

Getting Started: Establishing Routines & Procedures During the 1st 20 Days of Math

Overview: For students, a successful experience with math begins with the basics: how to think like an active mathematician, how to speak mathematically, and how to record and share their thinking. This guide is intended for grades 3-5 but can be used for K-2 with modifications, and may be extended, condensed, or modified according to students' needs. As you prepare to implement the 1st 20 Days of Math during the 90 minutes of math instruction, keep in mind that it will be necessary to be flexible. These 5-15 minute lessons are to be incorporated into the daily lesson. Grade level teams may meet periodically to monitor and adjust progress. Clear statements and clear demonstrations of roles and procedures need to be established. All points and aspects need to be repeated, charts or anchors of support are to be posted and referred to again and again.

Goals: The goals of implementing the instructional strategies included in this document are to

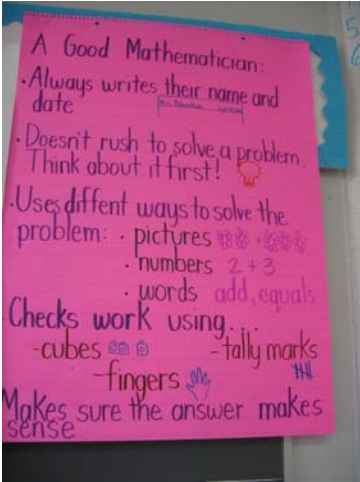

- help students think of themselves as mathematicians who enjoy and actively participate in math;
- establish consistent classroom roles, routines and procedures that support teaching and learning;
- increase rigor by having students explore, express, and better understand mathematical content through process skills (communication, connections, reasoning and proof, representations, and problem solving).

Background: Based on the idea of The First 20 days of Independent Reading by Fountas & Pinnell, these lessons have been developed to establish the roles, routines and procedures needed for effective mathematics instruction.

Principles of Learning are the foundation of this document. All students are told that they are already competent learners and are able to become even better through their persistent use of strategies and by reflecting on their efforts. Criteria for quality and work are explicit, accessible to all students, displayed publicly, and change over time to respond to level of rigor as learning deepens.

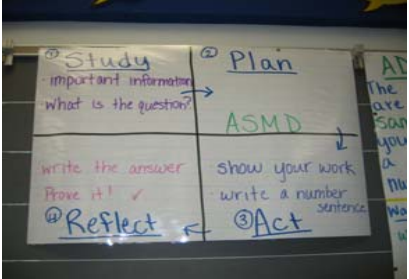
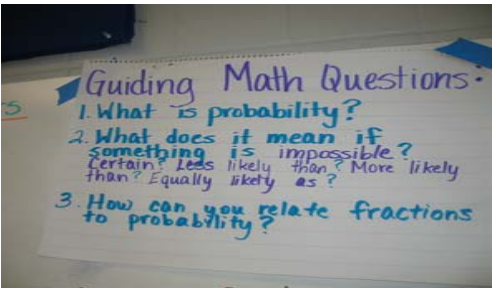
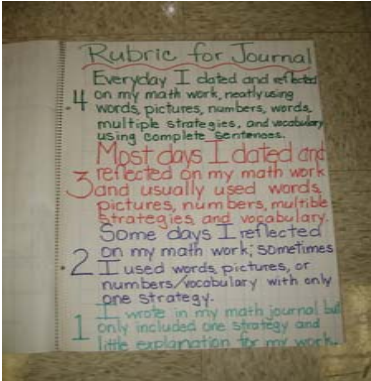


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Mini Lesson	Key Concepts	Learning Outcomes	Anchors of Support	Resources	Teacher Notes
<p>Day 1 Management:</p> <p>Establish Routines and Procedures for Independent and/or Cooperative Math Groups</p> <p>Principles of Learning: Clear Expectations</p>	<p>Establish student expectations during Mathematics instruction.</p> <p>Discuss the importance of “Anchors of Support” such as criteria charts, student work criteria and instructional aides.</p>	<p>Students understand and learn that information will be posted around the classroom for them to use to make their work better, to support their learning and to help them review concepts as they are learned.</p> <p>Students identify criteria to create a “Good Work” chart to post.</p>	<p>Post “Good Work” process chart to which students can refer. (A good work chart should have less than 6 criteria to be effective.)</p> <p>Example:</p> <ul style="list-style-type: none"> • Stay on Task • Speak/write mathematically • Be an active listener and participant. • Respect and organize math materials appropriately. 	<p>Chart paper</p> <p>Markers</p> 	<p>Before the lesson, make sure to discuss routines and procedures with the students. This is a good time to have students talk about what good students work should look like and then create the criteria chart using students’ ideas.</p>
<p>Day 2 Management:</p> <p>How and why do mathematicians use tools?</p>	<p>Mathematicians use math tools to help solve problems.</p> <p>Discuss mathematical tools and how they are to be used and stored.</p>	<p>Students become familiar with the math tools in the classroom.</p>	<p>Add notes to the “Good Work” chart about placing materials in their proper storage containers and location after use.</p>		<p>In part 2 of each enVision Math lesson, “Develop the Concept: Interactive,” students use manipulatives. This is a good time to establish & reinforce the “how and why” of using mathematical tools.</p>

