



"5" A DAY



Developing Basic Fact Fluency through Daily Instruction

After initial lessons in which math fact strategies are introduced, how do teachers effectively guide students through Phase II: Reasoning Strategies toward Phase III: Working toward Quick Recall? Planning daily, short (5 minutes a day!) lessons and activities in which specific strategies are likely to be developed is critical. The following ideas can be incorporated into daily routines such as morning opening and warm-ups or during other small chunks of time. These activities are teacher-led, student-centered, and essential for developing basic fact fluency.

The first set of ideas is generic and can be used for any operation throughout the school year. The second set of ideas is strategy- and/or operation-specific.

Activities for any operation	Description
Story Problems	Pose story problems that challenge students to solve basic facts. During the discussion of mental solution methods, the teacher should focus attention on the strategies that are most useful and challenge students to try strategies others have developed/shared. This should be done at least once per week.
Classroom Conversations	Pose one math fact and give students time to solve using mental strategies. Have several students explain their thinking and how they used reasoning. You may want to create a class anchor chart of strategies during this activity as students explain thinking so that students can return to it and add to it. This should be done at least once per week.

<p>Closed Sorts of Math Facts (Sort by ONE Strategy)</p>	<p>In small groups or as a class, present a collection of carefully pre-selected math fact cards and sort by whether a particular strategy (for example: doubles) may be useful to solve each fact or not. Discuss not only the facts that lend themselves to that particular strategy and why, but also why the other facts may <u>not</u> lend themselves to that strategy.</p>
<p>Open Sorts of Math Facts (Student-directed sorting and reasoning)</p>	<p>In pairs or small groups, present a collection of pre-selected math fact cards and students will sort into 2 or more groups based on their own strategies and reasoning. Sorts will vary and students will need to explain and defend their sort. Strategy anchor charts (mentioned in Classroom Conversations) would be helpful during this activity to serve as a resource.</p>
<p>Flash Math (Subitizing Extended)</p>	<p>Using a digital projector or overhead, flash a quantity of counters for just a few seconds (not long enough for students to point and count) and then cover or turn off. Ask students how many counters they think there were in all and to explain their strategy. For addition, you may want to incorporate a ten frame periodically and for multiplication, you may want to arrange counters in an array. Students will have a variety of strategies for telling how they found the total number.</p>
<p>If You Didn't Know</p>	<p>Pose the following task to the group: If you did not know the answer to $8+5$ (or any fact you want students to think about) what are some really good ways you can use to get the answer? Explain that "really good" means that you don't have to count and you can do it in your head. Encourage students to use think-pair-share and to generate more than one "really good" way.</p>
<p>Near-Double or Helping Fact Match</p>	<p>In small groups or as a class, present a collection of carefully pre-selected math fact cards, and students will match the double fact that helps you find the near-double. For example with addition, students should match $7+7$ with $7+8$ and explain how the double helps find the near-double. With multiplication, students should match 8×2 with 8×3 and explain how knowing double eights helps you figure out three eights.</p>

The following ideas are strategy- and/or operation-specific. You will notice that many addition ideas can be adapted for subtraction as “think-addition”. The same idea applies to multiplication and division as “think-multiplication”. Building reasoning strategies on the relationship between operations helps children create a connected network of math facts.

Strategy- or Operation-Specific Activities	Description
<p>Counting Up Dice (Addition & Subtraction as “Think-Addition”)</p>	<p>Make a six-sided die labeled with +1, +2, +1, +2, “one more”, and “two more”. Use number cards from 1-9. In small groups or partners, students draw one card and roll the die. At the end of the turn, students should say the complete fact: “Four and two is six” to reinforce the math fact. For subtraction, change the die labels to -1, -2, -1, -2, “one less”, and “two less” and use to count back.</p>
<p>Counting Up Match (Addition & Subtraction as “Think-Addition”)</p>	<p>Choose one strategy to focus on such as “counting up one” or “counting up two”. Use number cards 1-12. In small groups or partners with cards facing up, one student selects a number card and another student applies the strategy to find the match. If the focus is “count up two”, then if one child chooses 7, the other child will pick up 9 and say the fact $7+2=9$ to reinforce the math fact. For subtraction, change the focus to “count back two” or “count back one”.</p>
<p>Find a Fact to Help (Can be used for subtraction or division)</p>	<p>Choose a small group of 5 or 6 subtraction fact cards and the corresponding addition fact cards. Give students just the corresponding addition fact cards and as you post one of the subtraction facts. Rather than students calling out answers, they should find the addition fact card that helps solve the fact. For example if you post $12-4$ or $12-8$, students should select $4+8$. With division, if you post $42\div 7$, or $42\div 6$, students should select 6×7 as the helping fact. This activity could also be used with multiplication doubles facts (such as 9×2 or 2×9) and students would find the addition helping fact ($9+9$).</p>

