

Grade 3 Unit 3: Linear Measures and Area

Activity	<i>Everyday Mathematics</i> Goal for Mathematical Practice	Guiding Questions
Lesson 3-1 A “Class Shoe” Unit of Length		
Math Message Follow-Up <i>(Teacher’s Lesson Guide, page 171)</i>	GMP 6.1 Communicate your mathematical thinking clearly and precisely. <i>See also:</i> GMP 1.1, GMP 2.1, GMP 4.1	How likely is it that someone will draw your name from the bag without looking?* What chance is there to draw the name of someone who is <i>not</i> in our class? How do you know? What math vocabulary helps you communicate clearly about the chances of something happening or not happening?
Creating a Standard Unit of Length for the Class <i>(Teacher’s Lesson Guide, pages 172–173)</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 6.2	What is the difference between using the class shoe length and your shoe length for measuring objects and talking about the measures?
Lesson 3-2 Measuring with a Ruler		
Math Message Follow-Up <i>(Teacher’s Lesson Guide, page 177)</i>	GMP 6.2 Use the level of precision you need for your problem. <i>See also:</i> GMP 4.1	Which unit of length would you choose for measuring the distance the seed(s) travel?* Why are the larger units, such as miles or kilometers, not as appropriate for measuring the distances in the contest?*

<p>Reading a Ruler and Measuring to the Nearest Inch, 1/2 Inch, and 1/4 Inch</p> <p><i>(Teacher's Lesson Guide, pages 177–179)</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 nearest inch?</p> <p>What is more <i>precise</i>: measuring to the nearest inch or 1/2 inch? How do you know?</p>
Lesson 3-3 Standard Linear Measures		
<p>Math Message Follow-Up</p> <p><i>(Teacher's Lesson Guide, page 183)</i></p>	<p>GMP 5.2 Use mathematical tools correctly and efficiently.</p> <p><i>See also:</i> GMP 5.1, GMP 6.3</p>	<p>How are tape measures alike and different from rulers and metersticks?</p> <p>What things can you measure with a tape measure that you cannot measure with a ruler?</p>
<p>Recording Personal Measurement References</p> <p><i>(Teacher's Lesson Guide, page 184)</i></p>	<p>GMP 3.2 Work to make sense of others' mathematical thinking.</p> <p><i>See also:</i> GMP 2.1, GMP 3.1, GMP 4.1</p>	<p>Compare your personal measurement references with those of a partner. How are your personal measurement references alike and different from your partner's?</p> <p>Would you add some of their personal references to your list? Why or why not?</p>
Lesson 3-4 Perimeter		
<p>Making Polygons Out of Straws</p> <p><i>(Teacher's Lesson Guide, pages 189–190)</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 5.2, GMP 7.1, GMP 8.1</p>	<p>How did you know the number of straws you needed to create a triangle? A square? A rhombus?</p> <p>How could your straw and twist-tie polygons help you compare different quadrangles?</p>

<p>Revisiting the Concept of Perimeter</p> <p><i>(Teacher's Lesson Guide, page 191)</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 5.2</p>	<p>How might straw and twist-tie polygons help you to explain what perimeter means?</p> <p>What other things might help you to explain what perimeter means?</p>
Lesson 3-5 A Pattern-Block Toss Experiment		
<p>Math Message Follow-Up</p> <p><i>(Teacher's Lesson Guide, page 195)</i></p>	<p>GMP 1.1 Work to make sense of your problem.</p> <p><i>See also:</i> GMP 6.1, GMP 8.3</p>	<p>Have children vote for the shape they believe is most likely to land on an edge.*</p> <p>Why did you choose the _____ as the polygon that has the best chance of landing on one of its edges?</p>
<p>Discussing the Experimental Results</p> <p><i>(Teacher's Lesson Guide, page 196)</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 1.5, GMP 2.2</p>	<p>Did you change your mind about which polygon has the best chance of landing on one of its edges while you were tossing them? Why or why not?</p> <p>Why might it be helpful to think about what might happen in an experiment before doing the experiment?</p>
Lesson 3-6 Exploring Perimeter and Area		
<p>Exploration A: Constructing Rectangles with Given Perimeters</p> <p><i>(Teacher's Lesson Guide, page 202)</i></p>	<p>GMP 7.1 Find, extend, analyze, and create patterns.</p> <p><i>See also:</i> GMP 7.2</p>	<p>Look for a pattern in your table on journal page 67. Can you find one? Explain what it is.*</p>