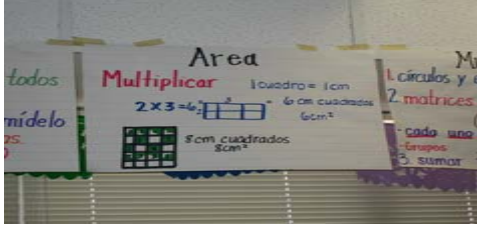



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<p>Day 3 Problem Solving:</p> <p>Mathematicians solve problems using a process.</p>	<p>There is a process involved when solving problems.</p> <p>Introduce Polya's 4 Step Problem Solving Model.</p>	<p>Students understand the importance of problem solving every day.</p> <p>Students will learn that there is a process involved when solving problems.</p>	<p>Develop and post a process chart of the mathematician's, Polya's, 4-Step Problem Solving Model.</p> <p>The four steps are:</p> <ul style="list-style-type: none"> Understand the problem, Devise a plan, Carry out the plan, and Look back. <p>There are many record keeping & pneumatic devices that follow this model. The selection of one to use campus-wide is recommended.</p>	<p>Problem Solving Model</p> <p>Chart paper</p> 	<p>Each day students will engage in problem solving during 90 minute math block (Problem of the Day and/or 2 Develop the Concept: Visual).</p> <p>Post the chart on the wall in student-friendly language.</p>
<p>Day 4 Writing/Representations in Math</p> <p>Mathematicians write about their thinking as a way to process information</p> <p>Representation is a Process Skill.</p>	<p>Mathematicians use and record mathematical representations to interpret and model everyday life activities.</p> <p>Introduce Interactive Math Journals.</p>	<p>Students understand that they are expected to write about their mathematical thinking on a daily basis.</p> <p>Students understand that writing about their thinking is a way to represent mathematical concepts.</p> <p>Students understand that the journal is a mathematical tool.</p>	<p>On a chart, post a model of the left and right side of math interactive journal (use science journal as a model).</p> <p>Post the Essential Understanding Question from the enVision lesson.</p> 	<p>Student journal</p> <p>Model of journal</p> <p>Sentence strip for Essential Understanding Question</p> 	<p>At the end of the lesson, use the Essential Understanding Question as a journal prompt. Have students write about their understanding.</p>
<p>Day 5 Mathematics is a</p>	<p>In a math</p>	<p>Students understand</p>	<p>Post Word Bank</p>	<p>Vocabulary words</p>	<p>As you</p>

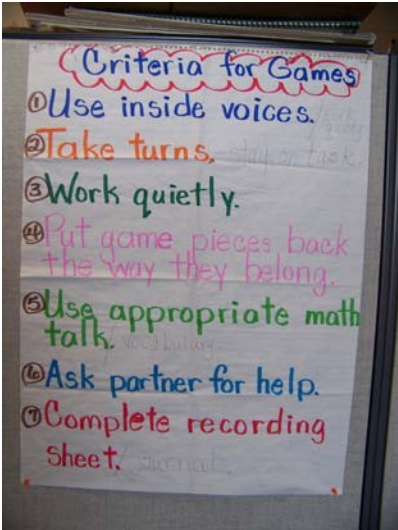



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<p>Language:</p>	<p>classroom, specialized language is used.</p> <p>Introduce word bank.</p>	<p>that we use specialized terms to define mathematical concepts.</p> <p>Students use mathematical terms to build conceptual knowledge.</p>		<p>Journal</p> 	<p>introduce new vocabulary, make sure that students record these word(s) in their journal. Have students write their definition of vocabulary word(s) and make a real life connection in the journal.</p>
<p>Day 6 Communication is a process skill</p> <p>Principles of Learning: “Accountable Talk”</p>	<p>Mathematicians communicate about their work orally and make conjectures about their findings.</p>	<p>Students understand that communication is a process skill that helps develop rigor.</p>	<p>Post and discuss “Accountable Talk” bubbles to encourage students to speak mathematically and to speak in complete thoughts</p>	<p>Think about what strategies you will use for calling on each student <i>daily</i>.</p> <p>Add communication criteria to “Good Work” chart if needed</p>	<p>Students must develop the habit of speaking in complete thoughts when communicating orally. enVision Math encourages students to communicate about their thinking throughout the lesson.</p>


