

Grade 1 Unit 3: Visual Patterns, Number Patterns, and Counting

Activity	<i>Everyday Mathematics</i> Goal for Mathematical Practice	Guiding Questions
Lesson 3-1 Visual Patterns		
Introducing Visual Patterns <i>(Teacher's Lesson Guide, page 183)</i>	GMP 7.1 Find, extend, analyze, and create patterns. <i>See also:</i> GMP 3.1, GMP 3.2, GMP 6.1	How do you figure out what comes next in a pattern? What is a pattern? Name some different kinds of patterns.
Creating Craft-Stick Patterns <i>(Teacher's Lesson Guide, page 184)</i>	GMP 3.2 Work to make sense of others' mathematical thinking. <i>See also:</i> GMP 3.1, GMP 6.1, GMP 7.1	What did you do to figure out your partner's pattern? What might you do if you don't understand your partner's pattern?
Lesson 3-2 Even and Odd Number Patterns		
Introducing Even and Odd Numbers <i>(Teacher's Lesson Guide, pages 189 and 190)</i>	GMP 4.1 Apply mathematical ideas to real world situations. <i>See also:</i> GMP 2.1, GMP 6.1, GMP 7.1	What does it mean to be the "odd person out"? Tell about a time when you had to make pairs or groups and discovered having an odd number.
Exploring Even and Odd Number Patterns <i>(Teacher's Lesson Guide, pages 190 and 191)</i>	GMP 8.1 Use patterns and structures to create and explain rules and shortcuts. <i>See also:</i> GMP 3.1, GMP 3.2, GMP 7.1	What patterns can help you decide whether a number is even or odd? Do you think that 1 is an even number or an odd number? Why? What about 0? How can the patterns we found help you?

Lesson 3-3 Number-Grid Patterns		
<p>Exploring Skip-Counting Patterns on a Number Grid</p> <p><i>(Teacher's Lesson Guide, pages 195 and 196)</i></p>	<p>GMP 7.2 Use patterns and structures to solve problems.</p> <p><i>See also:</i> GMP 3.1, GMP 5.2, GMP 7.1</p>	<p>How can you find the numbers in the 5s count without actually counting? *</p> <p>How might knowing this pattern help you get better at skip counting by 5s?</p> <p>How is the number grid helpful for understanding skip counting by 5s?</p>
<p>Exploring the 2s Pattern</p> <p><i>(Teacher's Lesson Guide, page 196)</i></p>	<p>GMP 6.1 Communicate your mathematical thinking clearly and precisely.</p> <p><i>See also:</i> GMP 2.1, GMP 3.1, GMP 7.1</p>	<p>How could you describe the 2s pattern on the number grid to someone who couldn't see it?</p> <p>How might the number grid better help you understand counting?</p>
Lesson 3-4 Exploring Number Patterns, Shapes, and Patterns		
<p>Exploration A: Sorting Dominoes by Odd and Even Numbers of Dots</p> <p><i>(Teacher's Lesson Guide, pages 200 and 201)</i></p>	<p>GMP 7.1 Find, extend, analyze, and create patterns.</p> <p><i>See also:</i> GMP 2.1, GMP 2.2, GMP 3.1, GMP 7.2</p>	<p>What do you notice about the dots on dominos with even numbers? With Odd numbers?</p> <p>Why is there always a dot in the middle of an odd number of dots?</p>
<p>Exploration C: Exploring Patterns with Pattern Blocks</p> <p><i>(Teacher's Lesson Guide, page 202)</i></p>	<p>GMP 6.1 Communicate your mathematical thinking clearly and precisely.</p> <p><i>See also:</i> GMP 3.1, GMP 3.2, GMP 7.1</p>	<p>How did you use the pattern blocks to make your pattern?</p> <p>What other words might you use to help you describe patterns?</p>

Lesson 3-5 Counting on the Number Line		
<p>Reviewing Skip Counting on Number Lines</p> <p><i>(Teacher's Lesson Guide, pages 205 and 206)</i></p>	<p>GMP 7.1 Find, extend, analyze, and create patterns.</p> <p><i>See also:</i> GMP 2.1, GMP 5.2, GMP 6.3</p>	<p>How do counts by 2s look different from the counts by 5s on the number line? How do counts by 5s look different from counts by 10s on the number line?</p> <p>How can a number line help us see patterns in counts?</p>
<p>Counting Hops Up and Back on the Number Line</p> <p><i>(Teacher's Lesson Guide, pages 206 and 207)</i></p>	<p>GMP 8.1 Use patterns and structures to create and explain rules and shortcuts.</p> <p><i>See also:</i> GMP 5.2, GMP 6.3, GMP 7.1</p>	<p>What did you notice when we started at 0 and hopped 3 hops first and then 7 hops compared to when we started at 3 and hopped 7 hops?</p> <p>Why do you think we landed on 10 both times?</p>
Lesson 3-6 Adding and Subtracting on the Number Line		
<p>Introducing Addition on the Number Line</p> <p><i>(Teacher's Lesson Guide, pages 210 and 211)</i></p>	<p>GMP 5.2 Use mathematical tools correctly and efficiently.</p> <p><i>See also:</i> GMP 1.1, GMP 2.1, GMP 2.2, GMP 6.3</p>	<p>How do you know where to start on the number line? How do you know how many hops to take?</p> <p>What mistakes might you make when adding on the number line?</p>
<p>Introducing Subtraction on the Number Line</p> <p><i>(Teacher's Lesson Guide, page 211)</i></p>	<p>GMP 1.1 Work to make sense of your problem.</p> <p><i>See also:</i> GMP 2.1, GMP 5.2, GMP 6.3</p>	<p>How do you know whether to hop forward or back on the number line? What clues did you hear in the number story?</p> <p>What clues might you use to help understand new problems?</p>

Lesson 3-7 Telling Time to the Half-Hour		
<p>Revisiting Telling Time on an Analog Clock</p> <p><i>(Teacher's Lesson Guide, pages 215 and 216)</i></p>	<p>GMP 6.2 Use the level of precision you need for your problem.</p> <p><i>See also:</i> GMP 4.1, GMP 5.2, GMP 6.1</p>	<p>Why do we use words like <i>almost</i> __, <i>between</i> __ and __, and <i>a little after</i> __ to tell the time?</p> <p>When might it be important to know the exact time?</p>
<p>Introducing Telling Time to the Half-Hour</p> <p><i>(Teacher's Lesson Guide, pages 216 and 217)</i></p>	<p>GMP 5.2 Use mathematical tools correctly and efficiently.</p> <p><i>See also:</i> GMP 4.1, GMP 6.1</p>	<p>How does the hour hand help you read a time to the half-hour? How does the minute hand help you?</p> <p>Why is it important to be able to read a clock?</p>
Lesson 3-8 Introduction to the Frames-and-Arrows Routine		
<p>Introducing the Frames-and-Arrows Routine</p> <p><i>(Teacher's Lesson Guide, pages 220–222)</i></p>	<p>GMP 1.5 Check whether your solution makes sense.</p> <p><i>See also:</i> GMP 1.1, GMP 1.6, GMP 2.1, GMP 2.2, GMP 6.3, GMP 7.1, GMP 7.2, GMP 8.2</p>	<p>How can you check whether you filled in the missing frames correctly?</p> <p>How does the rule help you check your answers? How do the filled-in frames help you?</p>
<p>Solving Frames-and-Arrows Problems</p> <p><i>(Teacher's Lesson Guide, page 222)</i></p>	<p>GMP 3.1 Explain both what to do and why it works.</p> <p><i>See also:</i> GMP 1.1, GMP 1.6, GMP 2.1, GMP 3.2, GMP 6.3, GMP 7.1, GMP 7.2, GMP 8.2</p>	<p>Explain to your partner how you solved one of the frames-and-arrows problems and how you know you solved the problem correctly.</p> <p>How can you get better at explaining to others what you did and why you did it?</p>

Lesson 3-9 More Frames-and-Arrows Problems		
<p>Finding the Arrow Rule</p> <p><i>(Teacher’s Lesson Guide, page 225)</i></p>	<p>GMP 8.1 Use patterns and structures to create and explain rules and shortcuts.</p> <p><i>See also:</i> GMP 1.5, GMP 1.6, GMP 2.1, GMP 2.2, GMP 7.1, GMP 7.2, GMP 8.2</p>	<p>How did you use the numbers in the frames to figure out the rule?</p> <p>Could you figure out the rule if you were only given one filled-in frame? Why or why not?</p>
<p>Solving Frames-and-Arrows Problems</p> <p><i>(Teacher’s Lesson Guide, page 226)</i></p>	<p>GMP 2.2 Explain the meanings of the numbers, words, pictures, symbols, gestures, tables, graphs, and concrete objects you and others use.</p> <p><i>See also:</i> GMP 1.6, GMP 2.1, GMP 7.1, GMP 8.1</p>	<p>Name some different ways to write the rule for Problem 2. Do all of the rules you wrote mean the same thing?</p> <p>What do the arrows stand for in the Frames-and-Arrows problems?</p>
Lesson 3-10 Counting with a Calculator		
<p>Counting Up and Back with a Calculator</p> <p><i>(Teacher’s Lesson Guide, pages 230–232)</i></p>	<p>GMP 1.6 Connect mathematical ideas and representations to one another.</p> <p><i>See also:</i> GMP 5.2, GMP 7.1, GMP 8.2</p>	<p>How is counting on the calculator like a Frames-and-Arrows problem? How is it different?</p> <p>What part of counting on a calculator is like the Frames-and-Arrows “rule”?</p>
<p>Counting Up, Starting from Any Number</p> <p><i>(Teacher’s Lesson Guide, page 232)</i></p>	<p>GMP 5.3 Estimate and use what you know to check the answers you find using tools.</p> <p><i>See also:</i> GMP 3.1, GMP 5.2, GMP 7.1</p>	<p>What can you do to figure out whether you programmed your calculator correctly?</p> <p>Why might you need to check the answers you found on your calculator?</p>

