so that we can help them represent their thinking with clarity and organization. A great deal of airtime has been given to the importance of writing in math class—but this is easier said than done. Learning to write about mathematics takes time, practice, and patience. I have found it necessary to occasionally devote an entire period to one short writing assignment. I model. The children write. We share. The children rethink and revise. We share. We generate a list of writing accountabilities together. This section addresses writing guidelines, possible journal prompts, and mechanical expectations for each month’s course of study.

Parent Communication

Creating a partnership between school and home supports the mathematical education of everyone involved. Communication with families needs to be regular and ongoing in order to report all the good mathematics going on in the classroom. You can establish a working relationship with parents through informational forms that present the mathematical goals of an upcoming unit and explain how parents can help at home; newsletters; formal reports; phone calls; and conferences. Parents often spend time doing mathematics with their children at home, but in a more traditional context within which they feel comfortable. Many do not understand how today’s mathematics class will help their children in and out of school. We have an opportunity (and an obligation) to educate families about the importance of teaching mathematics with meaning and understanding. Suggestions and samples of home-school communication are offered in this section.

Come August, I begin to draft my “Welcome Back to Math Class” newsletter to the parents of my students (see Figure 1–1). I have now been doing this for so many years that I simply revise the previous year’s letter. So even if this is your first attempt at such a letter, save it and rework it for the following year. It will be well worth the time and effort spent in writing a comprehensive and informative first draft! There are many parents who are genuinely interested in what you are doing in math class. With every letter sent home (about four a year), I attach a relevant article or summary of related research. NCTM’s journals often have articles that are extremely informative and describe current best practices in mathematics education.
September 5

Dear Fourth-Grade Parents,

We have had a busy and successful start to the school year. Your fourth-grade mathematicians have already started their year with a probability activity generated by a very endearing yellow lab named Martha . . . who talks, by the way. We will spend most of September working through problem-solving protocol and expectations as we review basic math facts and develop estimation strategies. We will then begin our year's work with the Everyday Mathematics program. A parent information form is currently posted on the electronic bulletin board under “Lower School Homework” that explains the goings-on in fourth-grade math in greater detail. Parent information forms will be posted prior to the beginning of each new unit.

I have included below some of my classroom quirks and policies. Some of these may be new to you; some may not. Please feel free to discuss any questions or concerns about your child in math this year with me at your convenience.

Class Policies

■ Homework: Homework will be assigned three nights a week. I do give the children an opportunity to start most assignments in class in order for them to ask any necessary questions. I do ask that little parental supervision be given to the children as they complete their math homework. Please refer to the handout in your child's registration packet for further “helpful hints” about helping with math homework. If children are having a tough time with the assignment, please have them stop, and send in a note with your child the next morning. (Email works fine, too!) I would rather not have them “dissolve” over an assignment after a long day of school! The fourth graders will have “Terrific Tuesday” each week—a no-math-homework night.

■ Pencils: All classwork and homework is to be done in pencil. The end.

■ Homework passes: These are very valuable pieces of paper! Five consecutive perfect (+10) quizzes earn a homework pass that can be turned in anytime in lieu of an assignment. I encourage the children to save these passes for those emergency nights: a birthday dinner, a late hockey practice, a special outing.

■ Quizzes: Ten-point quizzes will be given in grade 4 so frequently that they will soon be thought of as daily procedure. Five consecutive perfect quizzes earn a homework pass.

■ Math notebooks: All students in grade 4 will be asked to keep a math notebook. The graph paper notebooks will be distributed to the children in class. This notebook will become a valuable tool as the children move throughout the year. Quizzes, homework, seatwork, and other written activities will be completed in their notebooks. A quick look-see at the notebook will give you an excellent reference as to where we have been in class and the degree of progress that your child is making. The children will carry their math notebooks to and from class each day.
Mathematician’s Logs: At the beginning of each term, each fourth grader will receive a new Mathematician’s Logs. Prompts writing focus areas will be given for each entry. Students will be asked to respond to a mathematical prompt in writing and with diagrams or pictures. Each entry will be evaluated for content and mechanics—an effort grade will be given for each by way of a fraction:

\[
\frac{\text{content}}{\text{mechanics}}
\]

Language demands of the mathematics: The exploring, defining, manipulating, and refining of mathematical language can help children learn with greater understanding and meaning. Children need to speak the mathematics, represent the mathematics, and write about the mathematics. Acquiring the necessary vocabulary and language usage will help your fourth grader develop the conceptual and procedural skills required for mathematical growth and success. Working through the mathematical language of each particular unit of study will be a primary teaching and learning objective.

