

Grade 2 Unit 3: Place Value, Money, and Time

Activity	<i>Everyday Mathematics</i> Goal for Mathematical Practice	Guiding Questions
Lesson 3-1 Numeration and Place Value: Day 1		
Math Message Follow-Up <i>(Teacher's Lesson Guide, page 185)</i>	GMP 6.1 Communicate your mathematical thinking clearly and precisely. <i>See also:</i> GMP 2.1, GMP 2.2	Ask children to explain how they decided which digit names the tens and which digit names the ones.*
Exploring a Simple Way to Draw Base-10 Blocks <i>(Teacher's Lesson Guide, page 185)</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 6.1	Ask children why they think a long represents ten.* Ask children why they think a flat represents one hundred.* How might base-10 blocks be used to show numbers?
Lesson 3-1 Numeration and Place Value: Day 2		
Matching Numbers and Displays of Base-10 Blocks <i>(Teacher's Lesson Guide, page 186)</i>	GMP 2.1 Represent problems and situations mathematically with numbers, words, pictures, symbols, gestures, tables, graphs, and concrete objects you and others use. <i>See also:</i> GMP 2.2, GMP 6.1	What are different ways you can show the number 416? Why is it helpful to be able to show numbers in different ways?
Doing Place-Value Exercises <i>(Teacher's Lesson Guide, page 187)</i>	GMP 3.2 Work to make sense of others' mathematical thinking. <i>See also:</i> GMP 2.1, GMP 2.2, GMP 3.1, GMP 6.1	Is Marta right? Explain your answer.* Use base-10 blocks if it helps you explain your answer. Describe a time when you've helped someone else in math.

Lesson 3-2 Using Coins to Buy Things		
<p>Math Message Follow-Up</p> <p><i>(Teacher's Lesson Guide, page 191)</i></p>	<p>GMP 1.4 Solve your problem in more than one way.</p> <p><i>See also:</i> GMP 5.2, GMP 6.3, GMP 7.2</p>	<p>Ask children to share the strategy they used to find the total amount.*</p> <p>How could it be helpful to solve problems in more than one way?</p>
<p>Paying for Things with Coins</p> <p><i>(Teacher's Lesson Guide, page 192)</i></p>	<p>GMP 4.1 Apply mathematical thinking to real-world situations.</p> <p><i>See also:</i> GMP 1.4, GMP 1.5, GMP 3.1, GMP 5.2, GMP 6.3</p>	<p>Could you buy a tomato if you only had a dime? Why or why not?</p> <p>Describe a time when you had to count coins in real life.</p>
Lesson 3-3 Telling Time		
<p>Discussing the Functions of Clock Hands</p> <p><i>(Teacher's Lesson Guide, page 198)</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 6.1, GMP 6.2, GMP 6.3</p>	<p>Which hand on the clock is the hour hand? Minute hand?</p> <p>Could you estimate the time if your clock only had a minute hand? What if it had only an hour hand? Why?*</p>
<p>Estimating Time with an Hour Hand Only</p> <p><i>(Teacher's Lesson Guide, pages 198–199)</i></p>	<p>GMP 4.1 Apply mathematical ideas to real-world situations.</p> <p><i>See also:</i> GMP 5.2, GMP 6.2</p>	<p>When might you need to know the exact time, not just the hour?</p> <p>When do you use a clock during the day?</p>
Lesson 3-4 Exploring Numbers, Time, and Geoboards		
<p>Math Message Follow-Up</p> <p><i>(Teacher's Lesson Guide, page 203)</i></p>	<p>GMP 3.1 Explain both what to do and why it works.</p> <p><i>See also:</i> GMP 1.4, GMP 1.5, GMP 2.1, GMP 2.2</p>	<p>How do you know your drawings show 36?</p> <p>How could you get better at explaining how you solve problems?</p>

<p>Exploration C: Making and Comparing Geoboard Shapes</p> <p><i>(Teacher’s Lesson Guide, page 205)</i></p>	<p>GMP 6.1 Communicate your mathematical thinking clearly and precisely.</p> <p><i>See also:</i> GMP 2.2, GMP 3.2</p>	<p>Tell—but don’t show—your partner how to make the shape.*</p> <p>Compare the two shapes. How are they alike? How are they different? Did you give good directions?*</p>
Lesson 3-5 Data Day: Pockets		
<p>Finding the Middle Number of Pockets</p> <p><i>(Teacher’s Lesson Guide, pages 208–209)</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 4.2, GMP 6.1, GMP 8.3</p>	<p>Is the middle number a good prediction for the new child?*</p> <p>How do you think the greatest and fewest number of pockets would change if our school had uniforms?*</p>
<p>Making a Picture Graph of the Pockets Data</p> <p><i>(Teacher’s Lesson Guide, page 210)</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, GMP 6.1</p>	<p>What does each face symbol in the picture graph represent?*</p> <p>Why are graphs helpful for showing data?</p>
Lesson 3-6 Frames and Arrows Having Two Rules		
<p>Solving Frames-and-Arrows Problems Having Two Rules</p> <p><i>(Teacher’s Lesson Guide, pages 214–215)</i></p>	<p>GMP 7.1 Find, extend, analyze, and create patterns.</p> <p><i>See also:</i> GMP 3.1, GMP 8.1, GMP 8.2</p>	<p>How can patterns help you figure out what numbers go in empty frames? Missing rules?</p> <p>When else have you used growing patterns in math?</p>
<p>Solving Frames-and-Arrows Problems</p> <p><i>(Teacher’s Lesson Guide, page 216)</i></p>	<p>GMP 1.5 Check whether your answer makes sense.</p> <p><i>See also:</i> GMP 3.1, GMP 8.2</p>	<p>How can you check the answers you wrote in the empty frames?</p> <p>Why do we check our answers to see if they make sense?</p>

Lesson 3-7 Making Change by Counting Up		
Math Message Follow-Up <i>(Teacher's Lesson Guide, page 220)</i>	GMP 1.1 Work to make sense of your problem. <i>See also:</i> GMP 1.4, GMP 3.1, GMP 6.1	What do you need to figure out? What could you try to do first?
Acting as Customer or Clerk <i>(Teacher's Lesson Guide, page 221)</i>	GMP 5.1 Choose appropriate tools for your problem or situation. <i>See also:</i> GMP 2.1, GMP 2.2, GMP 3.2, GMP 5.2	What tools could help you solve the making change problems on the journal page? How? How are tools helpful when solving math problems?
Lesson 3-8 Coin Exchanges		
Math Message Follow-Up <i>and</i> Buying Items with Exact Change Only <i>(Teacher's Lesson Guide, page 226)</i>	GMP 6.1 Communicate your mathematical thinking clearly and precisely. <i>See also:</i> GMP 2.1, GMP 4.1, GMP 6.2, GMP 6.3	Can you buy something if you don't have the exact amount? * Explain. What does the exact change light mean? *
Making Vending Machine Purchases <i>(Teacher's Lesson Guide, page 227)</i>	GMP 6.2 Use the level of precision you need for your problem or situation. <i>See also:</i> GMP 2.1, GMP 4.1, GMP 6.1, GMP 6.3	How are problems that ask for exact change different from those that do not need exact change? Describe a time when you might need exact change to pay for something.

*denotes a question that is currently in the materials

Grade 2 Unit 4: Addition and Subtraction

Activity	<i>Everyday Mathematics</i> Goal for Mathematical Practice	Guiding Questions
Lesson 4-1 Change-to-More Number Stories		
Introducing the Change Diagram <i>(Teacher's Lesson Guide, pages 249–250)</i>	GMP 4.2 Use mathematical models such as graphs, drawings, tables, symbols, and diagrams to solve problems. <i>See also:</i> GMP 1.1, GMP 1.2, GMP 1.6, GMP 2.1, GMP 2.2	How do you decide where the information from the problem goes in a change diagram?
Solving Change-to-More Number Stories <i>(Teacher's Lesson Guide, page 251)</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 1.1, GMP 1.2, GMP 1.3, GMP 1.5, GMP 2.1, GMP 4.2	What does the “?” stand for in your change diagram? How do you decide where the “?” goes? What other symbols do you know how to use in math?
Lesson 4-2 Parts-and-Total Number Stories		
Math Message Follow-up <i>(Teacher's Lesson Guide, pages 255–256)</i>	GMP 1.4 Solve your problem in more than one way. <i>See also:</i> GMP 1.1, GMP 1.5, GMP 2.1, GMP 2.2, GMP 4.2, GMP 5.1, GMP 6.1	If the same problem is solved in more than one way, should the answer be the same or different? Explain. What could you do if you get different answers?
Finding the Cost of Two or More Items <i>(Teacher's Lesson Guide, page 256)</i>	GMP 6.3 Be accurate when you count, measure, and calculate. <i>See also:</i> GMP 1.4, GMP 1.5, GMP 4.2, GMP 5.1, GMP 5.2	How did you find the correct total costs? Why wouldn't it make sense to have a total that is smaller than one of the parts?