Lesson 3-11 Dimes		
<p>Introducing Dollars-and-Cents Notation</p> <p><i>(Teacher's Lesson Guide, pages 236 and 237)</i></p>	<p>GMP 6.1 Communicate your mathematical thinking clearly and precisely.</p> <p><i>See also:</i> GMP 2.1, GMP 2.2, GMP 4.1, GMP 6.3, GMP 7.2</p>	<p>Why is it important to include the \$ symbol and the decimal point when writing money amounts?</p> <p>What might happen if you put the decimal point in the wrong place?</p>
<p>Exchanging Pennies and Nickels for Dimes</p> <p><i>(Teacher's Lesson Guide, pages 237 and 238)</i></p>	<p>GMP 1.4 Solve your problem in more than one way.</p> <p><i>See also:</i> GMP 3.1, GMP 4.1</p>	<p>Why is it possible to show the same amount of money in different ways?</p> <p>When might it be helpful to use different sets of coins for the same amount of money?</p>
Lesson 3-12 Counting Dimes, Nickels, and Pennies		
<p>Counting Combinations of Dimes, Nickels, and Pennies</p> <p><i>(Teacher's Lesson Guide, pages 242 and 243)</i></p>	<p>GMP 7.2 Use patterns and structures to solve problems.</p> <p><i>See also:</i> GMP 1.2, GMP 2.1, GMP 6.3</p>	<p>What patterns do you use to count each of these coins separately?</p> <p>Why is it helpful to count all of the dimes before counting the nickels? Why is it helpful to count all of the nickels before counting the pennies?</p>
<p>More Counting Combinations of Dimes, Nickels, and Pennies</p> <p><i>(Teacher's Lesson Guide, page 243)</i></p>	<p>GMP 6.3 Be accurate when you count, measure, and calculate.</p> <p><i>See also:</i> GMP 1.5, GMP 7.2</p>	<p>What can you do to help yourself count the coins accurately?</p> <p>What does it mean to be accurate?</p>

Lesson 3-13 Data Day		
<p>Making a Line Plot</p> <p><i>(Teacher’s Lesson Guide, pages 247 and 248)</i></p>	<p>GMP 4.2 Use mathematical models such as graphs, drawings, tables, symbols, numbers, and diagrams to solve problems.</p> <p><i>See also:</i> GMP 1.6, GMP 2.1, GMP 2.2, GMP 4.1</p>	<p>Can you tell how many siblings the greatest number of children in our class has without counting? How? *</p> <p>How many siblings do you think most first graders in our school have? How did you figure that out? How did our class line plot help you make your prediction?</p> <p>Do you think a line plot was a good way to show the data? Why or why not?</p>
Lesson 3-14 Domino Addition		
<p>Exploring Dot Patterns on Halves of Dominoes</p> <p><i>(Teacher’s Lesson Guide, page 252)</i></p>	<p>GMP 8.1 Use patterns and structures to create and explain rules and shortcuts.</p> <p><i>See also:</i> GMP 6.1, GMP 6.3, GMP 7.1, GMP 7.2, GMP 8.2</p>	<p>Why is there a dot in the middle of the odd numbered dominoes but not the even numbered dominoes?</p> <p>How could you use this pattern to easily sort dominoes into sets with even and odd numbers of dots?</p>
<p>Introducing Number Combinations on Entire Dominoes</p> <p><i>(Teacher’s Lesson Guide, page 253)</i></p>	<p>GMP 2.2 Explain the meanings of the numbers, words, pictures, symbols, gestures, tables, graphs, and concrete objects you and others use.</p> <p><i>See also:</i> GMP 1.6, GMP 2.1</p>	<p>What does the number in the “total” box mean? What do the numbers in the “part” boxes mean?</p> <p>How are Parts-and-Total diagrams and dominos similar? How are they different?</p>

*denotes a question that is currently in the materials

Grade 1 Unit 4: Measurement and Basic Facts

Activity	<i>Everyday Mathematics</i> Goal for Mathematical Practice	Guiding Questions
Lesson 4-1 Math Message and Reading a Thermometer		
Math Message Follow-Up <i>(Teacher's Lesson Guide, page 276)</i>	GMP 5.3 Estimate and use what you know to check the answers you find using tools. <i>See also:</i> GMP 4.1, GMP 5.2	How did you use yesterday's temperature to predict today's temperature? Why is it important to check the answers we find using tools?
Reviewing Thermometers and How to Read Them <i>(Teacher's Lesson Guide, page 276)</i>	GMP 4.1 Apply mathematical ideas to real-world situations. <i>See also:</i> GMP 5.1, GMP 5.2, GMP 6.1	When have you or someone else used a thermometer in your life? What else could you use a thermometer to measure besides the temperature outside?
Lesson 4-2 Nonstandard Linear Measures		
Measuring Things with Fingers, Hands, Feet, and Arms <i>(Teacher's Lesson Guide, pages 282 and 283)</i>	GMP 5.1 Choose appropriate tools for your problem. <i>See also:</i> GMP 3.1, GMP 4.1, GMP 5.2, GMP 6.1, GMP 6.2, GMP 6.3	Would you use arm spans to measure a book? Why or why not? Would you use digits to measure the playground? Why or why not? Why do we use different tools to measure things of different lengths?

<p>Comparing Individual Heights to Objects in the Classroom</p> <p><i>(Teacher’s Lesson Guide, page 284)</i></p>	<p>GMP 6.2 Use the level of precision you need for your problem.</p> <p><i>See also:</i> GMP 1.1, GMP 4.1</p>	<p>Are you <i>exactly</i> the same height as the things you found?</p> <p>Why do we use words like <i>about, almost, a little more than, and a little less than</i> to report measurements we made with our bodies?</p>
Lesson 4-3 Personal “Foot” and Standard Foot		
<p>Measuring with Construction-Paper Cutouts of Children’s Feet</p> <p><i>(Teacher’s Lesson Guide, pages 287 and 288)</i></p>	<p>GMP 6.1 Communicate your mathematical ideas clearly and precisely.</p> <p><i>See also:</i> GMP 3.1, GMP 3.2, GMP 4.1, GMP 5.2, GMP 6.2, GMP 6.3</p>	<p>Why do we need to say “Jamir’s (or another name) feet” instead of just “feet” when reporting our measurements?</p> <p>Why might different people have different measurements for the same object?</p>
<p>Measuring with a Standard Foot-Long Foot</p> <p><i>(Teacher’s Lesson Guide, page 288)</i></p>	<p>GMP 6.3 Be accurate when you count, measure, and calculate.</p> <p><i>See also:</i> GMP 3.1, GMP 3.2, GMP 5.2, GMP 6.1, GMP 6.2</p>	<p>How can you make sure you are using your foot-long foot accurately?</p> <p>How are the foot-long foot and the cutout of your foot different?</p>
Lesson 4-4 The Inch		
<p>Introducing the Inch As a Standard Unit of Length</p> <p><i>(Teacher’s Lesson Guide, pages 292 and 293)</i></p>	<p>GMP 1.6 Connect mathematical ideas and representations to one another.</p> <p><i>See also:</i> GMP 2.1, GMP 5.2, GMP 6.2, GMP 6.3</p>	<p>What connections can you make between the 1-inch squares, the 12-inch ruler, and the foot-long foot?</p> <p>Which tool(s) helps you understand what an inch is? A foot? Why?</p>

<p>Measuring in Inches with a Cutout Ruler</p> <p><i>(Teacher's Lesson Guide, pages 293 and 294)</i></p>	<p>GMP 5.2 Use mathematical tools correctly and efficiently.</p> <p><i>See also:</i> GMP 4.1, GMP 6.1, GMP 6.3</p>	<p>Explain how you measure something to the nearest inch.</p> <p>What mistakes might you make when measuring to the nearest inch?</p>
Lesson 4-5 The 6-Inch Ruler		
<p>Estimating the Length of an Object</p> <p><i>(Teacher's Lesson Guide, pages 299)</i></p>	<p>GMP 5.3 Estimate and use what you know to check the answers you find using tools.</p> <p><i>See also:</i> GMP 6.1, GMP 6.2</p>	<p>Why would you want to estimate the length of something before measuring it with a tool?</p> <p>What might you do to get better at estimating length?</p>
<p>Measuring Objects with the 6-Inch Ruler</p> <p><i>(Teacher's Lesson Guide, page 299)</i></p>	<p>GMP 5.2 Use mathematical tools correctly and efficiently.</p> <p><i>See also:</i> GMP 6.1, GMP 6.3</p>	<p>How might you measure something that is longer than the six-inch ruler?</p> <p>How do you know if you have measured something correctly?</p>
Lesson 4-6 Measuring with a Tape Measure		
<p>Introducing Tape Measures</p> <p><i>(Teacher's Lesson Guide, pages 303 and 304)</i></p>	<p>GMP 4.1 Apply mathematical ideas to real-world situations.</p> <p><i>See also:</i> GMP 5.2</p>	<p>When have you seen someone use a tape measure in your life?</p> <p>When might you use a tape measure in your daily life?</p>
<p>Measuring Around and Across Things</p> <p><i>(Teacher's Lesson Guide, page 304)</i></p>	<p>GMP 5.1 Choose appropriate tools for your problem</p> <p><i>See also:</i> GMP 6.1, GMP 6.2, GMP 6.3</p>	<p>What are the advantages of using a tape measure?</p> <p>What are the disadvantages?</p> <p>Why is it helpful to know when and how to use different measuring tools?</p>