Assessment: Assessment is a constant process in my classroom. The children are asked to write about the math, to show the math, and to defend their solutions about the math. Each fourth grader will develop a math portfolio throughout the year. Corrected homework, classwork, and tests are housed in each child’s portfolio. You are welcome at any time to view your child’s work. All quizzes, tests, and project due dates will be posted on the online Lower School WebEvent calendar.

Exams: Unit exams will be given in grade 4 upon the completion of each major unit. Study sheets will always be handed out two or more days prior to every exam. With the use of a study sheet, each child can be well prepared for every test. No surprises will appear on the test—what is on the study sheet is what is on the test. Test self-reflections follow every exam and are stapled to the front of each child’s exam. The finished product is then sent home. I ask that the children return these to me in order to file them in their portfolios. The children are asked to assess their preparation and performance on their test reflection sheet. I have actually learned more about the children from reading these than by correcting their tests! They are often brutally honest and right on the mark as they self-reflect.

Portfolios: Yet another assessment tool . . . all loose papers, corrected homework and class work, and tests are kept in manila folders in my room. The children love folder day because they greatly enjoy collecting and commenting on completed work. It is always fun to hear the children talk about their own work. “This was so easy!” “Remember when we did this?” “This took me the longest time to understand!” Written personal assessments follow each unit in the fourth grade. These writing tasks develop important reflective skills that help children not only assess their work but own their work and progress, as well.

Calculators: I love playing with calculators, and the children do, too. It is very important in these times of increased technology that our
children know their way around a calculator. We use calculators in class quite often when I am not as concerned about the calculations as I am about the process of reaching a solution. We are now using the TI-15 in class. It is not necessary to have the same calculator at home. I would actually prefer to have the children learn to use other styles and brands as well. Please keep your calculator choice simple, however.

- **Heffalumps and Woozles:** As most of you may know, Heffalumps and Woozles are the optional problem-solving activities posted in my room every two weeks. Children are encouraged to pick up problems and work on them on their own, with a friend, or even as a family. I have received some wonderful family solutions! Please remind your children that they must show and explain their thinking when completing their problems.

**Additional Supplies**
- colored pencils
- mechanical pencils
- compass and ruler for at-home constructions

I would like to close this epic with a paragraph from *Raising Cain: Protecting the Emotional Life of Boys* (Kindlon and Thompson 1999). Even though this book explores the emotional life of boys, it provides insights into the development of all young people.

The most important thing to remember, the guiding principle, is to try to keep your son’s self-esteem intact while he is in school. That is the real risk to his success and to his mental health. Once he’s out of school, the work will be different. He’ll find a niche where the fact that he can’t spell well, or didn’t read until he was eight, won’t matter. But if he starts to hate himself because he wasn’t good at schoolwork, he’ll fall into a hole that he’ll be digging himself out of for the rest of his life. (36)

My goal as a teacher (and as a mother of two sons, too) is to send all of our fourth graders off into the mathematical world feeling confident and self-assured. They may struggle some with fractions or remainders, but they also realize that they have the skills, perseverance, and self-confidence to wrestle with these concepts, knowing that understanding will come in time. I cannot praise this book enough. I laughed. I sighed. I even wept while reading certain chapters. I rarely say this about a book, but it is a must-read if you have sons, know sons, or are a son.

Thank you all—children and parents—for your continued support. This is a very difficult job to do well and it would be all the more impossible without your support.

Please sign off on the form provided.

Mathematically yours,

Lainie Schuster
A Month-to-Month Guide: Fourth-Grade Math

Assessment

Embedding informal assessment measures into day-to-day routines as well as establishing formal assessment practices help us identify and document the mathematical growth of our students. Assessment routines can also give us important information about the effectiveness of our teaching and the math curriculum. We need to listen to and learn from our students as they tell us what makes sense to them and show us what they can do with the mathematics. This section discusses possible methods of formal and informal assessment as well as how to use the information you gather for in-house or reporting purposes.