Lesson 4-3 Exploring Temperature, Money, and Shapes		
<p>Exploration A: Measuring Temperatures</p> <p><i>(Teacher’s Lesson Guide, page 262)</i></p>	<p>GMP 5.2 Use mathematical tools correctly and efficiently.</p> <p><i>See also:</i> GMP 4.1, GMP 6.3</p>	<p>What mistakes might someone make when using a thermometer?</p> <p>When might you use a thermometer?</p>
<p>Exploration C: Sorting Attribute Blocks</p> <p><i>(Teacher’s Lesson Guide, page 264)</i></p>	<p>GMP 8.2 Use properties, rules, and shortcuts to solve problems.</p> <p><i>See also:</i> GMP 3.1, GMP 3.2, GMP 5.2, GMP 7.1</p>	<p>How are the blocks in one sort alike? How are they different?</p> <p>What helped you sort your blocks?</p>
Lesson 4-4 Temperature Changes		
<p>Math Message Follow-Up</p> <p><i>(Teacher’s Lesson Guide, page 267)</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 5.2, GMP 6.1, GMP 6.3</p>	<p>What do the degree marks between the multiples of 10s stand for?</p> <p>Why might someone want to know the temperature at which water freezes in °F or °C?</p>
<p>Solving “How Much Warmer (Cooler)?” Problems</p> <p><i>(Teacher’s Lesson Guide, page 268)</i></p>	<p>GMP 4.2 Use mathematical models such as graphs, drawings, tables, symbols, and diagrams to solve problems.</p> <p><i>See also:</i> GMP 1.6, GMP 2.1, GMP 2.2, GMP 4.1, GMP 5.2</p>	<p>How does the change diagram help you see whether the temperature gets warmer or cooler?</p> <p>How is the change diagram like a number model?</p>
Lesson 4-5 Estimating Costs		
<p>Discussing Estimation</p> <p><i>(Teacher’s Lesson Guide, page 273)</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 6.1</p>	<p>Why didn’t you need to find an exact answer for the Math Message problem?</p> <p>What is the difference between an estimate and an exact answer?</p>

<p>Estimating Costs</p> <p><i>(Teacher's Lesson Guide, page 274)</i></p>	<p>GMP 1.4 Solve your problem in more than one way.</p> <p><i>See also:</i> GMP 1.5, GMP 3.1, GMP 3.2, GMP 4.1, GMP 6.1, GMP 6.2</p>	<p>What strategies did you use to estimate?</p> <p>How can you get better at estimating costs?</p>
Lesson 4-6 A Shopping Activity		
<p>Discussing Strategies for Adding 2-Digit Numbers</p> <p><i>(Teacher's Lesson Guide, pages 278–279)</i></p>	<p>GMP 1.4 Solve your problem in more than one way.</p> <p><i>See also:</i> GMP 3.1, GMP 3.2, GMP 5.1, GMP 6.1</p>	<p>Ask children how they might find the cost of these two items.*</p> <p>Could some strategies for solving a problem be better than others? How?</p>
<p>Solving Shopping Problems</p> <p><i>(Teacher's Lesson Guide, page 280)</i></p>	<p>GMP 1.5 Check whether your solution makes sense.</p> <p><i>See also:</i> GMP 1.1, GMP 1.3, GMP 1.4, GMP 3.1, GMP 3.2, GMP 4.1, GMP 4.2, GMP 6.1</p>	<p>How did you check your partner's work?</p> <p>How could you use the parts-and-total diagram to check your work?</p>
Lesson 4-7 Exploring Length, Area, and Attributes		
<p>Math Message Follow-Up</p> <p><i>(Teacher's Lesson Guide, page 283)</i></p>	<p>GMP 5.1 Choose appropriate tools for your problem.</p> <p><i>See also:</i> GMP 4.1, GMP 5.2, GMP 6.1</p>	<p>Which tool would be better for measuring around the wastebasket? Explain.</p> <p>What could help you decide which tool to use to solve a problem?</p>
<p>Exploration E: Tiling Surfaces with Informal Units</p> <p><i>(Teacher's Lesson Guide, page 284)</i></p>	<p>GMP 7.1 Find, extend, analyze, and create patterns.</p> <p><i>See also:</i> GMP 4.1, GMP 6.1, GMP 6.2, GMP 6.3</p>	<p>With a partner, find things in the classroom that can be tiled.*</p> <p>How did you decide whether something can be tiled?</p>

Lesson 4-8 Paper-and-Pencil Addition Strategies		
<p>Solving Addition Problems; Keeping a Paper-and-Pencil Record</p> <p><i>(Teacher's Lesson Guide, page 290)</i></p>	<p>GMP 8.1 Use patterns and structures to create and explain rules and shortcuts.</p> <p><i>See also:</i> GMP 1.4, GMP 1.5, GMP 1.6</p>	<p>What addition number sentences describe these numbers?*</p> <p>What subtraction number sentences can you write using the three numbers?*</p>
<p>Finding the Sum of Two Multidigit Numbers</p> <p><i>(Teacher's Lesson Guide, page 291)</i></p>	<p>GMP 7.2 Use patterns and structures to solve problems.</p> <p><i>See also:</i> GMP 1.4, GMP 1.5, GMP 5.1, GMP 6.3</p>	<p>For Problems 7–10 on <i>Math Journal</i>, page 105, how might you use the first sum to help you find the other two sums?</p> <p>How can smaller numbers help you work with larger numbers?</p>
Lesson 4-9 The Partial-Sums Addition Algorithm		
<p>Introducing the Partial-Sums Addition Algorithm Using Base-10 Blocks</p> <p><i>(Teacher's Lesson Guide, pages 295–296)</i></p>	<p>GMP 2.1 Represent problems and situations mathematically with numbers, words, pictures, symbols, gestures, tables, and concrete objects.</p> <p><i>See also:</i> GMP 1.5, GMP 1.6, GMP 2.2, GMP 5.3, GMP 7.2</p>	<p>How do the base-10 blocks represent the two numbers we are adding?</p> <p>How do the base-10 blocks help you add two-digit numbers?</p>
<p>Continuing Practice with the Partial-Sums Algorithm</p> <p><i>(Teacher's Lesson Guide, page 297)</i></p>	<p>GMP 3.1 Explain both what to do and why it works.</p> <p><i>See also:</i> GMP 1.5, GMP 5.1, GMP 5.2, GMP 5.3, GMP 7.2</p>	<p>How did you use the partial-sums algorithm to solve one of the addition problems? Use base-10 blocks or other tools to help you explain your strategy.</p> <p>Would you recommend the partial-sums algorithm to a friend? Why or why not?</p>

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Grade 2 Unit 5: 3-D and 2-D Shapes

Activity	<i>Everyday Mathematics</i> Goal for Mathematical Practice	Guiding Questions
Lesson 5-1 Exploring Rules, Sharing, and Time		
Math Message Follow-Up <i>(Teacher's Lesson Guide, page 317)</i>	GMP 8.1 Use patterns and structures to create and explain rules and shortcuts. <i>See also:</i> GMP 7.1, GMP 7.2, GMP 8.2	How did you use the attribute blocks labeled “These fit the rule” to figure out the rule? How did you use the attribute blocks labeled “These do NOT fit the rule” to figure out the rule?
Exploration C: Making Cards and Doing a Clock Concentration Activity <i>(Teacher's Lesson Guide, page 319)</i>	GMP 6.1 Communicate your mathematical thinking clearly and precisely. <i>See also:</i> GMP 2.1, GMP 2.2, GMP 5.2	What would you do if someone in your group says a clock that shows 2:30 matches a time card that says 6:10? What mistake has he/she made? Why do you need to learn how to read time on different kinds of clocks (digital and analog)?
Lesson 5-2 Points and Line Segments		
Defining and Naming Line Segments <i>(Teacher's Lesson Guide, page 324)</i>	GMP 2.2 Explain the meaning of the numbers, words, pictures, symbols, gestures, tables, and concrete objects you and others use. <i>See also:</i> GMP 6.1	What is a line segment? Why do we write <u>the</u> name of a line segment as <i>AB</i> ? What geometric figures could you draw using line segments?
Drawing Line Segments with a Straightedge <i>(Teacher's Lesson Guide, page 324)</i>	GMP 5.2 Use mathematical tools correctly and efficiently. <i>See also:</i> GMP 2.1, GMP 2.2, GMP 5.1, GMP 6.1	What other geometric figures could you use a straightedge to draw?