Lesson 4-7 Exploring Data, Shapes, and Base-10 Blocks		
<p>Math Message Follow-Up</p> <p><i>(Teacher's Lesson Guide, page 308)</i></p>	<p>GMP 1.2 Make a plan for solving your problem.</p> <p><i>See also:</i> GMP 3.1, GMP 5.1, GMP 5.2, GMP 6.2, GMP 8.3</p>	<p>How can we check our estimates of how many feet tall most first graders in our class are? What might we do first?</p> <p>What can you do if you aren't sure how to solve a problem on your own?</p>
<p>Making a Bar Graph and Finding a "Typical" Height</p> <p><i>(Teacher's Lesson Guide, page 310)</i></p>	<p>GMP 4.2 Use mathematical models such as graphs, drawings, tables, symbols, numbers, and diagrams to solve problems.</p> <p><i>See also:</i> GMP 2.2, GMP 4.1, GMP 8.3</p>	<p>What question can you ask that can be answered using this graph? *</p> <p>What other questions can you ask that compare the data in one column with data in another column? *</p> <p>How does the tallest bar show a "typical" height for the class?</p> <p>Name another time when we might make a bar graph.</p>
Lesson 4-8 Telling Time on the Quarter-Hour		
<p>Reviewing Hour and Half-Hour Times</p> <p><i>(Teacher's Lesson Guide, page 314)</i></p>	<p>GMP 6.2 Use the level of precision you need for your problem.</p> <p><i>See also:</i> GMP 5.2, GMP 6.1</p>	<p>How does the minute hand help you tell time more precisely (or exactly)?</p> <p>What does it mean to be precise (or exact)?</p>
<p>Telling Time to the Quarter Hour</p> <p><i>(Teacher's Lesson Guide, pages 314 and 315)</i></p>	<p>GMP 6.1 Communicate your mathematical thinking clearly and precisely.</p> <p><i>See also:</i> GMP 1.6, GMP 5.2</p>	<p>What does a <i>quarter</i> of an hour mean?</p> <p>Name some other times where you have used or heard the word <i>quarter</i>. What does it mean in those situations?</p>

Lesson 4-9 Timelines		
<p>Introducing Timelines</p> <p><i>(Teacher's Lesson Guide, pages 320 and 321)</i></p>	<p>GMP 1.6 Connect mathematical ideas and representations to one another.</p> <p><i>See also:</i> GMP 2.1, GMP 2.2, GMP 4.1</p>	<p>How is a timeline like a number line?</p> <p>How is it different?</p>
<p>Making a Timeline</p> <p><i>(Teacher's Lesson Guide, page 321)</i></p>	<p>GMP 2.2 Explain the meanings of the numbers, words, pictures, symbols, gestures, tables, graphs, and concrete objects you and others use.</p> <p><i>See also:</i> GMP 2.1, GMP 6.1</p>	<p>What do the pictures on your timeline represent?</p> <p>When might you use a timeline?</p>
Lesson 4-10 Number Scrolls		
<p>Math Message Follow-Up</p> <p><i>(Teacher's Lesson Guide, page 325)</i></p>	<p>GMP 2.2 Explain the meaning of the numbers, words, pictures, symbols, gestures, tables, graphs, and concrete objects you use.</p> <p><i>See also:</i> GMP 2.1, GMP 6.1, GMP 7.2</p>	<p>How do you know which is the largest number? The smallest?</p> <p>What is the meaning of the number you picked?</p>
<p>Filling in a 100-Number Grid</p> <p><i>(Teacher's Lesson Guide, page 326)</i></p>	<p>GMP 7.1 Find, extend, analyze, and create patterns.</p> <p><i>See also:</i> GMP 3.1, GMP 5.2, GMP 6.3, GMP 7.2, GMP 8.2</p>	<p>What patterns did you use to figure out where to write numbers on the number grid?</p> <p>How might these patterns help you check your work?</p>

Lesson 4-11 Introducing Fact Power		
<p>Introducing Turn-Around Facts</p> <p><i>(Teacher's Lesson Guide, page 332)</i></p>	<p>GMP 8.1 Use patterns and structures to create and explain rules and shortcuts.</p> <p><i>See also:</i> GMP 6.1, GMP 7.1</p>	<p>Why might someone call using turn-around facts a shortcut?</p> <p>How might knowing your turn-around facts help you build fact power?</p>
<p>Discussing Patterns in the Turn-Around Facts Record</p> <p><i>(Teacher's Lesson Guide, page 332A)</i></p>	<p>GMP 7.1 Find, extend, analyze, and create patterns.</p> <p><i>See also:</i> GMP 6.1, GMP 7.2</p>	<p>What is the pattern of the sums in each row? Each column? *</p> <p>What would come next in each row of the table?</p> <p>What would come next in each column of the table?</p>
Lesson 4-12 Good Fact Habits and Making Ten		
<p>Introducing Making Ten</p> <p><i>(Teacher's Lesson Guide, page 336A)</i></p>	<p>GMP 2.1 Represent problems and situations mathematically with numbers, words, pictures, symbols, gestures, tables, graphs, and concrete objects.</p> <p><i>See also:</i> GMP 1.6, GMP 2.2, GMP 5.2, GMP 7.2, GMP 8.2</p>	<p>How does the filled ten-frame show $8 + 4 = 12$?</p> <p>Which counters show the 8? Which show the 4? Which show the 12?</p>
<p>Making-Ten Shortcut</p> <p><i>(Teacher's Lesson Guide, page 336B)</i></p>	<p>GMP 8.1 Use patterns and structures to create and explain rules and shortcuts.</p> <p><i>See also:</i> GMP 7.1, GMP 7.2, GMP 8.2</p>	<p>How might you use these facts to find a shortcut for solving +9 facts? How does this shortcut change for a +8 fact?</p> <p>What other shortcuts do you know how to use in math?</p>

* denotes a questions that is currently in the materials

Grade 1 Unit 5: Place Value, Number Stories, and Basic Facts

Activity	<i>Everyday Mathematics</i> Goal for Mathematical Practice	Guiding Questions
Lesson 5-1 Place Value: Tens and Ones		
Naming Numbers with Base-10 Blocks <i>(Teacher's Lesson Guide, page 359)</i>	GMP 2.2 Explain the meanings of numbers, words, pictures, symbols, gestures, tables, graphs, and concrete objects you and others use. <i>See also:</i> GMP 2.1, GMP 5.2	What do these base-10 blocks (3 longs and 4 cubes) represent? * What do the 3 longs represent? What do the 4 cubes represent? How do longs and cubes help you understand what a number means?
Making Exchanges with Base-10 Blocks <i>(Teacher's Lesson Guide, page 360)</i>	GMP 2.1 Represent problems and situations mathematically with numbers, words, pictures, symbols, gestures, tables, graphs, and concrete objects. <i>See also:</i> GMP 1.4, GMP 2.2, GMP 5.2, GMP 6.3	How many ways can you show 35 using base-10 blocks? What are other ways to represent numbers besides using base-10 blocks?
Lesson 5-2 Place Value with Calculators		
Investigating Digit Patterns in Counts by 10s <i>(Teacher's Lesson Guide, page 365)</i>	GMP 7.1 Find, extend, analyze, and create patterns. <i>See also:</i> GMP 2.2, GMP 5.2	What happens to the digits in the tens place as you count by 10s? * What do you think will happen when we pass 100? 200? How could you explain the 10s pattern to a friend?

<p>Discovering the Role of Place in the Value of Digits</p> <p><i>(Teacher’s Lesson Guide, page 366)</i></p>	<p>GMP 2.2 Explain the meaning of the numbers, words, pictures, symbols, gestures, tables, graphs, and concrete objects you and others use.</p> <p><i>See also:</i> GMP 5.2, GMP 7.1</p>	<p>What does the 5 in 45 mean? What does the 5 in 54 mean? How does the meaning of a number change depending on which place it is in?</p> <p>What does “tens place” mean? What does “ones place” mean?</p>
Lesson 5-3 Relations: Greater Than, Less Than, and Equal To		
<p>Math Message Follow-Up</p> <p><i>(Teacher’s Lesson Guide, page 369)</i></p>	<p>GMP 3.1 Explain both what to do and why it works.</p> <p><i>See also:</i> GMP 1.1, GMP 6.1, GMP 6.3</p>	<p>How did you decide who has more money?</p> <p>Why does your strategy work?</p>
<p>Introducing the $>$ and $<$ Relation Symbols</p> <p><i>(Teacher’s Lesson Guide, pages 369 and 370)</i></p>	<p>GMP 6.1 Communicate your mathematical thinking clearly and precisely.</p> <p><i>See also:</i> GMP 1.6, GMP 2.1, GMP 2.2</p>	<p>Can anyone describe a way to tell $<$ and $>$ apart? *</p> <p>Which strategies for telling $<$ and $>$ symbols apart help you? Why?</p> <p>Why do we use the symbols $>$, $<$, and $=$ when we do math?</p>
Lesson 5-4 EXPLORATIONS: Exploring Area, Weight, and Counting		
<p>Exploration A: Estimating and Finding the Area of a Surface</p> <p><i>(Teacher’s Lesson Guide, pages 375 and 376)</i></p>	<p>GMP 6.1 Communicate your mathematical thinking clearly and precisely.</p> <p><i>See also:</i> GMP 5.3, GMP 6.2, GMP 6.3</p>	<p>Did you need more of the larger units or more of the smaller units to cover the surface? Explain why. *</p> <p>What does it mean to find the area of a surface?</p>

<p>Exploration B: Finding Sets of Objects that Weigh the Same</p> <p><i>(Teacher's Lesson Guide, page 376)</i></p>	<p>GMP 5.2 Use mathematical tools correctly and efficiently.</p> <p><i>See also:</i> GMP 5.3, GMP 6.2</p>	<p>How can you figure out if two sets of objects have the same weight?</p> <p>What did you do to make the sides of the pan balance even?</p>
Lesson 5-5 Animal Weights		
<p>Math Message Follow-Up</p> <p><i>(Teacher's Lesson Guide, page 380)</i></p>	<p>GMP 1.3 Try different approaches when your problem is hard.</p> <p><i>See also:</i> GMP 1.1, GMP 1.2, GMP 1.4, GMP 2.1, GMP 2.2, GMP 5.1, GMP 6.1</p>	<p>What could you do if you got stuck trying to solve this problem?</p> <p>What makes a math problem hard?</p>
<p>Using Base-10 Blocks to Find Total Weights</p> <p><i>(Teacher's Lesson Guide, pages 380 and 381)</i></p>	<p>GMP 3.1 Explain both what to do and why it works.</p> <p><i>See also:</i> GMP 2.1, GMP 2.2, GMP 4.1, GMP 5.2, GMP 6.1</p>	<p>How did you add the weights of the koala and the fox (or two other animals) using base-10 blocks? Why does your strategy work?</p> <p>How might explaining your solution help you become a better problem solver?</p>
Lesson 5-6 More Than and Less Than Number Stories		
<p>Math Message Follow-Up</p> <p><i>(Teacher's Lesson Guide, page 385)</i></p>	<p>GMP 7.2 Use patterns and structures to solve problems.</p> <p><i>See also:</i> GMP 2.2, GMP 3.1, GMP 6.1</p>	<p>How do the numbers in the tens place help you decide which animal weighs more?</p> <p>Why do you only need to look at the ones place if the tens place is the same?</p>