TEACHER-TO-TEACHER TALK  Although our ultimate goal for our fourth-grade students is conceptual and procedural proficiency and efficiency, the road to that end can be a long one! Are wrong answers always wrong? Again, it is the mathematics and our understanding of it as teachers that need to drive our assessment practices. Perhaps Kirsten got the wrong answer, but how was her thinking? How was her approach to solving the problem? How was her number sense? How was she applying what she knew to what she did not? There are those times when a quick look at the answers will do when correcting math work. But there are also those times when we need to study the work of our children. Where was the breakdown in their thinking? Where was the miscalculation? Where did the fragile understanding of the concept or the procedure manifest itself? Once we have this information, our follow-up interactions with children become crucial to their rethinking, learning, and success.

Resources

There are wonderful mathematical resources available on the market. A resource listing at the end of each chapter offers additional materials to support the concepts and procedures covered in the respective unit of study. Understanding the needs of your students and the targeted mathematics will help you seek out relevant and valuable resources to further enrich your instruction.

Homework

Homework is not be addressed in this yearly overview. Homework policies can be district based, school based, discipline based, or teacher based. My homework routines have remained simple over the years and have largely been adjusted by homework practices set forth in Annette Raphel’s Math Homework That Counts (2000). I give math homework three nights a week—Monday, Wednesday, and Thursday. Every Tuesday is Terrific Tuesday—a night off with no math homework. Thursdays are designated for journal writes. Many of my homework assignments require some type of parent interaction. I want parents to know what is going on in math class. Initially, this was difficult to implement, but the parents now enjoy it, appreciate it, and expect it.
Setting Up Your Classroom

Setting up your classroom before the children arrive sets the stage for the yearlong mathematical journey ahead—literally! Even after thirty-something years of teaching, it still feels like Christmas when I open up the supply boxes and begin to organize my room for the upcoming year. New books, pencils, reams of graph paper, rulers, and glue sticks are reminders of new beginnings and hope-filled first days of school.

Valuing mathematical communication and sense making requires us to pay close attention to the physical organization of our classrooms. Table groupings are helpful in facilitating mathematical conversations. Easy access to mathematical tools and resources can help keep children engaged in the task without having to search out needed materials. Availability of several types of paper is helpful for the representation and charting of the mathematics. Suggestions for student materials and the organization of student work and teaching materials follow.

Furniture Arrangement

Table or desk groupings of four children work very well in my classroom. This configuration allows for small-group work, partner sharing, as well as individual work. Desks of the same height can be grouped together, as can rectangular or trapezoidal tables. Random seating assignments can set the expectation that all students are to work cooperatively with each other. You can pull name cards or color-coded craft sticks from a cup to determine table groups. I change my table groupings every two weeks to offer consistency within the randomness.

Teaching Materials

Math Manipulatives and Tools

Although my choice of manipulatives has remained fairly consistent over the years, my organizational practices and containers change fairly frequently. In an active mathematics classroom, certain materials should be available and accessible at all times. The organization of materials is a personal choice but one that needs to be shared with your students. Establishing routines early in the year for use, organization, and cleanup of materials will be well worth your time and effort.

Your choice of manipulatives should rely on instructional purpose. How will their use support the teaching and learning of mathematics? Although I use base ten blocks when I introduce decimals later in the year with my class, I do not use them enough to warrant having a set housed in my classroom, so I borrow a set from one of my colleagues when we begin
the decimals unit. Pooling materials with other teachers can stretch your budget dollars and allow for a greater selection of materials.

Here is my personal list of must-have manipulatives followed by a list of materials that are nice to have, which I usually borrow from others.

**Must-Have Manipulatives**

- Cuisenaire rods
- pattern blocks
- small translucent chips
- decimal cards
- dice
- number card decks, made up of four of each of the numbers 0–12—see Blackline Masters (Playing card decks also work well. You may also find that your prescribed curriculum offers card decks. Have enough for one deck per pair of children and a few extra decks for card replacements.)

**Optional Manipulatives**

- color tiles
- linking cubes
- geoboards

Years ago, a colleague introduced me to using plastic dishpans as an organizing system. I keep pattern blocks and Cuisenaire rods in separate dishpans (one color for pattern blocks and another color for Cuisenaire rods) for each table grouping. I stack them in open shelves for easy access. Chips, decimal cards, dice, and number card decks are organized in a similar fashion but in smaller color-coordinated tubs for easy access.