<p>Calculator Doubles (Addition)</p>	<p>Use the calculator and model the "double-maker" keys (press 2 x =). Let one child say, for example, "seven plus seven". The child with the calculator should press the double-maker, press 7, try to give the double (14), and then press (=) to see the correct double on the display.</p>
<p>Make-Ten Search (Addition)</p>	<p>In small groups or pairs, present a collection of carefully pre-selected math fact cards and students will search for the number combinations that equal ten as a sum. The rest of the cards can be sorted into facts with sums greater than ten and facts with sums less than ten.</p>
<p>Extended Make-Ten with Ten Frames (Addition)</p>	<p>In small groups or pairs, present a collection of math fact cards with sums greater than ten, two empty ten frames, and twenty counters. Students represent each addend on a ten frame with the counters. Students then need to decide the easiest way to show the total <u>without</u> counting up all the counters together. The obvious (but not only) choice is to move counters into the frame of the larger addend so that you have ten and whatever is left in the other ten frame. For subtraction, tell the total and one part that the students should represent on ten frame. Students should use the ten frame to determine the other part. For example, "The total is 11. One part is 9 - what is the other part?" Students should respond with the math fact $11-9=2$ or $9+2=11$.</p>
<p>Say the Make-Ten Fact (Addition & Subtraction as "Think-Addition")</p>	<p>Hold up a ten-frame card and have children say the "make-ten fact". For example, if you hold up a card with 7 dots in the ten frame, the students' response should be "seven and three makes ten". Later after much experience, this can be extended by displaying an empty ten frame on the board and saying a number less than ten. Students start with the number you said and say the make-ten fact. For example, you say "four" and the students' response should be "four and six makes ten". The activity need not be changed for subtraction as the focus is on learning combinations of numbers that make ten.</p>
<p>Calculator 2x Facts</p>	<p>Use the calculator and model the "double-maker" keys (press 2 x =). Play "Say the Double". You say a number (example: 8) and</p>

<p>(Multiplication and Division as "Think-Addition")</p>	<p>the children say the double of that number (16). On the calculator students should press the double-maker, press 8, and then press (=) to see the correct double on the display. For division, play "Say the Half". You say an even number and the children say half the number. The calculator would be used as a "half-maker". This can become a self-correcting activity for students to play with partners.</p>
<p>Clock Facts (Multiplication & Division as "Think-Addition")</p>	<p>Focus on the minute hand of a clock. When it points to a number, how many minutes past the hour is it? Use a large clock face and point to the numbers from 1 to 9 in random order and students respond with the minutes after as a "clock fact". For example, you point to the 8 and students respond with "8x5=40". Clock faces with only minute hands could also be copied on cards and students would match with corresponding math fact card and/or a matching array as a match game. For division, you tell how many minutes past the hour it is and students respond with the number where the minute hand would point.</p>
<p>Double-Double (Multiplication & Division as "Think-Addition")</p>	<p>In small groups or pairs, present a collection of carefully pre-selected math fact cards and have students find facts that could be solved accurately by doubling one factor and then doubling again (double doubles). Students should find that facts with 4 as one of the factors can be solved using this method. It would also be worthwhile to discuss why this method wouldn't work for other multiplication facts (without 4 as a factor) to prevent over-generalization of this strategy. For division, the focus strategy would be "Half then Half again". The focus facts would involve divisors of 4.</p>
<p>Nines Facts Patterns (Multiplication)</p>	<p>Write the nines facts in a table on the board from $9 \times 1 = 9$ through $9 \times 9 = 81$. Students should seek as many patterns as possible in the table and discuss. Later as a follow-up activity, use the patterns found to think of a clever way to figure out a nine fact if you didn't know it. Students use think-pair-share to discuss and explain their ideas before adding to anchor chart.</p>