<p>Introducing Number Models for Relation Number Stories</p> <p><i>(Teacher's Lesson Guide, page 385)</i></p>	<p>GMP 2.2 Explain the meanings of the numbers, words, pictures, symbols, gestures, tables, graphs, and concrete objects you and others use.</p> <p><i>See also:</i> GMP 4.1, GMP 6.1</p>	<p>How does this number model match the number story?</p> <p>How can numbers and symbols be used to tell stories?</p>
Lesson 5-7 Comparison Number Stories		
<p>Math Message Follow-Up</p> <p><i>(Teacher's Lesson Guide, page 389)</i></p>	<p>GMP 2.2 Explain the meanings of the numbers, words, pictures, symbols, gestures, tables, graphs, and concrete objects you and others use.</p> <p><i>See also:</i> GMP 1.1, GMP 1.6, GMP 2.1, GMP 3.1, GMP 4.1, GMP 4.2, GMP 6.1</p>	<p>In the number model $12 - 7 = 5$ (or another number model) what does the 12 stand for? the 7? the 5?</p> <p>Why can you represent this number story by writing $12 - 7 = ?$ or by writing $7 + ? = 12$?</p>
<p>Playing the <i>Difference Game</i></p> <p><i>(Teacher's Lesson Guide, page 390)</i></p>	<p>GMP 6.1 Communicate your mathematical thinking clearly and precisely.</p> <p><i>See also:</i> GMP 2.1, GMP 2.2, GMP 3.1</p>	<p>When you compare two sets of pennies, why do you call the number of extra pennies the “difference?”</p> <p>What are other words we use when we talk about subtraction?</p>
Lesson 5-8 Solving Number Stories		
<p>Math Message Follow-Up</p> <p><i>(Teacher's Lesson Guide, page 394)</i></p>	<p>GMP 1.6 Connect mathematical ideas and representations to one another.</p> <p><i>See also:</i> GMP 1.1, GMP 1.2, GMP 2.1, GMP 2.2, GMP 3.1, GMP 4.2, GMP 6.1</p>	<p>How is the comparison diagram like comparing sets of pennies?</p> <p>Why might you want to use a diagram instead of pennies to represent this problem?</p>

<p>Solving Number Stories Involving Addition and Subtraction</p> <p><i>(Teacher's Lesson Guide, pages 395 and 396)</i></p>	<p>GMP 1.1 Work to make sense of your problem.</p> <p><i>See also:</i> GMP 1.2, GMP 1.3, GMP 1.4, GMP 2.1, GMP 2.2, GMP 3.1, GMP 4.1, GMP 4.2, GMP 5.1</p>	<p>What can you do to make sense of a number story?</p> <p>What could you do if you don't understand what a problem is asking you to do?</p>
Lesson 5-9 Dice Sums		
<p>Math Message Follow-Up</p> <p><i>(Teacher's Lesson Guide, page 399)</i></p>	<p>GMP 1.6 Connect mathematical ideas and representations to one another.</p> <p><i>See also:</i> GMP 6.1, GMP 7.1</p>	<p>How are these problems like the Two-Fisted Penny Addition activity with 7 pennies? *</p> <p>How else could you show that these sums are all 7?</p>
<p>Investigating Frequency of Sums from Dice Rolls</p> <p><i>(Teacher's Lesson Guide, pages 399 and 400)</i></p>	<p>GMP 8.3 Reflect on your thinking before, during, and after you solve a problem.</p> <p><i>See also:</i> GMP 2.1, GMP 3.1, GMP 3.2, GMP 4.2, GMP 7.1, GMP 8.1</p>	<p>Imagine we played a game. In the game, we roll two dice. If a 7 comes up, the teacher wins. If a 2 or a 12 comes up the class wins. Is the game fair?*</p> <p>Explain why or why not. Use the data you collected about sums to explain your answer.</p> <p>What can you do to explain your ideas better in math?</p>
Lesson 5-10 Facts Using Doubles		
<p>Math Message Follow-Up</p> <p><i>(Teacher's Lesson Guide, page 403)</i></p>	<p>GMP 7.1 Find, extend, analyze, and create patterns.</p> <p><i>See also:</i> GMP 2.1, GMP 6.1, GMP 7.2</p>	<p>What do all doubles facts have in common?*</p> <p>How could you use doubles facts to help you solve other facts?</p>

<p>Introducing Doubles-Plus-1 Facts</p> <p><i>(Teacher’s Lesson Guide, pages 403 and 404)</i></p>	<p>GMP 8.2 Use properties, rules, and shortcuts to solve problems.</p> <p><i>See also:</i> GMP 2.1, GMP 2.2, GMP 8.1</p>	<p>How might a doubles-fact help you solve a doubles-plus-1 fact?</p> <p>Why might we call the doubles-plus-one and –two facts shortcuts?</p>
Lesson 5-11 Fact Strategy Review		
<p>Math Message Follow-Up</p> <p><i>(Teacher’s Lesson Guide, page 410)</i></p>	<p>GMP 6.1 Communicate your mathematical thinking clearly and precisely.</p> <p><i>See also:</i> GMP 8.1, GMP 8.2</p>	<p>What if we had a new student who didn’t know about turn-around facts? Can you explain how they work? *</p> <p>Why does [using turn-around facts] make learning the facts easier? *</p>
<p>Introducing <i>Beat the Calculator</i></p> <p><i>(Teacher’s Lesson Guide, page 412)</i></p>	<p>GMP 5.1 Choose appropriate tools for your problem.</p> <p><i>See also:</i> GMP 5.2, GMP 6.3, GMP 8.3</p>	<p>What tools could the Brain use to beat the calculator?</p> <p>How do you decide when to use a calculator to solve a math problem and when to use your brain?</p>
Lesson 5-12 “What’s My Rule?”		
<p>Introducing the “What’s My Rule?” Routine</p> <p><i>(Teacher’s Lesson Guide, pages 415 and 416)</i></p>	<p>GMP 8.1 Use patterns and structures to create and explain rules and shortcuts.</p> <p><i>See also:</i> GMP 1.1, GMP 1.5, GMP 2.1, GMP 3.1, GMP 6.1, GMP 6.3, GMP 7.1</p>	<p>What clues tell you if the rule is addition, subtraction, or something else?</p> <p>What patterns could you look for to help you figure out the rule?</p>

<p>Solving “What’s My Rule?” Problems</p> <p><i>(Teacher’s Lesson Guide, pages 416 and 417)</i></p>	<p>GMP 1.5 Check whether your solution makes sense.</p> <p><i>See also:</i> GMP 1.1, GMP 2.1, GMP 3.1, GMP 6.3, GMP 7.2, GMP 8.1, GMP 8.2</p>	<p>How might you check whether your rule makes sense?</p> <p>Why is it important to check your answers?</p>
Lesson 5-13 Applying Rules		
<p>Math Message Follow-Up</p> <p><i>(Teacher’s Lesson Guide, page 420)</i></p>	<p>GMP 6.1 Communicate your mathematical thinking clearly and precisely.</p> <p><i>See also:</i> GMP 2.2, GMP 6.3, GMP 7.1, GMP 8.1</p>	<p>What might happen to the “out” numbers if you change the rule?</p> <p>How might you explain a function machine to a friend who has never seen one?</p>
<p>Applying Rules</p> <p><i>(Teacher’s Lesson Guide, pages 420 and 421)</i></p>	<p>GMP 2.1 Represent problems and situations mathematically with numbers, words, pictures, symbols, gestures, tables, graphs, and concrete objects.</p> <p><i>See also:</i> GMP 6.1, GMP 8.1, GMP 8.2</p>	<p>Name some different ways to write the rule “Add 2” (or another rule) using numbers, symbols, words.</p>

* denotes a question currently in the materials

Grade 1 Unit 6: Developing Fact Power

Activity	<i>Everyday Mathematics</i> Goal for Mathematical Practice	Guiding Questions
Lesson 6-1 The Addition/Subtraction Facts Table		
Making a Dice-Throw Record of Facts <i>(Teacher's Lesson Guide, pages 537 and 538)</i>	GMP 2.1 Represent problems and situations mathematically with numbers, words, pictures, symbols, gestures, tables, and concrete objects. <i>See also:</i> GMP 2.2, GMP 4.2, GMP 6.1, GMP 8.2	What do you notice about the completed Dice-Throw Record? How might the Dice-Throw Record help you learn your addition facts?
Introducing the Addition/Subtraction Facts Table <i>(Teacher's Lesson Guide, pages 538 and 539)</i>	GMP 3.2 Work to make sense of others' mathematical thinking. <i>See also:</i> GMP 3.1, GMP 5.1	Retell a strategy that a classmate shared for solving $6 + 8$ (or another problem) that is different from your own. Does the strategy make sense to you? Why or why not? What can you learn by listening to others' strategies?
Lesson 6-2 Equivalent Names		
Illustrating Equivalence Using a Pan Balance <i>(Teacher's Lesson Guide, page 544)</i>	GMP 2.1 Represent problems and situations mathematically with numbers, words, pictures, symbols, gestures, tables, graphs, and concrete objects. <i>See also:</i> GMP 1.6, GMP 2.2, GMP 5.2, SMP 6.1	How might we write a number model(s) for what is shown on the pan balance? How do you know which symbols to use when writing a number model?