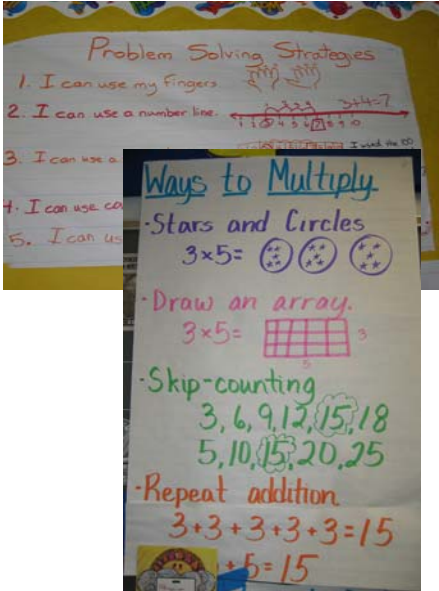


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<p>Day 7 Collaboration</p> <p>Principles of Learning: Socializing Intelligence</p>	<p>Mathematicians work collaboratively, developing good work ethics and maintaining a sense of responsibility.</p>	<p>Students learn that they can work with others to share information and to learn new information.</p>	<p>Establish rules for working in groups or centers</p>	<p>Post rules and directions for center work</p>  <p>The image shows a whiteboard with the title 'Criteria for Games' written in red. Below the title are seven numbered items: 1. Use inside voices (blue), 2. Take turns (orange), 3. Work quietly (green), 4. Put game pieces back the way they belong (pink), 5. Use appropriate math talk (green), 6. Ask partner for help (blue), 7. Complete recording sheet (red).</p>	<p>Make sure to establish rules and clear directions so that independent group work will be successful. After establishing rules, have the students practice during Part 4 of an enVision lesson.</p>
<p>Day 8 Justification</p> <p>Reasoning and Proof is a process skill.</p>	<p>Mathematicians justify their thinking</p> <p>The teacher & students press for accurate and appropriate evidence of their claims, including references to the text or prior classroom experiences.</p>	<p>Students understand that when they justify their thinking they deepen their understanding of a concept.</p>	<p>Show models/examples of quality work such as journal entry, student work products. etc that reinforce students' justification of their thinking.</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> <p>Justify means:</p> <ul style="list-style-type: none"> • explain • describe • prove • give reasons • show you understand </div>	 <p>The image shows a student's work page titled 'SUPER Student Work'. It features several sections with colorful backgrounds: 'Word' (blue), 'Place Value' (pink), 'Addition' (green), 'Subtraction' (yellow), 'Word Form' (blue), 'Standard Form' (pink), 'Congruent' (green), and 'Less Than' (yellow). Each section contains handwritten notes and diagrams, such as a number line for place value and a diagram of congruent shapes.</p>	<p>During math instruction, make sure that students are explaining thoughts in complete sentences <i>when speaking and writing</i>. This practice will reinforce and develop the skill of reasoning and proof.</p>


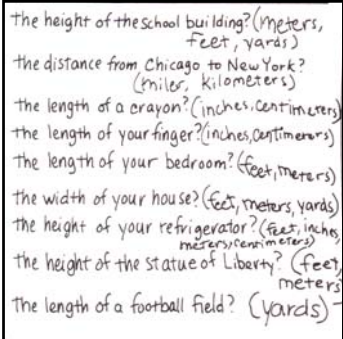
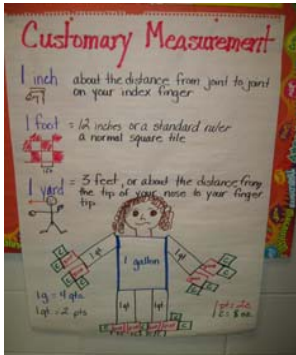