Lesson 5-3 Parallel Line Segments		
<p>Discussing the Meaning of Parallel Line Segments</p> <p><i>(Teacher's Lesson Guide, pages 328–329)</i></p>	<p>GMP 4.1 Apply mathematical ideas to real-world situations.</p> <p><i>See also:</i> GMP 1.6, GMP 6.1</p>	<p>Ask children to suggest other examples of parallel line segments in our classroom and the hallway?*</p> <p>Where might you see examples of parallel lines outside of school?</p>
<p>Drawing Line Segments That Are or Are Not Parallel</p> <p><i>(Teacher's Lesson Guide, page 329)</i></p>	<p>GMP 8.2 Use properties, rules, and shortcuts to solve problems.</p> <p><i>See also:</i> GMP 1.1, GMP 1.3, GMP 1.4, GMP 1.6, GMP 6.1</p>	<p>How did you use what you know about parallel lines to draw each shape?</p> <p>What other geometric figures could have parallel lines?</p>
Lesson 5-4 Exploring Polygons, Arrays, and Attributes		
<p>Exploration D: Constructing Polygons on a Geoboard</p> <p><i>(Teacher's Lesson Guide, page 335)</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 3.2, GMP 7.1, GMP 7.2</p>	<p>How is drawing polygons different from making them on a geoboard?</p> <p>What did you notice when you compared your drawings with classmates' drawings of polygons?</p>
<p>Exploration F: Finding Attribute Blocks That Differ by One Attribute or More</p> <p><i>(Teacher's Lesson Guide, page 335)</i></p>	<p>GMP 1.2 Make a plan for solving your problem.</p> <p><i>See also:</i> GMP 1.1, GMP 1.6, GMP 7.1, GMP 7.2, GMP 8.2</p>	<p>What could you do first to solve these problems?</p>
Lesson 5-5 Quadrangles		
<p>Exploring Similarities and Differences among Quadrangles</p> <p><i>(Teacher's Lesson Guide, page 340)</i></p>	<p>GMP 7.1 Find, extend, analyze, and create patterns.</p> <p><i>See also:</i> GMP 1.6, GMP 2.1, GMP 6.1</p>	<p>How are a square and rectangle alike?*</p> <p>Is a square a rectangle? Is a rectangle a square? Why or why not?</p>

<p>Making Shapes out of Triangles and Rectangles</p> <p><i>(Teacher’s Lesson Guide, page 341)</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 7.2</p>	<p>What shapes can you make using triangles <i>and</i> rectangles?</p> <p>What shapes can you make using only triangles?</p>
Lesson 5-6 3-Dimensional Shapes		
<p>Discussing Similarities and Differences among Shapes</p> <p><i>(Teacher’s Lesson Guide, pages 345–346)</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 7.1, GMP 7.2</p>	<p>How are a cylinder and rectangular prism similar? How are they different?</p> <p>How are a rectangular prism and cube similar? How are they different?</p> <p>Why do you think we compare 3-D shapes? How could these comparisons help you?</p>
<p>Identifying the Shapes of Real Objects</p> <p><i>(Teacher’s Lesson Guide, page 347)</i></p>	<p>GMP 4.1 Apply mathematical ideas to real-world situations.</p> <p><i>See also:</i> GMP 1.6, GMP 2.1, GMP 6.1</p>	<p>Why might someone need to know the geometric name of a 3-D shape in the real world?</p>
Lesson 5-7 Pyramids		
<p>Constructing a Pyramid out of Straws</p> <p><i>(Teacher’s Lesson Guide, page 351)</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 5.2, GMP 6.1</p>	<p>How are 3-dimensional models different from 2-dimensional drawings of cones and pyramids?</p>

<p>Discussing Pyramid Constructions</p> <p><i>(Teacher's Lesson Guide, page 352)</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 6.1</p>	<p>What patterns do you notice in the table?</p> <p>Based on the patterns, if a heptagonal pyramid has 7 sides in its base, how many edges, faces, and vertices does it have?</p> <p>Why do we look for patterns in math?</p>
<p>Lesson 5-8 Line Symmetry</p>		
<p>Math Message Follow-Up</p> <p><i>(Teacher's Lesson Guide, page 356)</i></p>	<p>GMP 4.1 Apply mathematical ideas to real-world situations.</p> <p><i>See also:</i> GMP 2.1, GMP 2.2, GMP 6.1</p>	<p>Ask the class to give other examples of things that look symmetrical?*</p> <p>What are some ways to find out whether an object has a line of symmetry?</p>
<p>Finding Lines of Symmetry</p> <p><i>(Teacher's Lesson Guide, page 357)</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 6.1</p>	<p>How did you figure out how many lines of symmetry a shape has?</p> <p>Why does this work?</p>

*denotes a question that is currently in the materials

Grade 2 Unit 6: Whole-Number Operations and Number Stories

Activity	<i>Everyday Mathematics</i> Goal for Mathematical Practice	Guiding Questions
Lesson 6-1 Addition of Three or More Numbers		
Math Message Follow-Up <i>(Teacher's Lesson Guide, page 379)</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 1.1, GMP 1.4, GMP 1.5, GMP 2.1, GMP 3.1	What do the numbers 13, 6, and 7 represent? Why is it important to understand what numbers mean in math problems?
Adding Three Numbers in any order <i>(Teacher's Lesson Guide, pages 379–380)</i>	GMP 7.2 Use patterns and structures to solve problems. <i>See also:</i> GMP 1.2, GMP 1.4, GMP 3.1, GMP 6.1, GMP 6.3, GMP 8.2	Which order makes it easiest to find the sum?*
Lesson 6-2 Comparison Number Stories		
Math Message Follow-Up <i>(Teacher's Lesson Guide, pages 385–386)</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 4.2, GMP 6.1	What does <i>quantity</i> mean in the diagram? What does it mean to find the <i>difference</i> between the two quantities?
Solving Comparison Number Stories <i>(Teacher's Lesson Guide, pages 386–387)</i>	GMP 1.5 Check whether your solution makes sense. <i>See also:</i> GMP 1.1, GMP 1.2, GMP 1.4, GMP 4.2, GMP 5.1, GMP 5.2, GMP 6.3	Will the difference be greater or less than the larger quantity? Explain. Why do problem solvers check whether their answers make sense?

Lesson 6-3 Data Day: The Five Food Groups		
<p>Collecting Data on Favorite Foods</p> <p><i>(Teacher's Lesson Guide, page 392)</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 2.1, GMP 2.2, GMP 4.1</p>	<p>Which questions could you answer using the data table?</p> <p>What questions could you <i>not</i> answer using this data table?</p>
<p>Making a Bar Graph of the Favorite-Food Data</p> <p><i>(Teacher's Lesson Guide, pages 393–394)</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, GMP 4.2, GMP 6.1</p>	<p>Why might someone want to show data in a bar graph instead of in a table?</p> <p>What other types of data could you show in a bar graph?</p>
Lesson 6-4 Mixed Addition and Subtraction Stories		
<p>Selecting Diagrams and Solving Number Stories</p> <p><i>(Teacher's Lesson Guide, page 397)</i></p>	<p>GMP 1.1 Work to make sense of your problem.</p> <p><i>See also:</i> GMP 1.2, GMP 1.4, GMP 2.1, GMP 4.2, GMP 5.1</p>	<p>What do we want to find out from the story?*</p> <p>Do we know how many shells Mary had to begin with?*</p> <p>How can you make sure you understand a problem before solving it?</p>
<p>Selecting Diagrams and Solving Number Stories</p> <p><i>(Teacher's Lesson Guide, pages 397–399)</i></p>	<p>GMP 5.1 Choose appropriate tools for your problem.</p> <p><i>See also:</i> GMP 1.1, GMP 1.2, GMP 1.4, GMP 1.5, GMP 2.1, GMP 2.2, GMP 4.2, GMP 5.2</p>	<p>How did you chose which diagram to use for the problems?</p>

Lesson 6-5 Subtraction Strategies		
<p>Math Message Follow-Up</p> <p><i>(Teacher's Lesson Guide, pages 402–403)</i></p>	<p>GMP 1.4 Solve your problem in more than one way.</p> <p><i>See also:</i> GMP 1.3, GMP 1.5, GMP 3.1, GMP 5.1, GMP 5.2, GMP 6.1</p>	<p>What are different strategies to solve subtraction problems?</p> <p>How are the different strategies different? How are they alike?</p>
<p>Using Base-10 Blocks to Model Subtraction</p> <p><i>(Teacher's Lesson Guide, pages 403–404)</i></p>	<p>GMP 2.1 Represent problems and situations mathematically with numbers, words, pictures, symbols, gestures, tables, and concrete objects.</p> <p><i>See also:</i> GMP 1.4, GMP 1.6, GMP 2.2, GMP 3.1, GMP 5.2, GMP 6.3</p>	<p>How can you use base-10 blocks to represent the top and bottom numbers (the minuend and subtrahend) in a subtraction problem?</p> <p>What are other ways to represent numbers?</p>
Lesson 6-6 Exploring Arrays, Coins, and Division		
<p>Exploration A: Making Geoboard Arrays</p> <p><i>(Teacher's Lesson Guide, page 408)</i></p>	<p>GMP 2.2 Explain the meaning of the numbers, words, pictures, symbols, gestures, tables, and concrete objects you and others use.</p> <p><i>See also:</i> GMP 1.6, GMP 2.1, GMP 6.1, GMP 7.1</p>	<p>In an array, what is a row?</p> <p>How are the arrays you make on the geoboard like the arrays you drew?</p> <p>What is an array?</p>
<p>Exploration B: Making a Dollar</p> <p><i>(Teacher's Lesson Guide, page 409)</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 2.1, GMP 6.3</p>	<p>How could it help you to have a plan before starting to solve a problem?</p>
Lesson 6-7 Multiples of Equal Groups		
<p>Math Message Follow-Up</p> <p><i>(Teacher's Lesson Guide, pages 413–414)</i></p>	<p>GMP 4.1 Apply mathematical ideas to real-world situations.</p> <p><i>See also:</i> GMP 1.3, GMP 1.4, GMP 2.1, GMP 3.1, GMP 6.1</p>	<p>Ask children to name things that come in equal groups.*</p> <p>Ask children to name things that do not come in equal groups.*</p> <p>When might you use equal groups in your life?</p>