<p>Introducing Name-Collection Boxes</p> <p><i>(Teacher's Lesson Guide, pages 544 and 545)</i></p>	<p>GMP 1.6 Connect mathematical ideas and representations to one another.</p> <p><i>See also:</i> GMP 1.4, GMP 2.1, GMP 2.2, SMP 6.3</p>	<p>How can we show “7” with cubes, money, dice, or dominoes?</p> <p>How are these representations the same? How are they different?</p>
Lesson 6-3 Fact Families		
<p>Math Message Follow-Up</p> <p><i>(Teacher's Lesson Guide, page 549)</i></p>	<p>GMP 1.4 Solve your problem in more than one way.</p> <p><i>See also:</i> GMP 1.1, SMP 1.5, GMP 2.1, GMP 2.2, GMP 3.1, GMP 3.2, GMP 6.3</p>	<p>How are the ways children solved Problem 2 the same? How are they different?</p> <p>What can you learn from solving problems in more than one way?</p>
<p>Introducing Addition/Subtraction Fact Families</p> <p><i>(Teacher's Lesson Guide, pages 550 and 551)</i></p>	<p>GMP 8.1 Use patterns and structures to create and explain rules and shortcuts.</p> <p><i>See also:</i> GMP 2.1, GMP 2.2, GMP 6.1</p>	<p>Why do some dominoes lead to a fact family with 4 facts while others lead to a fact family with only 2 facts?</p> <p>How might addition facts help you figure out subtraction facts?</p>
Lesson 6-4 Fact Triangles		
<p>Introducing Fact Triangles</p> <p><i>(Teacher's Lesson Guide, pages 554 and 555)</i></p>	<p>GMP 2.2 Explain the meanings of the numbers, words, pictures, symbols, gestures, tables, graphs, and concrete objects you and others use.</p> <p><i>See also:</i> GMP 2.1, GMP 6.1</p>	<p>What does the dot stand for at the top of a fact family triangle?</p> <p>Why are there always three numbers in a fact family?</p>

<p>Playing <i>Beat the Calculator</i></p> <p>(<i>Teacher's Lesson Guide</i>, pages 555 and 556)</p>	<p>GMP 8.3 Reflect on your thinking before, during, and after you solve a problem?</p> <p><i>See also:</i> GMP 5.2, GMP 6.3</p>	<p>Is the Brain faster or slower than the Calculator? Explain why you think so.</p> <p>Why might it be important to think back on a problem after you solved it?</p>
Lesson 6-5 Using Strategies to Solve Subtraction Facts		
<p>Using the Addition/Subtraction Facts Table to Solve Subtraction Problems</p> <p>(<i>Teacher's Lesson Guide</i>, pages 560 and 561)</p>	<p>GMP 5.3 Estimate and use what you know to check the answers you find using tools.</p> <p><i>See also:</i> GMP 1.4, GMP 1.5, GMP 5.2, GMP 8.2</p>	<p>How could you use the facts table to check your answers to addition and subtraction facts?</p> <p>Why is it important to check the answers you find using a tool?</p>
<p>Subtracting Using a Ten Frame</p> <p>(<i>Teacher's Lesson Guide</i>, page 561)</p>	<p>GMP 3.1 Explain both what to do and why it works.</p> <p><i>See also:</i> GMP 1.6, GMP 2.1, GMP 2.2, GMP 8.2</p>	<p>Explain how can you use a ten frame to solve $14 - 8 = ?$.</p> <p>Explain why this strategy works for you.</p>
Lesson 6-6 The Centimeter		
<p>Developing a Sense of a 10-Centimeter Length</p> <p>(<i>Teacher's Lesson Guide</i>, pages 564 and 565)</p>	<p>GMP 3.1 Explain both what to do and why it works.</p> <p><i>See also:</i> GMP 1.4, GMP 1.6, GMP 4.1, GMP 5.3, GMP 6.1, GMP 6.2</p>	<p>How did you use longs to measure the length of your journal (or another object) in centimeters?</p> <p>Why does this method work?</p> <p>Why is it important to be able to explain why your method works?</p>
<p>Measuring and Drawing Line Segments</p> <p>(<i>Teacher's Lesson Guide</i>, pages 565 and 566)</p>	<p>GMP 6.2 Use the level of precision you need for your problem.</p> <p><i>See also:</i> GMP 5.2, GMP 6.3</p>	<p>How could you measure something when the length is between two centimeters?</p>

Lesson 6-7 EXPLORATIONS: Exploring Pattern Blocks, Addition Facts, and Triangles		
<p>Math Message Follow-Up</p> <p><i>(Teacher's Lesson Guide, page 570)</i></p>	<p>GMP 6.1 Communicate your mathematical thinking clearly and precisely.</p> <p><i>See also:</i> GMP 1.6, GMP 7.1</p>	<p>How might you describe your triangles to someone who couldn't see them?</p> <p>How can you make your descriptions clearer?</p>
<p>Exploration C: Making Triangle Shapes on the Geoboard</p> <p><i>(Teacher's Lesson Guide, page 571)</i></p>	<p>GMP 3.2 Work to make sense of others' mathematical thinking.</p> <p><i>See also:</i> GMP 1.4, GMP 1.6, GMP 2.1</p>	<p>Compare your triangle that touches 6 pins (or another number) to another child's. Did you both follow the directions?</p> <p>How is your classmate's triangle different from your triangle? How are they the same?</p>
Lesson 6-8 Addition Facts Practice with "What's My Rule?"		
<p>Math Message Follow-Up</p> <p><i>(Teacher's Lesson Guide, page 575)</i></p>	<p>GMP 8.3 Reflect on your thinking before, during, and after you solve a problem.</p> <p><i>See also:</i> GMP 1.2, GMP 1.5, GMP 2.1, GMP 3.1, GMP 7.1, GMP 8.1, GMP 8.2</p>	<p>What did you do when you first saw the problem? What did you do next? What did you do after you named the rule?</p>
<p>Reviewing the "What's My Rule?" Routine</p> <p><i>(Teacher's Lesson Guide, page 576)</i></p>	<p>GMP 1.5 Check whether your solution makes sense.</p> <p><i>See also:</i> GMP 1.1, GMP 1.2, GMP 2.1, GMP 3.1, GMP 8.2</p>	<p>How could you check that an input number you found is correct?</p> <p>Why should you check whether your answers to "What's my Rule?" problems make sense?</p>

Lesson 6-9 Quarters		
Counting by 25s <i>(Teacher's Lesson Guide, page 582)</i>	GMP 7.1 Find, extend, analyze, and create patterns. <i>See also:</i> GMP 2.1, GMP 2.2, GMP 4.1, GMP 6.3	What patterns do you see when counting by 25s with cents? With dollars? What makes these lists of numbers patterns?
Counting Combinations of Quarters, Dimes, Nickels, and Pennies <i>(Teacher's Lesson Guide, pages 582 and 583)</i>	GMP 1.2 Make a plan for solving your problem. <i>See also:</i> GMP 6.3, GMP 7.2	Why does counting the coins in order from largest value to smallest value help us count efficiently? What might happen if you don't make a plan before solving a problem?
Lesson 6-10 Digital Clocks		
Introducing the 5-Minute Interval Marks on the Analog Clock <i>(Teacher's Lesson Guide, page 589)</i>	GMP 7.2 Use patterns and structures to solve problems. <i>See also:</i> SMP 5.2, GMP 6.2, GMP 7.1	How does counting by 5s help you read the minutes on the clock? Why do you think we counted by 5s to 60 in the Math Message problem?
Introducing the Digital Clock <i>(Teacher's Lesson Guide, pages 590 and 591)</i>	GMP 1.6 Connect mathematical ideas and representations to one another. <i>See also:</i> GMP 2.1, GMP 4.1, GMP 6.1	How are digital and analog clocks the same? How are they different? Which clock is easier for you to read? Why?
Lesson 6-11 Introducing My Reference Book		
Math Message Follow-Up <i>(Teacher's Lesson Guide, pages 594 and 595)</i>	GMP 5.1 Choose appropriate tools for your problem. <i>See also:</i> GMP 5.2	Why might you use <i>My Reference Book</i> to help you solve a problem? What are some other tools you use during mathematics to help you solve problems?

<p><i>My Reference Book Scavenger Hunt</i></p> <p><i>(Teacher's Lesson Guide, page 595)</i></p>	<p>GMP 5.2 Use mathematical tools correctly and efficiently.</p> <p><i>See also:</i> GMP 6.1, GMP 7.1</p>	<p>How did you use the Table of Contents to you find information in <i>My Reference Book</i>?</p> <p>How did you find your favorite math game in <i>My Reference Book</i>?</p>
Lesson 6-12 Data Landmarks		
<p>Timing a Calculator Count</p> <p><i>(Teacher's Lesson Guide, pages 598–600)</i></p>	<p>GMP 4.2 Use mathematical models such as graphs, drawings, tables, numbers, and diagrams to solve problems.</p> <p><i>See also:</i> GMP 1.1, GMP 2.1, GMP 2.2, GMP 6.1, GMP 8.3</p>	<p>Suppose you had to guess about how high a child your age in another school could count on the calculator in 15 seconds. What would be your guess? *</p> <p>Why might we want to find the middle number (the median) of our data?</p>
<p>Making a Bar Graph</p> <p><i>(Teacher's Lesson Guide, pages 600 and 601)</i></p>	<p>GMP 2.2 Explain the meanings of the numbers, words, pictures, symbols, gestures, tables, graphs, and concrete objects you and others use.</p> <p><i>See also:</i> GMP 2.1, GMP 4.1, GMP 4.2</p>	<p>How do you know how many squares to fill in above each of the numbers? * What does each colored square stand for?</p> <p>Why is it important to give a title to our graph?</p>

* denotes a question that is currently in the materials

Grade 1 Unit 7: Geometry and Attributes

Activity	<i>Everyday Mathematics</i> Goal for Mathematical Practice	Guiding Questions
Lesson 7-1 Attribute Rules		
Introducing the Attributes of Attribute Blocks <i>(Teacher’s Lesson Guide, pages 623 and 624)</i>	GMP 6.2 Use the level of precision you need for your problem. <i>See also:</i> GMP 6.1, GMP 7.1, GMP 8.2	What is the most precise way you could describe your block? What is the least precise way you could describe your block? What does it mean to be precise in your description?
Sorting Attribute Blocks by Attribute Rules <i>(Teacher’s Lesson Guide, page 624)</i>	GMP 8.2 Use properties, rules, and shortcuts to solve problems. <i>See also:</i> GMP 6.1	What are the differences between the rule “not yellow” and the rule “red square”? Could these rules describe the same block? Why might it be helpful to sort things into groups?
Lesson 7-2 EXPLORATIONS: Exploring Attributes, Designs, and Fact Platters		
Guessing the Rule with Attribute Blocks <i>(Teacher’s Lesson Guide, page 628)</i>	GMP 8.1 Use patterns and structures to create and explain rules and shortcuts. <i>See also:</i> GMP 1.1, GMP 1.5, GMP 3.2, GMP 7.1	How do you figure out the secret rule? Name another time you were asked to figure out a rule?