<p>Exploration B: Comparing Pattern-Block Sizes by Tiling Equal Areas</p> <p><i>(Teacher's Lesson Guide, page 203)</i></p>	<p>GMP 1.3 Try different approaches when your problem is hard.</p> <p><i>See also:</i> GMP 1.4, GMP 2.2</p>	<p>Which pattern block(s) was (were) hard to use when tiling the rectangles?</p> <p>What things did you try to solve the problem?</p> <p>What makes some math problems harder than others?</p>
Lesson 3-7 Area		
<p>Math Message Follow-Up</p> <p><i>(Teacher's Lesson Guide, page 207)</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 2.1</p>	<p>How did you estimate the length of one of the sides of the paper square on the board?</p> <p>Why might it be helpful to estimate length before you measure something?</p>
<p>Estimating and Measuring Areas in the Classroom</p> <p><i>(Teacher's Lesson Guide, page 208)</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 4.1, GMP 4.2, GMP 5.2, GMP 6.2</p>	<p>How did you use your 1-foot and 1-yard squares to measure the area of surfaces in the classroom?</p> <p>How might you use the 1-foot and 1-yard squares to measure the area of your bedroom?</p>
Lesson 3-8 Number Models for Area		
<p>Math Message Follow-Up</p> <p><i>(Teacher's Lesson Guide, page 213)</i></p>	<p>GMP 1.1 Work to make sense of your problem.</p> <p><i>See also:</i> GMP 5.1</p>	<p>What do you know about area and measurement that could help you figure out the amount of carpet needed to cover the classroom floor?</p> <p>What tools could you use to solve the problem?</p> <p>What might you do to help you understand a problem before solving it?</p>

<p>Finding the Area of Rectilinear Figures</p> <p><i>(Teacher's Lesson Guide, pages 214–215)</i></p>	<p>GMP 1.4 Solve your problem in more than one way.</p> <p><i>See also:</i> GMP 2.1, GMP 2.2</p>	<p>What other ways can you partition the rectilinear figure?</p>
<p>Lesson 3-9 Diameter and Circumference</p>		
<p>Defining the Circumference, Diameter, and Center of a Circle</p> <p><i>(Teacher's Lesson Guide, pages 219–220)</i></p>	<p>GMP 6.1 Communicate your mathematical thinking clearly and precisely.</p> <p><i>See also:</i> GMP 2.2</p>	<p>Show the circumference, diameter, and center on your paper circle. How could you explain what each term means?</p> <p>Why is it important to be able to explain mathematical words clearly and precisely?</p>
<p>Discussing the Relationship between Diameter and Circumference</p> <p><i>(Teacher's Lesson Guide, page 221)</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 3.1, GMP 4.1, GMP 4.2</p>	<p>Explain how you figured out the <i>about 3 times</i> circle rule.</p> <p>Did the <i>about 3 times</i> circle rule work for other circular objects in your classroom? Give an example.</p>

*denotes a question that is currently in the *Everyday Mathematics* materials

Grade 3 Unit 4: Multiplication and Division

Activity	<i>Everyday Mathematics</i> Goal for Mathematical Practice	Guiding Questions
Lesson 4-1: Multiples of Equal Groups		
Using Multiplication/Division Diagrams <i>(Teacher's Lesson Guide, pages 243–244)</i>	GMP 1.2 Make a plan for solving your problem. <i>See also:</i> GMP 1.5, GMP 2.1, GMP 2.2, GMP 3.1, GMP 4.1, GMP 4.2	What could you do to find the total number of pencils? How do you know your answer makes sense?*
Solving Multiplication Stories <i>(Teacher's Lesson Guide, page 246)</i>	GMP 5.1 Choose appropriate tools for your problem. <i>See also:</i> GMP 1.1, GMP 1.4, GMP 2.1, GMP 4.2	How did the tools that you used help you solve the multiplication number stories? How do you decide which tools to use to solve a problem?
Lesson 4-2: Multiplication Arrays		
Solving Multiplication Number Stories Using Arrays <i>(Teacher's Lesson Guide, page 250)</i>	GMP 4.2 Use mathematical models such as graphs, drawings, tables, symbols, numbers, and diagrams to solve problems. <i>See also:</i> GMP 1.5, GMP 2.1, GMP 3.2, GMP 6.1	How might the multiplication/division diagram help you solve number stories and write number models? How can diagrams help you organize information in number stories?
Solving More Multiplication Number Stories <i>(Teacher's Lesson Guide, page 251)</i>	GMP 2.1 Represent problems and situations mathematically with numbers, graphs, words, pictures, symbols, gestures, tables, and concrete objects. <i>See also:</i> GMP 5.1, GMP 5.2	If you don't know the answer to a multiplication fact, how can an array help you find the product? How might an array help you to write a number model?