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<p>Day 9 Accountability</p> <p>Principles of Learning: Socializing Intelligence & Self Management of Learning</p>	<p>Mathematicians are accountable for the learning tasks.</p> <p>Classroom practice holds all students accountable for using learning, problem solving, and helping strategies.</p>	<p>Students understand that they share in the responsibility for their own learning</p>	<p>Emphasize that the “Anchors of Support” in the classroom are there as referents to help make their work better</p>	<p>Add accountability to class rules.</p>	<p>Keep reminding the students that the referents on the wall and journals are mathematical tools for their use.</p>
<p>Day 10 Representation</p> <p>Representation is a process skill.</p>	<p>Mathematician use multiple ways to represent ideas</p>	<p>Students understand that in math there are multiple ways to represent mathematical ideas.</p>	<p>Create a chart and explain that students can represent math concepts using pictures, words, numbers, symbols, manipulatives and in relevant situations.</p> <div style="text-align: center;">  </div>	<div style="text-align: center;">  </div>	<p>During Parts 2 and 3 of enVision Math, discuss how students can represent concepts using manipulatives, pictures, etc...</p>

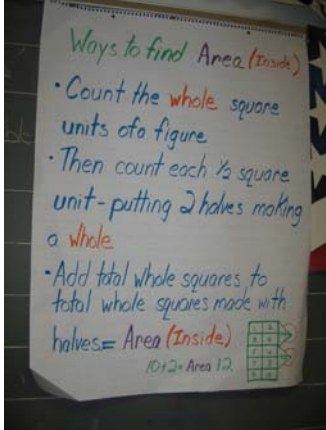
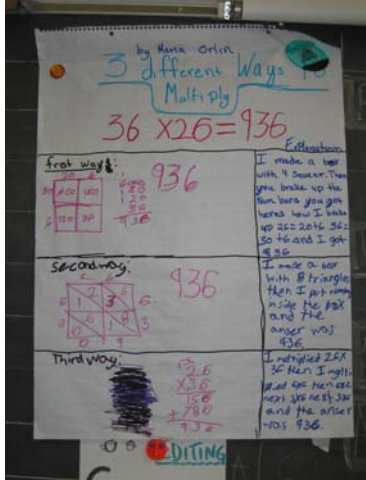
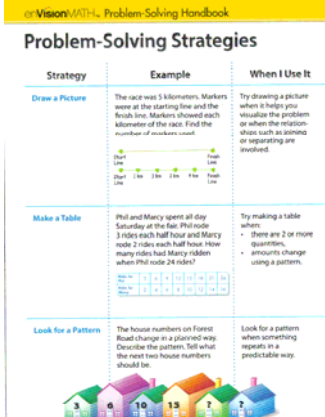
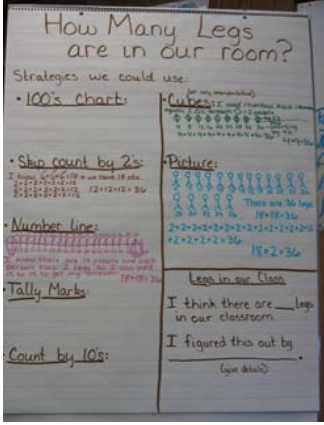


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<p>Day 11 Connections</p> <p>Connections is a process skill.</p>	<p>Mathematicians wonder how math connects and relates to the world around them.</p> <p>Mathematicians make connections between mathematical concepts.</p>	<p>Students know they can relate math to the world around them, inside and outside of the classroom.</p> <p>Students also understand that mathematical ideas can be interrelated.</p>	<p>Generate lists and/or models relating real world examples to math concepts (i.e. bulletin board showing collection of items representing concept).</p> 	 	<p>These connections can also be made when transitioning from Part 2 to Part 3 of the enVision lesson.</p>
<p>Day 12 Self Monitor</p> <p>Principle of Learning: Clear Expectations & Self Management of Learning</p>	<p>Mathematician modify and adjust their work as needed.</p>	<p>Students revise their work to meet quality criteria on a systematic basis as appropriate.</p>	<p>Introduce a criteria chart and rubric for self-monitoring of work.</p>	<p>Post Rubric and Criteria for Problem Solving</p>	<p>Through discussion, develop a clear understanding of criteria and how work will be scored.</p>

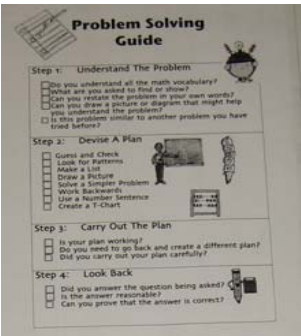
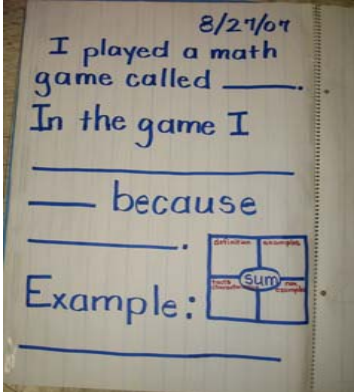
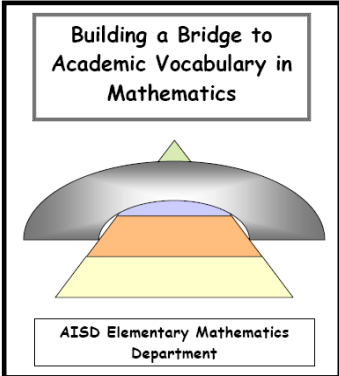