Calculators and 6- and 12-inch rulers are kept in an inexpensive plastic three-drawer unit. Each drawer is labeled. Each year I add a few new calculators to my collection so that each child can have access to a calculator. I purposefully keep several styles of calculators in my room, from the basic four-function model to those with a few more bells and whistles. I want to give the children the opportunity to manipulate and investigate different models. I find it interesting that even though the children are intrigued by the fancier calculators, they go straight for the four-function models when solving problems. They like the user-friendliness and comfort level the simple models offer.

An overhead projector continues to be my most coveted teaching tool even in this technological era of document cameras, LCD projectors, and interactive whiteboards. I have a supply of overhead manipulatives (pattern blocks, Cuisenaire rods, color tiles, and Decimal Squares) housed under the projector in zip-top baggies (in a plastic bin, of course!).
Supplies

As with manipulatives, you should rely on instructional purpose and budget to choose supplies and determine accessibility. How will children record their day-to-day math? How will you organize math writing? What paper will you use if students will be making posters or presentations? Will these materials be exclusive to mathematics or can they be shared with the other disciplines you teach? You will also need to address organization and storage as you determine class and logistical needs and constraints.

My paper supply is perhaps my most costly line item in my yearly order. In my classroom, paper is organized in a five-tier tray, which saves considerable space on the countertop. Quarter-inch graph paper, centimeter graph paper, plain white paper, and lined notebook paper fill the tiers. I keep a roll of 1-inch graph paper on hand for projects requiring a large work area. A supply of 16-by-24-inch newsprint for poster making and presentations is also handy. I also keep a tablet of lined chart paper available for use with whole-group instruction. I do not have room for a free-standing easel for the chart paper, so I just mount individual sheets on the whiteboard when necessary. I also order four to five reams of colored card stock for special projects and math journals (see “Student Materials” below for more information).

Art supplies such as scissors, glue sticks, and markers are also available in plastic bins on the countertop. I ask that each child supply her own colored pencils. The children and I have agreed over the years that markers are best suited for poster making, but colored pencils are preferred for day-to-day work. Colored pencils do not bleed and can be sharpened. I ask that only colored pencils be used on paper-and-pencil activities that require coloring.

TEACHER-TO-TEACHER TALK  I ask my fourth graders to use pencil for all of their math work—with the exception of check writing later on in the year. I also encourage the children to use mechanical pencils when possible, upon the suggestion of a past parent who was also an occupational therapist. Mechanical pencils may be tricky for the children to use at first, so be prepared. The children frequently break their lead and fiddle with replacement procedures. In time, however, they master the usage of these tools. Mechanical pencils are a great help to those children who have grip and excessive pencil-pressure issues. If you push down too hard, the lead breaks! Mechanical pencils now come with rubber grips that are also helpful for some.

Student Materials

I supply each student with a spiral $\frac{1}{4}$-inch graph paper notebook. We do just about everything on graph paper. This allows students to develop organizational practices on paper and helps them align their calculations. I ask that they always place one digit per box. When working with decimal
numbers, I ask that they give the decimal point its own box (because it is that important!). This may take a little vigilance on your part. Children may grumble at first with your corrections and constant reminders. But once the ground rules are set, written work tends to be neat and well organized. Most of our written work in and out of class is completed in this notebook. It becomes a comprehensive and well-documented written record of the year.

Each child also receives a Mathematician’s Log that I publish and collate myself. For years, I have searched for a math journal that would suit my needs, but I have never found one. So I headed to my computer and the copy machine and created my own. I have been very happy with this format but find that I tweak it a little each year. I print the front and back covers on primary-colored card stock (see Figures 1–2 and 1–3). The inside pages are two-sided copies (see Figure 1–4). When the log is opened, the prompt and writing focus areas are taped on the left side. The children
Editing Checklist

Checking for Organization and Readability
Read your entry aloud to yourself.

_____ Does your introductory sentence restate the problem or question?
_____ Have you written a concluding solution statement defining your position?
_____ Do you have an example(s) or a diagram(s) to support your solution?

Checking for Punctuation and Mechanics
Read one sentence at a time.

_____ Does every sentence begin with a capital letter?
_____ Does every sentence end with proper punctuation?
_____ Do all your sentences express one clear idea?

Checking for Spelling
_____ Circle lightly any words that do not look correct.
_____ Use a dictionary to verify spelling.