<p>Exploration C: Using a Fact Platter Fact Generator</p> <p><i>(Teacher's Lesson Guide, page 630)</i></p>	<p>GMP 1.5 Check whether your solution makes sense.</p> <p><i>See also:</i> GMP 5.1, GMP 6.3, GMP 7.2, GMP 8.2</p>	<p>How did you check your partner's sums?</p> <p>How might knowing the solution to one fact help you check the solutions to other facts?</p>
Lesson 7-3 Pattern-Block Template Shapes		
<p>Math Message Follow-Up</p> <p><i>(Teacher's Lesson Guide, page 634)</i></p>	<p>GMP 6.1 Communicate your mathematical thinking clearly and precisely.</p> <p><i>See also:</i> GMP 7.1</p>	<p>What words might you use to describe the two rhombuses so that people can tell them apart?</p> <p>What kinds of words might you use to describe shapes?</p>
<p>Identifying Pattern-Block Shapes</p> <p><i>(Teacher's Lesson Guide, pages 634–636)</i></p>	<p>GMP 4.1 Apply mathematical ideas to real-world situations.</p> <p><i>See also:</i> GMP 6.1, GMP 6.2, GMP 7.1, GMP 8.1</p>	<p>Where have you seen or used triangles in your life?</p> <p>Where have you seen or used other shapes in your life?</p>
Lesson 7-4 Making Polygons		
<p>Discussing Similarities and Differences Among Shapes</p> <p><i>(Teacher's Lesson Guide, pages 640 and 641)</i></p>	<p>GMP 7.2 Use patterns and structures to solve problems.</p> <p><i>See also:</i> GMP 1.6, GMP 6.1, GMP 8.1</p>	<p>Why do we say a square is a special kind of rectangle?</p> <p>What helps you remember the attributes of shapes?</p>
<p>Composing New Shapes</p> <p><i>(Teacher's Lesson Guide, page 641)</i></p>	<p>GMP 1.6 Connect mathematical ideas and representations to one another.</p> <p><i>See also:</i> GMP 1.4, GMP 3.2</p>	<p>Do any of these new shapes remind you of other shapes you know? Which ones? *</p> <p>How many different shapes can you make using one of the combinations of blocks from <i>Math Masters</i>, pages 205B and 205C?</p>

Lesson 7-5 Spheres, Cylinders, and Rectangular Prisms		
<p>Discussing the Characteristics of Spheres, Cylinders, and Rectangular Prisms</p> <p><i>(Teacher's Lesson Guide, pages 645 and 646)</i></p>	<p>GMP 2.1 Represent problems and situations mathematically with numbers, words, pictures, symbols, gestures, tables, graphs, and concrete objects.</p> <p><i>See also:</i> GMP 1.6, GMP 6.1, GMP 8.1</p>	<p>Explain how drawings of 3-dimensional shapes are different from drawings of 2-dimensional shapes.</p>
<p>Starting a Shapes Museum with a Display of 3-Dimensional Objects</p> <p><i>(Teacher's Lesson Guide, page 646)</i></p>	<p>GMP 4.1 Apply mathematical ideas to real-world situations.</p> <p><i>See also:</i> GMP 6.1</p>	<p>What real world items are spheres? cylinders? rectangular prisms?</p> <p>How might finding 3-dimensional shapes in your life help you better understand them in math class?</p>
Lesson 7-6 Pyramids, Cones, and Cubes		
<p>Discussing the Characteristics of Pyramids, Cones, and Cubes</p> <p><i>(Teacher's Lesson Guide, page 650)</i></p>	<p>GMP 6.1 Communicate your mathematical thinking clearly and precisely.</p> <p><i>See also:</i> GMP 4.1</p>	<p>What words might you use to describe the pyramid, cone, and cube?</p> <p>What new attributes did you notice when comparing these 3-dimensional shapes that you hadn't noticed before?</p>
<p>Making Cubes and Cones</p> <p><i>(Teacher's Lesson Guide, pages 651 and 652)</i></p>	<p>GMP 1.6 Connect mathematical ideas and representations to one another.</p> <p><i>See also:</i> GMP 6.1, GMP 8.2</p>	<p>How is your cone like others in the Shapes Museum? How is it different?</p> <p>What can you learn by building shapes yourself?</p>

Lesson 7-7 Symmetry		
<p>Math Message Follow-Up</p> <p><i>(Teacher's Lesson Guide, page 655)</i></p>	<p>GMP 4.1 Apply mathematical ideas to real-world situations.</p> <p><i>See also:</i> GMP 6.1</p>	<p>What are other examples of things that can be folded in half so that the two sides match?</p> <p>Have you ever made a drawing or other kind of artwork that uses symmetry?</p>
<p>Making Symmetrical Shapes</p> <p><i>(Teacher's Lesson Guide, pages 655 and 656)</i></p>	<p>GMP 3.1 Explain both what to do and why it works.</p> <p><i>See also:</i> GMP 6.1</p>	<p>How can you tell if a shape is symmetrical?</p> <p>How might you teach someone else about symmetry?</p>

* denotes a question that is currently in the materials

Grade 1 Unit 8: Mental Arithmetic, Money, and Fractions

Activity	<i>Everyday Mathematics</i> Goal for Mathematical Practice	Guiding Questions
Lesson 8-1 Review: Money		
Showing an Amount of Money <i>(Teacher's Lesson Guide, page 678)</i>	GMP 1.4 Solve your problem in more than one way. <i>See also:</i> GMP 2.1, GMP 4.1, GMP 6.3	How many ways can we show 38¢? Why might you want to show an amount of money in a different way?
Finding Values of Sets of Coins <i>(Teacher's Lesson Guide, page 678)</i>	GMP 1.2 Make a plan for solving your problem <i>See also:</i> GMP 1.3, GMP 1.4, GMP 1.5, GMP 4.1, GMP 6.3, SMP 7.2, GMP 8.2	What was your plan for marking the coins you needed to buy each item? Name another way you might choose the coins needed to buy an item. Is it easier or harder than the way you did it the first time?
Lesson 8-2 Dollars		
Discussing the Purchasing Power of a Dollar <i>(Teacher's Lesson Guide, page 684)</i>	GMP 4.1 Apply mathematical ideas to real-world situations. <i>See also:</i> GMP 6.3, GMP 7.2	<i>What are some things that we could buy with one dollar?</i> How will knowing how to work with money help you in your life?
Using Money Notation and Vocabulary <i>(Teacher's Lesson Guide, pages 684 and 685)</i>	GMP 2.2 Explain the meanings of the numbers, words, pictures, symbols, gestures, tables, graphs, and concrete objects you and others use. <i>See also:</i> GMP 2.1, GMP 4.1, GMP 6.1	What is the difference between \$5.43 and 543 (or other numbers)? What does the 5 (or 4 or 3) mean in each? Why do you need to learn how to read different types of numbers?

Lesson 8-3 Place Value: Hundreds, Tens, and Ones		
<p>Naming Numbers Shown with Base-10 Blocks</p> <p><i>(Teacher's Lesson Guide, pages 689 and 690)</i></p>	<p>GMP 2.1 Represent problems and situations mathematically with numbers, words, pictures, symbols, gestures, tables, graphs, and concrete objects.</p> <p><i>See also:</i> GMP 2.2, GMP 6.3, GMP 7.1</p>	<p>What number represents 2 flats? 4 longs? 3 cubes?</p> <p>Why is the order of the digits in a number important?</p>
<p>Making Exchanges with Base-10 Blocks</p> <p><i>(Teacher's Lesson Guide, pages 690 and 691)</i></p>	<p>GMP 7.2 Use patterns and structures to solve problems.</p> <p><i>See also:</i> GMP 1.1, GMP 1.2, GMP 2.1, GMP 2.2, GMP 3.1, GMP 5.2, GMP 6.3</p>	<p>Why can you replace 10 cubes with 1 long? 1 long with 10 cubes?</p> <p>Could you solve this problem without making exchanges? Tell which is easier.</p>
Lesson 8-4 Application: Shopping at the School Store		
<p>Math Message Follow-Up</p> <p><i>(Teacher's Lesson Guide, page 694)</i></p>	<p>GMP 1.1 Work to make sense of your problem.</p> <p><i>See also:</i> GMP 1.2, GMP 1.3, GMP 1.5, GMP 2.1, GMP 3.1, GMP 3.2, GMP 4.1, GMP 4.2</p>	<p>What do you need to find out about the money you have? What do you need to find out about the pencil and the scissors?</p> <p>What information helps you understand a new problem?</p>
<p>Making Up and Solving Number Stories</p> <p><i>(Teacher's Lesson Guide, pages 694–696)</i></p>	<p>GMP 3.2 Work to make sense of others' mathematical thinking.</p> <p><i>See also:</i> GMP 1.1, GMP 1.2, GMP 1.4, GMP 2.1, GMP 2.2, GMP 3.1, GMP 4.1, GMP 4.2, GMP 5.1, GMP 5.2, GMP 6.1</p>	<p>Why might we use different strategies to solve number stories?</p> <p>What might we do if we disagree about the solution to a number story?</p>