<p>Solving Number Stories about Equal Groups</p> <p><i>(Teacher’s Lesson Guide, pages 414–415)</i></p>	<p>GMP 1.6 Connect mathematical ideas and representations to one another.</p> <p><i>See also:</i> GMP 1.1, GMP 2.1, GMP 2.2, GMP 4.2, GMP 6.1</p>	<p>How is the multiplication diagram and the multiplication number model alike?</p> <p>Why can you represent this problem with a multiplication and addition number model?</p>
Lesson 6-8 Array Number Stories		
<p>Math Message Follow-Up</p> <p><i>(Teacher’s Lesson Guide, page 419)</i></p>	<p>GMP 5.2 Use mathematical tools correctly and efficiently.</p> <p><i>See also:</i> GMP 1.4, GMP 1.6, GMP 2.1, GMP 4.2</p>	<p>How did you solve the Math Message problem on your calculator?*</p> <p>When would you use a calculator to solve problems about equal groups? When wouldn’t you?</p>
<p>Creating and Solving Number Stories about Arrays</p> <p><i>(Teacher’s Lesson Guide, pages 420–421)</i></p>	<p>GMP 1.6 Connect mathematical ideas and representations to one another.</p> <p><i>See also:</i> GMP 1.1, GMP 1.4, GMP 1.5, GMP 2.1, GMP 2.2, GMP 4.2, GMP 6.1</p>	<p>How can arrays help you understand multiplication?</p> <p>How are the array and the Multiplication Diagram alike?</p>
Lesson 6-9 Multiplication with Arrays		
<p>Math Message Follow-Up</p> <p><i>(Teacher’s Lesson Guide, page 425)</i></p>	<p>GMP 2.1 Represent problems and situations mathematically with numbers, words, pictures, symbols, gestures, tables, and concrete objects.</p> <p><i>See also:</i> GMP 1.6, GMP 2.2, GMP 4.2, GMP 6.1</p>	<p>How do arrays help you solve multiplication problems?</p> <p>How do multiplication diagrams help you solve multiplication problems?</p> <p>How could it be helpful to show problems in different ways?</p>

<p>Playing Array Bingo</p> <p><i>(Teacher's Lesson Guide, page 426)</i></p>	<p>GMP 7.1 Use patterns and structures to solve problems.</p> <p><i>See also:</i> GMP 1.6, GMP 2.1, GMP 2.2, GMP 7.2</p>	<p>What patterns do you see in the array bingo cards?</p>
<p>Lesson 6-10 Division Stories</p>		
<p>Modeling Equal-Sharing Number Stories</p> <p><i>(Teacher's Lesson Guide, page 431)</i></p>	<p>GMP 4.2 Use mathematical models such as graphs, drawings, tables, symbols, and diagrams to solve problems.</p> <p><i>See also:</i> GMP 1.4, GMP 2.1, GMP 5.1, GMP 6.1, GMP 6.3</p>	<p>How does drawing or using counters help you solve equal-sharing problems?</p>
<p>Solving Division Number Stories</p> <p><i>(Teacher's Lesson Guide, page 432)</i></p>	<p>GMP 1.5 Check whether your solution makes sense.</p> <p><i>See also:</i> GMP 2.1, GMP 4.2, GMP 6.1</p>	<p>What does it mean for an answer to “make sense?”</p> <p>How could you check whether your answers to division problems make sense?</p> <p>Is it the same thing to check whether your answer makes sense <i>and</i> is correct?</p>

*denotes a question that is currently in the materials

Grade 2 Unit 7: Patterns and Rules

Activity	<i>Everyday Mathematics</i> Goal for Mathematical Practice	Guiding Questions
Lesson 7-1 Patterns in Counting		
Math Message Follow-Up <i>(Teacher's Lesson Guide, page 545)</i>	GMP 7.1 Find, extend, analyze, and create patterns. <i>See also:</i> GMP 6.1, GMP 6.3	Ask volunteers to describe the pattern in counts by 2s.* What patterns do you notice in counts by 5s? 10s?
Using a Calculator to Find Patterns on a Number Grid <i>(Teacher's Lesson Guide, page 546–547)</i>	GMP 7.1 Find, extend, analyze, and create patterns. <i>See also:</i> GMP 5.2, GMP 6.1, GMP 6.3	How could you continue the pattern you created on a larger number grid? Why do we look for patterns in math?
Lesson 7-2 Extending Complements of 10		
Making 10s Using a Calculator <i>(Teacher's Lesson Guide, pages 550–551)</i>	GMP 7.2 Use patterns and structures to solve problems. <i>See also:</i> GMP 3.1, GMP 5.2, GMP 6.1, GMP 6.3, GMP 8.2	How does knowing the complements of 10 make it easier to solve problems with bigger numbers? What are other problems that complements of 10 could help you solve?
Introducing <i>Hit the Target</i> <i>(Teacher's Lesson Guide, page 551)</i>	GMP 1.3 Try different approaches when your problem is hard. <i>See also:</i> GMP 1.2, GMP 3.2, GMP 5.1, GMP 7.2, GMP 8.2	Could you hit the target number in fewer steps if you tried again? How? How could you get better at <i>Hit the Target</i>?
Lesson 7-3 Mental Arithmetic: A Basketball Game		
Demonstrating <i>Basketball Addition</i> <i>(Teacher's Lesson Guide, pages 555–556)</i>	GMP 7.2 Use patterns and structures to solve problems. <i>See also:</i> GMP 1.3, GMP 1.4, GMP 6.3, GMP 8.2, GMP 8.3	What are ways to add the team members' points?

<p>Playing <i>Basketball Addition</i></p> <p>(<i>Teacher’s Lesson Guide</i>, page 556)</p>	<p>GMP 6.3 Be accurate when you count, measure, and calculate.</p> <p><i>See also:</i> GMP 1.3, GMP 1.4, GMP 1.5, GMP 6.1, GMP 7.2, GMP 8.2</p>	<p>What mistakes could someone make when adding three or more numbers?</p> <p>What could you do to make sure you add multiple numbers accurately?</p> <p>What does it mean to be accurate?</p>
Lesson 7-4 Pattern in Doubles and Halves		
<p>Math Message Follow-Up</p> <p>(<i>Teacher’s Lesson Guide</i>, page 560)</p>	<p>GMP 2.2 Explain the meaning of the numbers, words, pictures, symbols, gestures, tables, and concrete objects you and others use.</p> <p><i>See also:</i> GMP 6.1, GMP 7.1, GMP 8.2</p>	<p>How could you use this “What’s My Rule?” table to explain what <i>double</i> and <i>half</i> mean?</p>
<p>Doubling and Halving Numbers</p> <p>(<i>Teacher’s Lesson Guide</i>, pages 560–562)</p>	<p>GMP 8.1 Use patterns and structures to create and explain rules and shortcuts.</p> <p><i>See also:</i> GMP 1.4, GMP 5.1, GMP 5.2, GMP 6.1, GMP 7.1, GMP 7.2</p>	<p>What happens to a number when you keep doubling it?</p> <p>What happens to a number when you keep dividing it in half?</p> <p>When might you need to double or divide something in half?</p>
Lesson 7-5 Exploring Weights, Equal Sharing, and Patterns		
<p>Exploration A: Weighing with a Bath Scale</p> <p>(<i>Teacher’s Lesson Guide</i>, pages 566–567)</p>	<p>GMP 5.3 Estimate and use what you know to check the answers you find using a tool.</p> <p><i>See also:</i> GMP 1.3, GMP 1.5, GMP 4.1, GMP 5.2, GMP 6.2, GMP 6.3</p>	<p>How did you estimate the weight of your stack(s) of books?</p> <p>How did weighing books in Problems 1–3 help you estimate the weight of your stack(s)?</p> <p>How could you get better at estimating weight?</p>