Helpful Words for Mathematical Writing

________________________________________  __________________________________
________________________________________  __________________________________
________________________________________  __________________________________
________________________________________  __________________________________
________________________________________  __________________________________
________________________________________  __________________________________
________________________________________  __________________________________
________________________________________  __________________________________
________________________________________  __________________________________
________________________________________  __________________________________
________________________________________  __________________________________
________________________________________  __________________________________
________________________________________  __________________________________
________________________________________  __________________________________
________________________________________  __________________________________

FIGURE 1–3
Back cover (editing checklist) and first page of Mathematician’s Log.
Prompt:

Writing Focus:

Assessment: content mechanics

X

X

X

X

X

X

X

X
are to construct their response and diagrams on the right. I prefer that the children write on every other line and not write on the lines beginning with Xs. I find the entries easier to read and edit when written in this format. I collate the books with a binding machine (an office supply store or printing company could also do this for you). New journals are distributed at the beginning of each grading period. This gives students a sense of accomplishment because they can view the previous journal as a finished product. Completed journals are filed in portfolios.

Organization of Student Work

Each child has a math portfolio. There are numerous options for this practice. Currently, I am using hanging folders—one for each child—that are housed in one of my two lateral filing cabinets. Crates and individual filing boxes also work just fine. My system does place a constraint on easy access, but it reduces clutter. The good news is that the filing cabinet is very near my phone. When phone conferencing with a parent, I can easily and quickly retrieve his child’s portfolio and make reference to student work as we speak.

I distribute a manila folder to each child at the beginning of each trimester in which to place that trimester’s corrected homework and tests, test reflections, and major projects. One of my students’ favorite activities is to decorate their manila folders at the beginning of each trimester. I ask each child for her favorite one- or two-digit number. With a permanent broad-tipped black marker, I write the number big in the middle of the cover of the folder. The children then use markers (any color except black) to create a picture around that number. I have seen 5s become baseball players and ladies with big hats. I have seen 3s transformed into colorful butterflies. My students call this folder day and are delighted when it is announced at the beginning of class. While they are drawing, I can be handing out work and having quiet conversations with children about their progress or about a piece of work of which they should be particularly proud.

Organization of Teaching Materials

As we gain years of experience, we begin to develop our own organizational systems for teaching materials. I used to keep files and files of student handouts, unit projects, and activities. I still do, but I now keep the bulk of my unit planning materials in three-ring notebooks—one for each unit. Each notebook has the unit printed on the spine and on the front. There are similar dividers in each notebook designating the following categories:

- Lesson plans and teaching notes: I usually type these up on Friday afternoon, to reflect on the week that has just ended. They are cryptic but address the mathematics of the lesson, contain important text page numbers, homework given, and personal notes about the success of the lesson.
Vocabulary: I keep a listing of new vocabulary encountered in the unit.

Student handouts: I keep copies of handouts given in class for in- or out-of-class work. They are referenced in the lesson plans and teaching notes.

Parent handouts: I file newsletters that have been sent home during that unit in this section. Also included is the parent information form for the unit.

Unit project: If a project is assigned in this unit, I file away the student information sheets and rubrics in this section.

Formal assessments: Copies of study sheets, quizzes, and the unit test are filed in this section.

Reference articles: I file any articles that support the teaching of this unit in this section.

This notebook becomes my teacher’s manual for the unit. Personally, I have found that such a notebook system makes referencing activities, articles, and dates that certain material was covered much easier and more accessible from year to year. I add to the notebooks each year and remove and archive dated material. Each unit will quickly become your own as you collect materials to support and document your teaching and progress.

**Literature Display**

I have recently acquired a book display rack that sits on the corner of the math counter. For years, my math picture books were on a bookshelf too high for the children to reach. But when the library was discarding several book racks, I commandeered one for my classroom. Now the math picture books are available for student use at all times. I often find children under my desk or huddled together at a table sharing a book in their free time. I love the fact that some of the books are tattered and well worn. Much like the Skin Horse in *The Velveteen Rabbit*, these are sure signs of being loved.

For me, a classroom is a sacred place. I am very fortunate because I do not have to share my space with other teachers. Therefore, I have been able to make it truly my own. My classroom is a manifestation of who I am as a teacher and who my students are as mathematicians. A friend of mine from another school came to visit one day and could not find me. She wandered into several rooms and then waited for me in what “had” to be my room. “It just looked like you,” she admitted. That was the warmest compliment I could have received.