Lesson 8-5 Making Change		
<p>Making Change by Counting Up</p> <p><i>(Teacher's Lesson Guide, pages 699 and 700)</i></p>	<p>GMP 4.1 Apply mathematical ideas to real-world situations.</p> <p><i>See also:</i> GMP 1.1, GMP 1.2, GMP 6.2, GMP 6.3</p>	<p>Why might someone not have the exact amount of coins and bills needed to pay for an item?</p> <p>Now that you know how to make change, when might it be helpful in your life?</p>
<p>Role-Playing Shopping and Making Change</p> <p><i>(Teacher's Lesson Guide, page 700)</i></p>	<p>GMP 6.3 Be accurate when you count, measure, and calculate.</p> <p><i>See also:</i> GMP 1.1, GMP 1.5, GMP 4.1, GMP 7.2</p>	<p>How can you make sure you count back the change correctly?</p> <p>What mistakes might someone make when making change?</p>
Lesson 8-6 Equal Shares		
<p>Math Message Follow-Up</p> <p><i>(Teacher's Lesson Guide, page 704)</i></p>	<p>GMP 3.2 Work to make sense of others' mathematical thinking.</p> <p><i>See also:</i> GMP 2.1, GMP 4.1</p>	<p>Why might someone else prefer $\frac{1}{2}$ a fruit bar when you prefer a whole (or vice versa)?</p> <p>What could you do that might help you better understand someone else's thinking?</p>
<p>Folding and Cutting Whole Crackers into Equal Parts</p> <p><i>(Teacher's Lesson Guide, pages 705 and 706)</i></p>	<p>GMP 3.1 Explain both what to do and why it works.</p> <p><i>See also:</i> GMP 1.1, GMP 1.5, GMP 2.1, GMP 3.2, GMP 4.1</p>	<p>If you want to share two crackers equally among four people, how much would each person get?*</p> <p>Explain how you found your answer.</p> <p>Which is more, two-fourths or one-half of a cracker?*</p> <p>Explain how you know.</p>

Lesson 8-7 Fractions		
<p>Math Message Follow-Up</p> <p><i>(Teacher's Lesson Guide, page 710)</i></p>	<p>GMP 6.2 Use the level of precision you need for your problem.</p> <p><i>See also:</i> GMP 3.1, GMP 4.1, GMP 6.1</p>	<p>When something is divided into two parts, can we call each part one half? Explain why or why not.</p>
<p>Labeling Fractional Parts of Geometric Figures</p> <p><i>(Teacher's Lesson Guide, page 711)</i></p>	<p>GMP 2.2 Explain the meanings of the numbers, words, pictures, symbols, gestures, tables, graphs, and concrete objects you and others use.</p> <p><i>See also:</i> GMP 2.1, GMP 6.1</p>	<p>What do the numbers in a fraction mean?</p> <p>How might you explain the numbers in a fraction to a friend?</p> <p>Why is it important to be able to explain what numbers mean?</p>
Lesson 8-8 Sharing Pennies		
<p>Math Message Follow-Up</p> <p><i>(Teacher's Lesson Guide, page 715)</i></p>	<p>GMP 1.6 Connect mathematical ideas and representations to one another.</p> <p><i>See also:</i> GMP 1.2, GMP 1.5, GMP 2.1, GMP 4.1, GMP 6.3</p>	<p>How is sharing 14 pennies equally like sharing a cracker equally with a friend?</p> <p>What fraction of the pennies would each of you have if you share them equally? What fraction of the cracker would each of you have if you share it equally?</p>
<p>Sharing 12 Pennies</p> <p><i>(Teacher's Lesson Guide, pages 715 and 716)</i></p>	<p>GMP 6.1 Communicate your mathematical thinking clearly and precisely.</p> <p><i>See also:</i> GMP 1.5, GMP 1.6, GMP 2.1, GMP 3.1, GMP 6.3, GMP 7.1</p>	<p>Can any number of pennies be shared equally by two people? Why or why not?</p> <p>What do you notice about the numbers of pennies that can be shared equally? Cannot be shared equally?</p>

Lesson 8-9 EXPLORATIONS: Exploring Fractional Parts and Addition Facts		
<p>Exploration A: Finding Relationships Involving Pattern Blocks</p> <p><i>(Teacher's Lesson Guide, pages 720 and 721)</i></p>	<p>GMP 2.2 Explain the meanings of the numbers, words, pictures, symbols, gestures, tables, graphs, and concrete objects you and others use.</p> <p><i>See also:</i> GMP 2.1, GMP 6.1</p>	<p>What do we mean when we say “the whole” in these problems?</p> <p>Why do we need to know what “the whole” is when we talk about fractions?</p>
<p>Exploration B: Naming Fractional Parts of a Region</p> <p><i>(Teacher's Lesson Guide, page 721)</i></p>	<p>GMP 1.4 Solve your problem in more than one way.</p> <p><i>See also:</i> GMP 1.3, GMP 2.1</p>	<p>How many ways can you divide your partner's shape into 2 equal parts?</p> <p>Which shapes were you able to divide into 2 equal parts? 3 equal parts? 4 equal parts? Which shapes could you not divide?</p>

* denotes a question that is currently in the materials

Grade 1 Unit 9: Place Value and Fractions

Activity	<i>Everyday Mathematics</i> Goal for Mathematical Practice	Guiding Questions
Lesson 9-1 Tens and Ones Patterns on the Number Grid		
Reviewing Number-Grid Patterns <i>(Teacher's Lesson Guide, page 743)</i>	GMP 7.1 Find, extend, analyze, and create patterns. <i>See also:</i> GMP 5.2, GMP 6.1	How might patterns on the number grid help you quickly find a number on the number grid? What do the patterns on the number grid remind you of?
Naming Hidden Numbers on the Number Grid <i>(Teacher's Lesson Guide, page 744)</i>	GMP 7.2 Use patterns and structures to solve problems. <i>See also:</i> GMP 1.1, GMP 1.4, GMP 1.6, GMP 3.1, GMP 5.2, GMP 8.2	How did you figure out the hidden numbers? How did you use other numbers on the grid to figure out the hidden numbers?
Lesson 9-2 Adding and Subtracting Tens		
Adding and Subtracting 10s <i>(Teacher's Lesson Guide, pages 748 and 749)</i>	GMP 5.1 Choose appropriate tools for your problem. <i>See also:</i> GMP 1.4, GMP 1.6, GMP 2.1, GMP 2.2, GMP 3.1, GMP 3.2, GMP 5.2	Is the number grid a good tool for solving these problems? Why or why not? How do you decide whether or not you need to use a tool to solve a problem?
Introducing the <i>Number-Grid Game</i> <i>(Teacher's Lesson Guide, page 749)</i>	GMP 6.2 Use the level of precision you need for your problem. <i>See also:</i> GMP 5.2, GMP 6.1	How do you decide whether to move 1 or 10 when you roll a 1? How might your strategy change as the game progresses?

Lesson 9-3 Number-Grid Puzzles		
<p>Math Message Follow-Up</p> <p><i>(Teacher's Lesson Guide, page 754)</i></p>	<p>GMP 7.2 Use patterns and structures to solve problems.</p> <p><i>See also:</i> GMP 1.1, GMP 1.2, GMP 1.5, GMP 2.2, GMP 5.2, GMP 7.1</p>	<p>How did you figure out the missing numbers on the number grid?</p> <p>What patterns did you use to help you find the missing numbers?</p>
<p>Filling in Pieces of the Number Grid</p> <p><i>(Teacher's Lesson Guide, pages 754 and 755)</i></p>	<p>GMP 1.5 Check whether your solution makes sense.</p> <p><i>See also:</i> GMP 1.1, GMP 1.2, GMP 5.2, GMP 6.3, GMP 7.2, GMP 8.2</p>	<p>How might you check your work <i>before</i> looking at the number grid under the T- or L-shaped piece?</p> <p>Why is it helpful to check your work?</p>
Lesson 9-4 Adding and Subtracting 2-Digit Numbers		
<p>Math Message Follow-Up</p> <p><i>(Teacher's Lesson Guide, page 759)</i></p>	<p>GMP 6.1 Communicate your mathematical thinking clearly and precisely.</p> <p><i>See also:</i> GMP 2.2, GMP 4.1</p>	<p>What is the meaning of length? What is the meaning of height?</p> <p>How might you remember the difference between height and length?</p>
<p>Creating and Solving Silly Animal Stories</p> <p><i>(Teacher's Lesson Guide, pages 759–761)</i></p>	<p>GMP 1.4 Solve your problem in more than one way.</p> <p><i>See also:</i> GMP 1.1, GMP 1.2, GMP 1.3, GMP 1.5, GMP 2.1, GMP 2.2, GMP 3.1, GMP 3.2, GMP 4.2, GMP 5.1, GMP 6.3</p>	<p>What are some different ways you could solve the raccoon and rabbit problem?</p> <p>Did you use a tool? Could you solve it without a tool or with a different tool?</p>