<p>Exploration B: Sharing Money</p> <p><i>(Teacher's Lesson Guide, page 567)</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 1.3, GMP 1.4, GMP 1.5, GMP 2.1, GMP 3.2, GMP 4.1, GMP 8.3</p>	<p>How did you divide \$5 among 4 children? Why does this work? Is it fair?</p> <p>How could it be helpful to show all your work on problems like this?</p>
<p>Lesson 7-6 Data Day: Standing Jumps and Arm Spans</p>		
<p>Collecting and Recording Standing Long Jump Data</p> <p><i>(Teacher's Lesson Guide, page 572)</i></p>	<p>GMP 5.2 Use mathematical tools correctly and efficiently.</p> <p><i>See also:</i> GMP 6.1, GMP 6.2, GMP 6.3, GMP 8.3</p>	<p>How do you use the tape measure to measure the jumps to the <i>nearest</i> inch and centimeter?</p> <p>What mistakes might someone make when measuring the jumps?</p>
<p>Collecting and Recording Arm Span Data</p> <p><i>(Teacher's Lesson Guide, page 573)</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>What does it mean to measure to the <i>nearest</i> inch or centimeter?</p> <p>What does it mean to be precise when measuring?</p>
<p>Lesson 7-7 Middle Value (Median) of a Set of Data</p>		
<p>Sorting the Standing Jump Data</p> <p><i>(Teacher's Lesson Guide, page 578)</i></p>	<p>GMP 1.2 Make a plan for solving your problem.</p> <p><i>See also:</i> GMP 1.1, GMP 2.1, GMP 2.2</p>	<p>How did you determine where to stand on the line?</p>
<p>Finding the Median Length of the Standing Long Jumps</p> <p><i>(Teacher's Lesson Guide, page 579)</i></p>	<p>GMP 6.1 Communicate your mathematical thinking clearly and precisely.</p> <p><i>See also:</i> GMP 1.2, GMP 2.2, GMP 4.2, GMP 6.1</p>	<p>Why is it useful to find the median of a set of data?</p> <p>What could help you remember new math vocabulary such as <i>median</i>?</p>

Lesson 7-8 Frequency Distributions		
<p>Making a Line Plot of Arm Spans</p> <p><i>(Teacher's Lesson Guide, pages 584–585)</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 4.2, GMP 6.1</p>	<p>What do the numbers on the line plot represent?</p> <p>What other types of data could you represent on a line plot?</p>
<p>Finding the Median Length of Arm Spans</p> <p><i>(Teacher's Lesson Guide, page 586)</i></p>	<p>GMP 4.2 Use mathematical models such as graphs, drawings, tables, symbols, and diagrams to solve problems.</p> <p><i>See also:</i> GMP 1.4, GMP 2.1, GMP 2.2, GMP 6.1</p>	<p>How did you use the line plot to find the median arm span?</p> <p>What other questions could you answer with line plot?</p>

*denotes a question that is currently in the materials

Grade 2 Unit 8: Fractions

Activity	<i>Everyday Mathematics</i> Goal for Mathematical Practice	Guiding Questions
Lesson 8-1 Equal Parts of ONE		
Folding Squares into Equal Parts <i>(Teacher's Lesson Guide, page 605)</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	Is there more than one way to do this?* (fold square into two halves)
Reviewing Basic Fraction Concepts <i>(Teacher's Lesson Guide, page 606)</i>	GMP 2.2 Explain the meaning of the numbers, words, pictures, symbols, gestures, tables, and concrete objects you and others use. <i>See also:</i> GMP 2.1, GMP 6.1	What does the denominator of $\frac{3}{4}$ tell you?* What does the numerator of $\frac{3}{4}$ tell you?* What is a fraction?
Lesson 8-2 Exploring Fractions, Multiplication and Division, and Volume		
Exploration A: Comparing Pairs of Shapes When One Shape Represents ONE <i>(Teacher's Lesson Guide, page 612)</i>	GMP 6.1 Communicate your mathematical thinking clearly and precisely. <i>See also:</i> GMP 1.6, GMP 2.1, GMP 2.2, GMP 5.2, GMP 6.3	What does the ONE mean when working with fractions?
Exploration C: Finding the Volumes of Base-10 Structures <i>(Teacher's Lesson Guide, page 613)</i>	GMP 5.3 Estimate and use what you know to check the answers you find using tools. <i>See also:</i> GMP 1.5, GMP 5.2, GMP 6.1	How did you estimate the number of centimeter cubes in your structure? Did your estimates get closer as you and your group built more structures? Why or why not? When might you estimate the volume of something?

Lesson 8-3 Collections of Things		
<p>Math Message Follow-Up</p> <p><i>(Teacher's Lesson Guide, page 617)</i></p>	<p>GMP 1.1 Work to make sense of your problem.</p> <p><i>See also:</i></p> <p>GMP 1.3, GMP 1.4, GMP 2.1, GMP 3.1, GMP 4.2, GMP 5.1, GMP 6.1</p>	<p>What do you know from the problem?</p> <p>Do you know how many marbles he gave to Ling and Mike?</p> <p>How could you figure out the number of marbles Ling and Mike have?</p>
<p>Reviewing Fractions with Reference to Collections of Objects</p> <p><i>(Teacher's Lesson Guide, page 617)</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></p> <p>GMP 2.2, GMP 6.1</p>	<p>Is $\frac{1}{2}$ of a collection of objects always the same? Why or why not?</p>
Lesson 8-4 Equivalent Fractions		
<p>Making a Display of Equivalent Fractions</p> <p><i>(Teacher's Lesson Guide, pages 622–623)</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></p> <p>GMP 2.1, GMP 6.1, GMP 7.1</p>	<p>How could you use your picture in Problem 1 to explain why $\frac{1}{2}$ and $\frac{2}{4}$ are equivalent fractions?</p> <p>Do all numbers have many names? Give examples.</p>
Lesson 8-5 Equivalent Fractions Using Fraction Cards		
<p>Math Message Follow-Up</p> <p><i>(Teacher's Lesson Guide, page 627)</i></p>	<p>GMP 1.6 Connect mathematical ideas and representations to one another.</p> <p><i>See also:</i></p> <p>GMP 2.1, GMP 2.2</p>	<p>How might a picture help you see that $\frac{1}{2}$ and $\frac{3}{6}$ are the same amount of a granola bar?</p> <p>How can pictures help you understand fractions?</p>

Using Fraction Cards to Review and Extend Fraction Concepts (<i>Teacher's Lesson Guide</i> , pages 627–628)	GMP 7.1 Find, extend, analyze, and create patterns. <i>See also:</i> GMP 2.1, GMP 2.2, GMP 6.1	What do you notice about the all the fractions equivalent to $\frac{1}{2}$? ($\frac{1}{2}$, $\frac{2}{4}$, $\frac{3}{6}$, $\frac{4}{8}$) How would this pattern continue with a fraction card divided into 10 equal parts?
Lesson 8-6 Comparing Fractions		
Identifying Fractions That Are Less Than, More Than, or Equivalent to $\frac{1}{2}$ (<i>Teacher's Lesson Guide</i> , pages 632–633)	GMP 8.3 Reflect on your thinking before, during, and after you solve a problem. <i>See also:</i> GMP 1.2, GMP 6.1	What was your strategy for sorting your cards? Are there any fractions you knew were less than, equal to, or greater than $\frac{1}{2}$ without looking at the picture? How did you know? Would you sort your cards using the same strategy if you had to do it again? Why or why not?
Playing <i>Fraction Top-It</i> (<i>Teacher's Lesson Guide</i> , page 633)	GMP 5.2 Use mathematical tools correctly and efficiently. <i>See also:</i> GMP 2.1, GMP 2.2, GMP 6.1, GMP 6.3	How do you use the fraction cards to see whose fraction is greater?
Lesson 8-7 Fraction Number Stories		
Math Message Follow-Up (<i>Teacher's Lesson Guide</i> , page 637)	GMP 1.4 Solve your problem in more than one way. <i>See also:</i> GMP 1.1, GMP 4.1, GMP 5.1	What strategy did you use to decide whether you'd like to play for $\frac{1}{2}$ or $\frac{1}{3}$ of an hour? How might it help you to hear different strategies for solving problems?
Making Up and Solving Fraction Number Stories (<i>Teacher's Lesson Guide</i> , page 637)	GMP 4.1 Apply mathematical ideas to real world situations. <i>See also:</i> GMP 2.1, GMP 6.3	What are other real life fraction number stories that we might solve? * When might you use fractions in your life?