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<p>Day 13 Problem Solving</p> <p>Principles of Learning: Academic Rigor in a Thinking Curriculum</p>	<p>Mathematicians solve problems using a variety of strategies.</p> <p>Students are expected to engage in high thinking demand by raising questions, problem solving, and reasoning.</p>	<p>Students share and recognize multiple strategies used to solve a problem (Problem of the Day or Part 3 of enVision lesson).</p>	<p>Build or add to a strategy wall showing student created models of strategies.</p> 		<p>Refer to Gr 3-5 Problem Solving Handbook (enVision SE pages x-xvii) to make connections between strategies.</p>
<p>Day 14 Math Strategies</p> <p>Principles of Learning: Clear Expectations, Socializing Intelligence, Self Management of Learning, Academic Rigor in a Thinking Curriculum</p>	<p>Mathematicians choose from many strategies to solve problems.</p>	<p>Students understand they have a handy source for strategies to help them solve problems (Problem of the Day or Part 3 of enVision lesson).</p>	<p>Introduce Problem Solving Handbook to students (front of student text). Explain that the Problem Solving Handbook has examples and pictures of many different kinds of strategies to help students with problem solving. Students can refer to the handbook at any time.</p> 	<p>Add additional strategies to Strategy Wall.</p> 	<p>During Guided Practice, teacher facilitates as students skim the problem-solving handbook to select a strategy to help them solve the problem.</p>






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<p>Day 15 Math Strategies</p> <p>Principles of Learning: Clear Expectations, Socializing Intelligence, Self Management of Learning, Academic Rigor in a Thinking Curriculum</p>	<p>Mathematicians organize their work in different ways.</p>	<p>Students will understand how to utilize a recording sheet or guide.</p>	<p>Include recording tools in math journal for student reference.</p> 		<p>Introduce a Problem Solving Recording Sheet as a student tool (ex: enVision xx-xxi)</p>
<p>Day 16 Vocabulary Development</p> <p>Principles of Learning: Socializing Intelligence</p>	<p>Mathematicians use a variety of strategies to build vocabulary.</p>	<p>Students will practice using different tools to strengthen their math vocabulary.</p> <p>Students consistently use the academic language specific to the discipline being studied.</p>	<p>Select model(s) from “Building Bridges to Vocabulary” to implement with students (Frayer, ABC, cards, etc).</p> 		<p>Refer to “Building Bridges to Vocabulary” on AISD Math website.</p> <p>Introduce strategies one at a time across multiple days of instruction.</p>



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<p>Day 17 Using the Journal as a Mathematical Tool</p> <p>Principles of Learning: Academic Rigor</p>	<p>Students' work reflects students' thinking and understanding of why formulas or procedures work.</p>	<p>Students identify patterns, form generalizations, and support conclusions with evidence.</p>	<p>Students refer back to anchors already created.</p> 		<p>Facilitate conversation with students about uses for math journal as a mathematical tool (ex: record of thinking; reflections; collection of strategies and vocabulary).</p>
<p>Day 18 Guided Math</p> <p>Principles of Learning: Clear Expectations, Socializing Intelligence, Self Management of Learning, Academic Rigor in a Thinking Curriculum</p>	<p>Mathematics skills are developed over time, and students learn in different ways at different rates.</p> <p>Mathematicians sometimes work in groups and sometimes work independently.</p>	<p>Students understand that they are accountable for using learning, problem solving, & helping strategies.</p> <p>Criteria for quality and work are explicit, accessible to all students, displayed publicly, and change over time to respond to level of rigor as learning deepens.</p>	<p>Introduce record-keeping/accountability tool for centers and independent work.</p>		<p>After the Quick Check, the teacher assigns students to pre-arranged centers to work independently while other students work in a small group with the teacher.</p>
<p>Day 19 Guided Math</p>			<p>Teachers and students practice gradual release of control on Days 18-20.</p>		
<p>Day 20 Guided Math</p>					