Lesson 9-5 EXPLORATIONS: Exploring Capacity, Symmetry, and Heights		
<p>Math Message Follow-Up</p> <p><i>(Teacher's Lesson Guide, page 764)</i></p>	<p>GMP 1.2 Make a plan for solving your problem.</p> <p><i>See also:</i> GMP 1.4, GMP 1.5, GMP 3.1, GMP 4.1, GMP 5.1, GMP 5.2, GMP 5.3, GMP 6.2</p>	<p>Is there more than one way to solve this problem?</p> <p>Can some plans for solving a problem be better than others? How?</p>
<p>Exploration C: Measuring and Recording Children's Heights</p> <p><i>(Teacher's Lesson Guide, page 765)</i></p>	<p>GMP 8.3 Reflect on your thinking before, during, and after you solve a problem.</p> <p><i>See also:</i> GMP 5.3, GMP 6.3</p>	<p>What do you think your second height measurement will be?</p> <p>Why might your first and second height measures be different?</p>
Lesson 9-6 Fractional Parts of the Whole		
<p>Folding Squares to Make Fourths</p> <p><i>(Teacher's Lesson Guide, pages 769 and 770)</i></p>	<p>GMP 2.1 Represent problems and situations mathematically with numbers, words, pictures, symbols, gestures, tables, graphs, and concrete objects.</p> <p><i>See also:</i> GMP 1.6, GMP 2.2, GMP 3.1, GMP 4.1, GMP 4.2</p>	<p>Explain how you know that $\frac{2}{4}$ is another name for $\frac{1}{2}$.</p> <p>What are other names for $\frac{1}{2}$?</p>
<p>Shading Fractional Parts of Shapes</p> <p><i>(Teacher's Lesson Guide, page 771)</i></p>	<p>GMP 1.3 Try different approaches when your problem is hard.</p> <p><i>See also:</i> GMP 1.1, GMP 1.2, GMP 2.1, GMP 5.2</p>	<p>What might you do if the first pattern block you used to divide the shape into equal parts didn't work?</p> <p>What can you do when you think a problem is hard?</p>

Lesson 9-7 Comparing Fractions		
<p>Discussing Fraction Concepts</p> <p><i>(Teacher's Lesson Guide, page 776)</i></p>	<p>GMP 6.1 Communicate your mathematical thinking clearly and precisely.</p> <p><i>See also:</i> GMP 2.2</p>	<p>How do the fraction words help you know the number of equal parts?</p> <p>When might you need to use fraction words?</p>
<p>Comparing Fractions</p> <p><i>(Teacher's Lesson Guide, page 776)</i></p>	<p>GMP 8.1 Use patterns and structures to create and explain rules and shortcuts.</p> <p><i>See also:</i> GMP 1.2, GMP 1.4, GMP 1.5, GMP 2.1, GMP 7.1, GMP 8.2</p>	<p>What happens to the size of the fraction pieces of the 1-strip as the denominators get larger? Explain why this happens.</p>
Lesson 9-8 Many Names for Fractional Parts		
<p>Naming Fractional Parts in Several Ways</p> <p><i>(Teacher's Lesson Guide, pages 779 and 780)</i></p>	<p>GMP 6.1 Communicate your mathematical thinking clearly and precisely.</p> <p><i>See also:</i> GMP 2.1, GMP 2.2, GMP 3.1</p>	<p>How could you use your fraction pieces to explain what = means?</p> <p>What are other ways to describe the equal sign (=)?</p>
<p>Finding Names for Fractional Parts</p> <p><i>(Teacher's Lesson Guide, page 780)</i></p>	<p>GMP 5.2 Use mathematical tools correctly and efficiently.</p> <p><i>See also:</i> GMP 2.1, GMP 2.2, GMP 3.1</p>	<p>How did you use the fraction pieces to solve these problems?</p> <p>What mistakes might someone make when using the fraction pieces?</p>

* denotes a question that is currently in the materials

Grade 1 Unit 10: Year-End Review and Assessment

Activity	<i>Everyday Mathematics</i> Goal for Mathematical Practice	Guiding Questions
Lesson 10-1 Data Day: End-of-Year Heights		
Finding the Typical Height of Children in the Class <i>(Teacher's Lesson Guide, page 801)</i>	GMP 2.2 Explain the meanings of the numbers, words, pictures, symbols, gestures, tables, graphs, and concrete objects you and others use. <i>See also:</i> GMP 2.1, GMP 4.1, GMP 4.2, GMP 6.1	Which height has the largest number of stick-on notes? * What does this tell you? What other types of data could you represent on a line plot?
Finding Out How Much Children Grew <i>(Teacher's Lesson Guide, page 803)</i>	GMP 4.2 Use mathematical models such as graphs, drawings, tables, symbols, numbers, and diagrams to solve problems. <i>See also:</i> GMP 2.1, GMP 2.2, GMP 4.1	What do you predict is the typical growth of all of the first graders in our school? How does the data our class collected help you make this prediction?
Lesson 10-2 Review: Telling Time		
Practicing with Time <i>(Teacher's Lesson Guide, page 807)</i>	GMP 6.3 Be accurate when you count, measure, and calculate. <i>See also:</i> GMP 2.1, GMP 3.2, GMP 5.2	What might happen if you draw the hour hand and the minute hand the same length? What might happen if you don't line up the hands with the right numbers?

<p>Telling Time to Minutes</p> <p><i>(Teacher's Lesson Guide, page 808)</i></p>	<p>GMP 7.2 Use patterns and structures to solve problems.</p> <p><i>See also:</i> GMP 2.1, GMP 5.2, GMP 6.2</p>	<p>How does the counting by 5s pattern help you read the time to the minute?</p> <p>Where else in math do we use 5s and 1s counting patterns?</p>
Lesson 10-3 Mental Arithmetic: Using a Vending Machine Poster		
<p>Using Coin Combinations to Make Purchases</p> <p><i>(Teacher's Lesson Guide, page 812)</i></p>	<p>GMP 6.2 Use the level of precision you need for your problem.</p> <p><i>See also:</i> GMP 1.4, GMP 3.1, GMP 4.1</p>	<p>What does "exact change" mean?</p> <p>Why might you need to have exact change to pay for items in the vending machine?</p>
<p>Adding 2-Digit Vending Machine Prices</p> <p><i>(Teacher's Lesson Guide, page 813)</i></p>	<p>GMP 1.2 Make a plan for solving your problem.</p> <p><i>See also:</i> GMP 1.1, GMP 1.3, GMP 1.4, GMP 1.5, GMP 5.1</p>	<p>What is your plan for solving a vending machine problem? What will you do first?</p> <p>Why is it helpful to think about how you will solve a problem before starting to solve it?</p>
Lesson 10-4 Mental Arithmetic (Continued)		
<p>Comparing Prices</p> <p><i>(Teacher's Lesson Guide, page 817)</i></p>	<p>GMP 3.1 Explain both what to do and why it works.</p> <p><i>See also:</i> GMP 1.1, GMP 1.2, GMP 1.4, GMP 1.5, GMP 3.2, GMP 4.1, GMP 6.3</p>	<p>Explain how you solved these problems in your head (mentally)?</p> <p>When in your own life have you had to do math mentally?</p>
<p>Making Change</p> <p><i>(Teacher's Lesson Guide, page 818)</i></p>	<p>GMP 1.5 Check whether your solution makes sense.</p> <p><i>See also:</i> GMP 3.2, GMP 4.1, GMP 6.3</p>	<p>How might you check whether the change you receive is correct?</p> <p>Why is it important to check the amount of change you receive from a vending machine (or someone else)?</p>

Lesson 10-5 Year-End Geometry Review		
<p>Constructing Polygons out of Straws and Twist-Ties</p> <p><i>(Teacher's Lesson Guide, pages 823 and 824)</i></p>	<p>GMP 6.1 Communicate your mathematical thinking clearly and precisely.</p> <p><i>See also:</i> GMP 2.1, GMP 8.2</p>	<p>Is the rectangle on this page a square? Explain your answer.</p> <p>How has your thinking about shapes changed since you were younger?</p>
<p>Constructing Solids</p> <p><i>(Teacher's Lesson Guide, pages 824 and 825)</i></p>	<p>GMP 3.2 Work to make sense of others' mathematical thinking.</p> <p><i>See also:</i> GMP 2.1, GMP 6.1, GMP 8.3</p>	<p>What 3-dimensional shapes do you recognize in other children's solids constructions?</p> <p>How did you recognize them?</p>
Lesson 10-6 Review: Thermometers and Temperature		
<p>Reviewing Temperature and Thermometers</p> <p><i>(Teacher's Lesson Guide, pages 828 and 829)</i></p>	<p>GMP 6.2 Use the level of precision you need for your problem.</p> <p><i>See also:</i> GMP 4.1, GMP 5.2, GMP 6.1</p>	<p>What is the difference between saying "about 70 degrees" (for room temperature) and "212 degrees" (for the temperature water boils)?</p> <p>Name some times when it is important to give the exact temperature. When might it be OK to give a less precise description of the temperature?</p>
<p>Finding Differences Between High and Low Temperatures</p> <p><i>(Teacher's Lesson Guide, pages 829 and 830)</i></p>	<p>GMP 4.1 Apply mathematical ideas to real-world situations.</p> <p><i>See also:</i> GMP 1.4, GMP 2.1, GMP 2.2, GMP 6.2</p>	<p>What might a very big difference between the high and low temperatures in a city tell you about the city's weather? What about a very small difference?</p> <p>Describe some other weather maps you have seen.</p>

Lesson 10-7 Review: Place Value, Scrolls, and Number Grids		
<p>Math Message Follow-Up</p> <p><i>(Teacher's Lesson Guide, page 833)</i></p>	<p>GMP 1.6 Connect mathematical ideas and representations to one another.</p> <p><i>See also:</i> GMP 2.1, GMP 2.2, GMP 6.1, GMP 8.1, GMP 8.2</p>	<p>Why do you think so many of our math materials have a pattern for trading 1s, 10s, and 100s?</p> <p>Why do you think our number system is called the base-10 place value system?</p>
<p>Extending Number-Grid Puzzles to Hundreds</p> <p><i>(Teacher's Lesson Guide, page 835)</i></p>	<p>GMP 7.2 Use patterns and structures to solve problems.</p> <p><i>See also:</i> GMP 3.1, GMP 6.3, GMP 8.2</p>	<p>How are number-grid puzzles in the hundreds different from those in the tens and ones? How are they the same?</p>

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