*denotes a question that is currently in the materials

Grade 2 Unit 9: Measurement

Activity	<i>Everyday Mathematics</i> Goal for Mathematical Practice	Guiding Questions
Lesson 9-1 Measuring with Yards and Meters		
Measuring Length with a Nonstandard Unit <i>(Teacher's Lesson Guide, pages 661–662)</i>	GMP 6.1 Communicate your mathematical thinking clearly and precisely. <i>See also:</i> GMP 1.2, GMP 6.2	What are the advantages of using standard units? What are examples of standard units?
Checking Estimates by Measuring Distances with Metersticks <i>(Teacher's Lesson Guide, page 663)</i>	GMP 5.3 Estimate and use what you know to check the answers you find using tools. <i>See also:</i> GMP 1.5, GMP 5.2, GMP 6.2, GMP 6.3	How did you make your estimates of length before measuring? How can you get better at estimating length?
Lesson 9-2 Linear Measures		
Measuring to the Nearest Inch and Centimeter <i>(Teacher's Lesson Guide, pages 667–668)</i>	GMP 6.3 Be accurate when you count, measure, and calculate. <i>See also:</i> GMP 5.2, GMP 6.1, GMP 6.2	Ask children to describe how to measure to the nearest inch or centimeter.* How could you measure something that's longer than your ruler? Why are units important when you report measurements?
Beginning a Table of Equivalent Measures <i>(Teacher's Lesson Guide, pages 668–669)</i>	GMP 7.2 Use patterns and structures to solve problems. <i>See also:</i> GMP 2.1, GMP 2.2, GMP 5.2	How might knowing the number of inches in a foot help you figure out the number of inches in two feet?
Lesson 9-3 Fractional Units of Length		
Discussing the Need for Accurate Measurements <i>(Teacher's Lesson Guide, pages 673–674)</i>	GMP 6.2 Use the level of precision you need for your problem. <i>See also:</i> GMP 4.1, GMP 5.2, GMP 6.1, GMP 6.3	Which situations call for very accurate measurements?* What does it mean to be accurate when you measure?

<p>Measuring to the Nearest Inch and Centimeter</p> <p><i>(Teacher's Lesson Guide, page 675)</i></p>	<p>GMP 5.2 Use mathematical tools correctly and efficiently.</p> <p><i>See also:</i> GMP 3.1, GMP 3.2, GMP 6.2</p>	<p>How could you still measure accurately with a broken ruler that starts at the 1-inch mark?</p> <p>What mistakes could someone make when measuring to the nearest 1/2-inch or 1/2-centimeter?</p>
Lesson 9-4 Perimeter		
<p>Measuring Distances around Shapes</p> <p><i>(Teacher's Lesson Guide, page 679)</i></p>	<p>GMP 5.1 Choose appropriate tools for your problem.</p> <p><i>See also:</i> GMP 5.2, GMP 6.2</p>	<p>Why did you choose the measuring tool(s) that you used?</p> <p>Are some tools better for measuring certain things than others? Explain.</p>
<p>Investigating Perimeters of Rectangles</p> <p><i>(Teacher's Lesson Guide, page 680)</i></p>	<p>GMP 3.1 Explain both what to do and why it works.</p> <p><i>See also:</i> GMP 5.2, GMP 6.1, GMP 6.3</p>	<p>Ask children to explain how they found the distance around their box (perimeter).*</p> <p>Did anyone do so without measuring all four sides?*</p>
Lesson 9-5 Measuring Longer Distances		
<p>Introducing Units Used to Measure Longer Distances</p> <p><i>(Teacher's Lesson Guide, pages 684–685)</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 5.1, GMP 6.1</p>	<p>Would it make sense to measure the distance to [name a nearby city or place] in inches?*</p> <p>Why or why not? Can someone name a better unit?*</p> <p>When might you use miles or kilometers to measure something? Why?</p>
<p>Introducing Road-Map Stories</p> <p><i>(Teacher's Lesson Guide, page 685)</i></p>	<p>GMP 4.1 Apply mathematical ideas to real world situations.</p> <p><i>See also:</i> GMP 2.1, GMP 2.2, GMP 5.2, GMP 6.2</p>	<p>How do you think people figured out the distances between places?</p> <p>Why do we talk about how math is important in your life?</p>

Lesson 9-6 Exploring Capacity, Area, and Measures		
<p>Exploration A: Discovering Which Cylinder Holds More</p> <p><i>(Teacher's Lesson Guide, page 689)</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 6.1</p>	<p>Which holds more macaroni—the tall and narrow cylinder or the short and wide cylinder?*</p> <p>Why do we make predictions before solving a problem?</p>
<p>Exploration C: Exploring Tools and Measures</p> <p><i>(Teacher's Lesson Guide, page 691)</i></p>	<p>GMP 5.1 Choose appropriate tools for your problem.</p> <p><i>See also:</i> GMP 1.1, GMP 4.1, GMP 5.2</p>	<p>What could you measure with a ruler, a tape measure, a meterstick, or a yardstick?</p> <p>Which of these measuring tools have you used in your life? How did you use them?</p>
Lesson 9-7 Area		
<p>Comparing Units Used to Measure Area and Perimeter</p> <p><i>(Teacher's Lesson Guide, page 696)</i></p>	<p>GMP 6.1 Communicate your mathematical thinking clearly and precisely.</p> <p><i>See also:</i> GMP 1.6, GMP 2.2</p>	<p>Because 32 is half of 64, does it make sense to say that the perimeter of the checkerboard is half its area?*</p> <p>How are the units used for measuring area different from the units used for measuring perimeter?*</p>
<p>Investigating Perimeter and Area</p> <p><i>(Teacher's Lesson Guide, page 696)</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 1.4, GMP 2.2, GMP 6.1</p>	<p>What do you notice about the perimeter for the rectangles with an area of 12 square cm?</p> <p>Give an example of two rectangles with an area of 12 square cm but different perimeters. Explain why there are different perimeters.</p>
Lesson 9-8 Capacity		
<p>Math Message Follow-Up</p> <p><i>(Teacher's Lesson Guide, page 700)</i></p>	<p>GMP 4.1 Apply mathematical ideas to real-world situations.</p> <p><i>See also:</i> GMP 2.2, GMP 5.1, GMP 6.1</p>	<p>When do people need to measure liquids in daily life? For what types of jobs?</p>

<p>Demonstrating Equivalent U.S. Customary Units of Capacity</p> <p><i>(Teacher's Lesson Guide, pages 700–701)</i></p>	<p>GMP 1.6 Connect mathematical ideas and representations to one another.</p> <p><i>See also:</i> GMP 4.1, GMP 5.2</p>	<p>If someone spills a pint of milk at lunch, how many cups were spilled?</p> <p>When might you need to know equivalent measures of capacity?</p>
Lesson 9-9 Weight		
<p>Discussing the Spring Scale and the Bath Scale</p> <p><i>(Teacher's Lesson Guide, pages 706–707)</i></p>	<p>GMP 5.1 Choose appropriate tools for your problem.</p> <p><i>See also:</i> GMP 4.1, GMP 6.1</p>	<p>What are some things you might weigh with a spring scale? *</p> <p>What are some things you might weigh with a bath scale? *</p>
<p>Deciding Which Objects Weigh the Same Amount</p> <p><i>(Teacher's Lesson Guide, page 708)</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 5.2, GMP 5.3</p>	<p>How much was the weight difference before it was easy to feel that one object weighed more than others?*</p> <p>Could you estimate the weight of something by only looking at it? Why or why not?</p>

*denotes a question that is currently in the materials

Grade 2 Unit 10: Decimals and Place Value

Activity	<i>Everyday Mathematics</i> Goal for Mathematical Practice	Guiding Questions
Lesson 10-1 Money		
Reviewing Values of Coins and Bills <i>(Teacher's Lesson Guide, page 727)</i>	GMP 4.1 Apply mathematical ideas to real world situations. <i>See also:</i> GMP 2.1, GMP 6.1	What helps you remember the values of coins in daily life? How have you used coins recently?
Making Equivalent Amounts with Coins and Bills <i>(Teacher's Lesson Guide, page 728)</i>	GMP 1.4 Solve your problem in more than one way. <i>See also:</i> GMP 1.5, GMP 2.2, GMP 4.1, GMP 6.3	Are there more ways to pay for these items, in addition to the two ways you thought of? When could it be helpful to know how to pay for something in more than one way?
Lesson 10-2 Decimal Notation for Pennies and Dimes		
Math Message Follow-Up <i>(Teacher's Lesson Guide, page 732)</i>	GMP 6.2 Use the level of precision you need for your problem. <i>See also:</i> GMP 1.5, GMP 2.2, GMP 4.1	Do you have to find an exact answer to buy two items for less than \$2.00? Why do we sometimes estimate the cost of things in daily life?
Matching a Dollar, a Dime, and a Penny with Their Names <i>(Teacher's Lesson Guide, page 734)</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 6.1	What are different names for \$1.00? What are different names for a dime?
Lesson 10-3 Money Amounts with a Calculator		
Entering Amounts Less than \$1.00 into a Calculator <i>(Teacher's Lesson Guide, page 739)</i>	GMP 5.2 Use mathematical tools correctly and efficiently. <i>See also:</i> GMP 2.1, GMP 2.2	What mistakes might someone make when using a calculator to work with money? What other functions do you know how to use on a calculator?

<p>Playing <i>Pick-a-Coin</i></p> <p>(<i>Teacher's Lesson Guide</i>, pages 739–740)</p>	<p>GMP 1.2 Make a plan for solving your problem.</p> <p><i>See also:</i> GMP 5.2, GMP 6.3, GMP 7.2, GMP 8.3</p>	<p>What was your strategy when playing <i>Pick-a-Coin</i>?</p> <p>If you roll a large number first, where might you put it? Why?</p>
Lesson 10-4 Using a Calculator to Solve Problems with Money		
<p>Discussing the Then-and-Now Poster</p> <p>(<i>Teacher's Lesson Guide</i>, pages 744–745)</p>	<p>GMP 4.1 Apply mathematical ideas to real-world situations.</p> <p><i>See also:</i> GMP 6.1</p>	<p>Why did most things cost so much less then?*</p> <p>Can you think of things that cost less now than they did 5 or 10 years ago? Why might they cost less now?*</p>
<p>Using a Calculator to Solve Then-and-Now Problems</p> <p>(<i>Teacher's Lesson Guide</i>, page 745)</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 5.2</p>	<p>What did you do if you weren't sure how to solve one of these problems?</p> <p>What makes a problem hard?</p>
Lesson 10-5 Estimating and Finding Exact Costs		
<p>Estimating and Finding Exact Costs</p> <p>(<i>Teacher's Lesson Guide</i>, pages 749–750)</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 6.1</p>	<p>Why is it useful to estimate total cost when shopping in the store?*</p> <p>How can you get better at estimating costs?</p>
<p>Practicing Estimating and Finding Exact Costs</p> <p>(<i>Teacher's Lesson Guide</i>, pages 750–751)</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>How do your estimates and exact costs compare?</p> <p>How can estimates help you check exact answers?</p>
Lesson 10-6 Making Change		
<p>Using Coins and Bills to Make Change from \$10.00</p> <p>(<i>Teacher's Lesson Guide</i>, pages 754–755)</p>	<p>GMP 1.4 Solve your problem in more than one way.</p> <p><i>See also:</i> GMP 1.5, GMP 4.1, GMP 5.3</p>	<p>Ask children to find the exact amount of change. Have children share their strategies.*</p>

<p>Shopping for Groceries</p> <p><i>(Teacher’s Lesson Guide, page 755)</i></p>	<p>GMP 3.1 Explain both what to do and why it works.</p> <p><i>See also:</i> GMP 1.5, GMP 5.2, GMP 5.3, GMP 6.2</p>	<p>Explain how you <i>estimated</i> the change you would receive after paying for your items.</p> <p>What could you do if your estimated change was very different from the exact change?</p> <p>How can you make sure someone else can understand your explanation?</p>
<p>Lesson 10-7 Exploring Area, Polygons, and Geoboard Fractions</p>		
<p>Exploration B: Making Pattern-Block Worktables</p> <p><i>(Teacher’s Lesson Guide, page 760)</i></p>	<p>GMP 6.1 Communicate your mathematical thinking clearly and precisely.</p> <p><i>See also:</i> GMP 1.4, GMP 2.1</p>	<p>How did you use trapezoids to make the new worktables?</p> <p>How would you describe the shapes of the other worktables you made?</p>
<p>Exploration C: Forming Fractions on the Geoboard</p> <p><i>(Teacher’s Lesson Guide, pages 760–761)</i></p>	<p>GMP 7.1 Find, extend, analyze, and create patterns.</p> <p><i>See also:</i> GMP 6.1, GMP 8.1</p>	<p>What do you notice about all the shapes that can be divided equally?</p> <p>What other shapes could be divided into equal parts?</p>
<p>Lesson 10-8 Place Value</p>		
<p>Representing 3- and 4-Digit Numbers with Base-10 Blocks</p> <p><i>(Teacher’s Lesson Guide, pages 765–766)</i></p>	<p>GMP 2.1 Represent problems and situations mathematically with numbers, words, pictures, symbols, gestures, tables, and concrete objects.</p> <p><i>See also:</i> GMP 1.6, GMP 2.2, GMP 6.1</p>	<p>What are different ways to represent numbers in the thousands?</p>
<p>Comparing Place Value with Base-10 Blocks and Money</p> <p><i>(Teacher’s Lesson Guide, page 766)</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</p>	<p>How can base-10 blocks and money represent the same numbers?</p> <p>Why do you think we use base-10 blocks in math class?</p>

Lesson 10-9 Place Value Tools		
<p>Displaying Counts with Place-Value Tools</p> <p><i>(Teacher's Lesson Guide, pages 771–772)</i></p>	<p>GMP 7.2 Use patterns and structures to solve problems.</p> <p><i>See also:</i> GMP 5.2, GMP 6.1, GMP 7.1, GMP 8.1</p>	<p>Why do we describe the relationship between digits as the ten-for-one relationship? How did you show this with your Place-Value book?</p> <p>Why do you think our number system is called the base-10 place-value system?</p>
<p>Displaying and Reading Numbers with Place-Value Tools</p> <p><i>(Teacher's Lesson Guide, page 772)</i></p>	<p>GMP 5.2 Use mathematical tools correctly and efficiently.</p> <p><i>See also:</i> GMP 2.2, GMP 6.3</p>	<p>Call out a 3-digit number . . . Which digit shows the ones? Tens? Hundreds?*</p> <p>How could you use your Place-Value Book to compare numbers?</p>
Lesson 10-10 Place-Value Notation for Ten-Thousands		
<p>Math Message/Math Message Follow-Up</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 2.1, GMP 2.2</p>	<p>What is a digit? How many digits are there? Name them.*</p> <p>What is the difference between a digit and a number?</p>
<p>Reviewing 0 as a Placeholder</p> <p><i>(Teacher's Lesson Guide, page 777)</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 6.1</p>	<p>Why is it necessary to write zeros to show 1,001? Discuss what would happen if the zeros were not there.*</p> <p>Would our number system work without 0? Why or why not?</p>
10-11 Grouping with Parenthesis		
<p>Math Message Follow-Up</p> <p><i>(Teacher's Lesson Guide, page 781)</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, GMP 6.3</p>	<p>What do parentheses tell you to do in a problem?</p> <p>What other symbols do you know how to use in math?</p>

<p>Introducing the Use of Parentheses in Number Models</p> <p><i>(Teacher's Lesson Guide, page 781)</i></p>	<p>GMP 6.3 Be accurate when you count, measure, and calculate.</p> <p><i>See also:</i> GMP 2.1, GMP 2.2, GMP 6.1, GMP 8.1</p>	<p>How can parentheses change the meaning of a problem?</p> <p>Why do you get the same answer to some problems no matter where you put the parentheses?</p>
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*denotes a question that is currently in the materials

Grade 2 Unit 11 Whole-Number Operations Revisited

Activity	<i>Everyday Mathematics</i> Goal for Mathematical Practice	Guiding Questions
Lesson 11-1 Addition Number Stories with Dollars and Cents		
Math Message Follow-Up <i>(Teacher's Lesson Guide, page 803)</i>	GMP 6.2 Use the level of precision you need for your problem. <i>See also:</i> GMP 1.4, GMP 6.1	Is it necessary to find the exact total costs? Why or why not? What estimation strategies could you use to solve these problems?
Solving Problems with 2- and 3-Digit Addends <i>(Teacher's Lesson Guide, pages 803–804)</i>	GMP 1.4 Solve your problem in more than one way. <i>See also:</i> GMP 4.1, GMP 6.1, GMP 6.2, GMP 6.3	What are strategies for solving these problems? What can you learn from sharing different problem-solving strategies?
Lesson 11-2 Subtraction Number Stories with Dollars and Cents		
Math Message Follow-Up <i>(Teacher's Lesson Guide, page 808)</i>	GMP 4.1 Apply mathematical ideas to real world situations. <i>See also:</i> GMP 1.4, GMP 6.2	When might you solve a similar problem in your life? How could it help you to know how to make change in your head?
Solving Comparison Problems <i>(Teacher's Lesson Guide, page 810)</i>	GMP 7.2 Use patterns and structures to solve problems. <i>See also:</i> GMP 1.4, GMP 6.3	How did you decide which item costs more? Which digit(s) helped you figure out which item cost more?
Lesson 11-3 The Trade-First Subtraction Algorithm		
Demonstrating the Trade-First Algorithm with Trades <i>(Teacher's Lesson Guide, pages 814–815)</i>	GMP 1.6 Connect mathematical ideas and representations to one another. <i>See also:</i> GMP 2.1, GMP 6.1	How are counting up and trade-first both methods for subtraction? Which method do you prefer? Why?

<p>Practicing the Trade-First Algorithm</p> <p><i>(Teacher's Lesson Guide, page 815)</i></p>	<p>GMP 1.5 Check whether your solution makes sense.</p> <p><i>See also:</i> GMP 1.6, GMP 2.1, GMP 3.1, GMP 6.3</p>	<p>How can you check whether your answers make sense?</p> <p>How could you use your ballpark estimate to check your answers?</p>
Lesson 11-4 Multiples of Equal Groups		
<p>Math Message Follow-Up</p> <p><i>(Teacher's Lesson Guide, pages 819–820)</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 2.1, GMP 4.2, GMP 6.1</p>	<p>Why can't the number model for this problem be $4 + 3$?</p> <p>What does 4×3 mean in this problem?</p>
<p>Making Up and Solving Number Stories about Multiples of Equal Groups</p> <p><i>(Teacher's Lesson Guide, page 821)</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 4.1, GMP 6.1, GMP 6.3</p>	<p>How did you use the multiplication diagram to solve these problems?</p> <p>What are other ways to model multiplication problems?</p>
Lesson 11-5 Division Number Models		
<p>Introducing Number Models for Division Stories</p> <p><i>(Teacher's Lesson Guide, page 826)</i></p>	<p>GMP 2.2 Explain the meaning of the numbers, words, pictures, symbols, gestures, tables, and concrete objects you and others use.</p> <p><i>See also:</i> GMP 2.1, GMP 4.2, GMP 6.1</p>	<p>Why do we sometimes call remainders <i>leftovers</i>?</p> <p>What does it mean to divide?</p>
<p>Solving Division Number Stories</p> <p><i>(Teacher's Lesson Guide, page 827)</i></p>	<p>GMP 6.1 Communicate your mathematical thinking clearly and precisely.</p> <p><i>See also:</i> GMP 1.4, GMP 2.1, GMP 2.2, GMP 5.1, GMP 6.3</p>	<p>How do you know which units to write in each part of the diagram?</p> <p>Why are the units important when solving number story problems?</p>

Lesson 11-6 Multiplication Facts		
<p>Multiplying by 2, 5, and 10</p> <p><i>(Teacher's Lesson Guide, page 832)</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</p>	<p>How does it help you to “think nickels” when multiplying by 5s?</p>
<p>Listing Multiplication Facts from 2s to 10s</p> <p><i>(Teacher's Lesson Guide, pages 832–833)</i></p>	<p>GMP 7.1 Find, extend, analyze, and create patterns.</p> <p><i>See also:</i> GMP 2.1</p>	<p>What patterns do you see in your list of multiplication problems?</p> <p>How could you use a pattern to figure out your number times 11?</p> <p>How can patterns help you with mathematics?</p>
Lesson 11-7 Products Table		
<p>Discussing and Recording 1s and 0s Products</p> <p><i>(Teacher's Lesson Guide, page 837)</i></p>	<p>GMP 7.2 Use patterns and structures to solve problems.</p> <p><i>See also:</i> GMP 7.1, GMP 8.1</p>	<p>What pattern helps you answer the times-1 problems?</p> <p>What pattern helps you answer the times-0 problems?</p>
<p>Recording Other Products in the Products Table</p> <p><i>(Teacher's Lesson Guide, pages 837–838)</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 6.1, GMP 7.1</p>	<p>Is there a turn-around rule for multiplication?*</p> <p>How can you tell from the table? Give examples.</p> <p>How does the turn-around rule help you build fact power?*</p>
Lesson 11-8 Multiplication/Division Fact Families		
<p>Making Division Stories from Multiplication Stories</p> <p><i>(Teacher's Lesson Guide, pages 841–842)</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 6.1</p>	<p>How might arrays and multiplication diagrams help you solve multiplication and division problems?</p>

Practicing with \times , \div Fact Triangles <i>(Teacher's Lesson Guide, page 844)</i>	GMP 3.2 Work to make sense of others' mathematical thinking. <i>See also:</i> GMP 6.3	How could you help your partner if they do not know a product?
Lesson 11-9 Multiplication/Division Facts Practice		
Math Message Follow-Up <i>(Teacher's Lesson Guide, page 847)</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 3.1, GMP 6.1	What division number models represent this fact family? Do these division number models mean the same thing? Why or why not?
Playing a Multiplication Version of <i>Beat the Calculator</i> <i>(Teacher's Lesson Guide, pages 847–848)</i>	GMP 5.2 Use mathematical tools correctly and efficiently. <i>See also:</i> GMP 6.3	Will the Calculator always beat the Brain? Why or why not? When is a calculator less efficient than solving a problem in your head?

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Grade 2 Unit 12: Year-End Reviews and Extensions

Activity	<i>Everyday Mathematics</i> Goal for Mathematical Practice	Guiding Questions
Lesson 12-1 Review: The Calendar		
Reviewing Calendar Facts <i>(Teacher's Lesson Guide, page 868)</i>	GMP 6.1 Communicate your mathematical thinking clearly and precisely. <i>See also:</i> GMP 4.1	How did you figure out whether this year is a leap year? How did you figure out when the next leap year will be? What do you need to know about leap years to figure out these problems?
Telling Time <i>(Teacher's Lesson Guide, page 869)</i>	GMP 5.2 Use mathematical tools correctly and efficiently. <i>See also:</i> GMP 6.1	How could you use a clock to explain your answers to Problems 1-5? Could you tell time with clocks that have marks for the hours but no numbers? How?
Lesson 12-2 Review: Clock Skills		
Math Message Follow-Up <i>(Teacher's Lesson Guide, page 873)</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 5.2, GMP 6.1	What do A.M. and P.M. mean when telling time? Are 12:00 P.M. and 12:00 A.M. the same time of day?
Discussing Alternative Names for Times <i>(Teacher's Lesson Guide, page 874)</i>	GMP 6.1 Communicate your mathematical thinking clearly and precisely. <i>See also:</i> GMP 2.1, GMP 2.2, GMP 4.1	Why is "half-past 8" a good name for 8:30?*" Why is "quarter-past 3" the same as 3:15?*" Why is "quarter-to 2" a good name for 1:45?*"

Lesson 12-3 Timelines		
<p>Displaying Events in Sequential Order on a Timeline</p> <p><i>(Teacher's Lesson Guide, page 880)</i></p>	<p>GMP 4.1 Apply mathematical ideas to real-world situations.</p> <p><i>See also:</i> GMP 2.1, GMP 6.1</p>	<p>What other kinds of information could you represent on a timeline?</p> <p>When might you use a timeline in your life?</p>
<p>Showing Dates for Inventions on a Timeline</p> <p><i>(Teacher's Lesson Guide, page 881)</i></p>	<p>GMP 2.1 Represent problems and situations mathematically with numbers, words, pictures, symbols, gestures, tables, and concrete objects.</p> <p><i>See also:</i> GMP 2.2, GMP 4.1, GMP 6.1</p>	<p>How does a timeline help you organize information?</p> <p>What are other ways to represent data?</p>
Lesson 12-4 Practice Multiplication Facts		
<p>Math Message Follow-Up</p> <p><i>(Teacher's Lesson Guide, pages 885–886)</i></p>	<p>GMP 7.1 Find, extend, analyze, and create patterns.</p> <p><i>See also:</i> GMP 6.1, GMP 8.1</p>	<p>What other patterns do you notice in the Products Table?</p>
<p>Reviewing Multiplication Shortcuts and Strategies</p> <p><i>(Teacher's Lesson Guide, pages 886–887)</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</p>	<p>How can you explain the 1-shortcut using examples from the Products Table?</p> <p>How can you explain the 0-shortcut using examples from the Products Table?</p> <p>Why are some math rules called <i>shortcuts</i>?</p>
Lesson 12-5 Division from Multiplication		
<p>Math Message Follow-Up</p> <p><i>(Teacher's Lesson Guide, page 891)</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</p>	<p>Why do turn-around facts work for multiplication?</p> <p>Why <i>don't</i> turn-around facts work for division?</p>

<p>Solving Related Multiplication/Division Fact Problems</p> <p><i>(Teacher’s Lesson Guide, page 893)</i></p>	<p>GMP 5.1 Choose appropriate tools for your problem.</p> <p><i>See also:</i> GMP 1.6, GMP 6.3</p>	<p>In addition to your fact triangles, what tools could you use to help you solve these multiplication problems?</p> <p>How do you decide which tools to use?</p>
Lesson 12-6 Graphs: Comparing Speeds of Animals and People		
<p>Math Message Follow-Up</p> <p><i>(Teacher’s Lesson Guide, pages 897–898)</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</p>	<p>Why can you still answer questions about the distances animals traveled without looking at the numbers?</p> <p>What other types of data could you represent in a bar graph?</p>
<p>Finding the Median and Range of the Distances</p> <p><i>(Teacher’s Lesson Guide, pages 898–899)</i></p>	<p>GMP 6.2 Use the level of precision you need for your problem.</p> <p><i>See also:</i> GMP 2.2, GMP 6.1</p>	<p>How could you approximate the distances that fell between two grid lines?</p> <p>How can you get better at reading graphs?</p>
Lesson 12-7 The Mode of a Set of Data		
<p>Math Message Follow-Up</p> <p><i>(Teacher’s Lesson Guide, pages 903–904)</i></p>	<p>GMP 2.2 Explain the meaning of the numbers, words, pictures, symbols, gestures, tables, and concrete objects you and others use.</p> <p><i>See also:</i> GMP 2.1, GMP 6.1</p>	<p>How do you find the mode on a line plot?</p> <p>How could knowing the mode of a set of data be helpful?</p>
<p>Making a Line Plot, Frequency Table, and Bar Graph of Height Changes</p> <p><i>(Teacher’s Lesson Guide, pages 904–905)</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>When would a tally chart be a better way to represent data?</p> <p>When would a line-plot or bar graph be a better way to represent data?</p>

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