Lesson 4-3: Equal Shares and Equal Groups		
<p>Solving Equal-Grouping Number Stories</p> <p><i>(Teacher's Lesson Guide, pages 256– 257)</i></p>	<p>GMP 1.4 Solve your problem in more than one way.</p> <p><i>See also:</i> GMP 2.1, GMP 2.2, GMP 3.1, GMP 3.2, GMP 4.1, GMP 4.2</p>	<p>Each child has 5 pennies. There are 30 pennies total. How many children have pennies? Have volunteers share their solution strategies.*</p> <p>How might sharing these solution strategies help you learn about mathematics?</p>
<p>Solving Division Number Stories</p> <p><i>(Teacher's Lesson Guide, page 257)</i></p>	<p>GMP 2.1 Represent problems and situations mathematically with numbers, graphs, words, pictures, symbols, gestures, tables, and concrete objects.</p> <p><i>See also:</i> GMP 1.1</p>	<p>What are some ways that you can show how you solve equal grouping and equal sharing problems?</p> <p>Which of the ways are more helpful to you? Why?</p>
Lesson 4-4: Division Ties to Multiplication		
<p>Math Message Follow-Up</p> <p><i>(Teacher's Lesson Guide, page 261)</i></p>	<p>GMP 2.1 Represent problems and situations mathematically with numbers, graphs, words, pictures, symbols, gestures, tables, and concrete objects.</p> <p><i>See also:</i> GMP 1.1, GMP 4.1, GMP 5.2</p>	<p>How might arrays help you solve division problems?</p>
<p>Using Number Models and Diagrams for Division Stories</p> <p><i>(Teacher's Lesson Guide, pages 262–263)</i></p>	<p>GMP 6.1 Communicate your mathematical thinking clearly and precisely.</p> <p><i>See also:</i> GMP 1.2, GMP 2.1, GMP 4.2</p>	<p>What does it mean to divide something? Use words, pictures, arrays, or other tools to show your thinking.</p> <p>How might your explanation help someone understand what division is?</p> <p>Why is it important to clearly explain your thinking?</p>

Lesson 4-5: Multiplication Fact Power and Shortcuts		
Reviewing Shortcuts for Multiplication Facts <i>The Turn-around Shortcut</i> (Teacher's Lesson Guide, page 268)	GMP 7.1 Find, extend, analyze, and create patterns. <i>See also:</i> GMP 6.3, GMP 7.2, GMP 8.1	How can you know if a number model will make a square array?* How might patterns help you solve multiplication problems?
Reviewing Shortcuts for Multiplication Facts <i>The Familiar Facts Shortcut</i> (Teacher's Lesson Guide, page 269)	GMP 8.2 Use properties, rules, and shortcuts to solve problems. <i>See also:</i> GMP 6.3, GMP 7.1, GMP 7.2, GMP 8.1	How might rules about the products of 2s, 5s, and 10s facts help you solve problems? How might rules about the products of 5s and 10s facts help you fix this mistake: $5 \times 10 = 51$?
Lesson 4-6: Multiplication and Division Fact Families		
Math Message Follow-Up Introducing Multiplication/Division Fact Families (Teacher's Lesson Guide, page 273)	GMP 1.6 Connect mathematical ideas and representations to one another. <i>See also:</i> GMP 2.1	How are multiplication/division fact families like addition/subtraction fact families? How might fact families help you build fact power?
Finding Patterns in the Facts Table (Teacher's Lesson Guide, page 274)	GMP 7.2 Use patterns and structures to solve problems. <i>See also:</i> GMP 2.2, GMP 3.2, GMP 5.2, GMP 7.1	How might patterns in the facts table help you know multiplication and division facts? Give some examples. When might you use the Multiplication/ Division Facts Table? Why?

Lesson 4-7: Baseball Multiplication		
Math Message Follow-Up <i>(Teacher's Lesson Guide, page 279)</i>	GMP 1.1 Work to make sense of your problem. <i>See also:</i> GMP 2.1, GMP 4.1, GMP 4.2	What questions could you ask yourself to help you make sense of the Math Message number story? What number model can you use to summarize the number story?
Playing <i>Baseball Multiplication</i> <i>(Teacher's Lesson Guide, page 280)</i>	GMP 7.2 Use patterns and structures to solve problems. <i>See also:</i> GMP 3.2, GMP 8.2	What pitches of 5 or less use the multiplication by 1 shortcut? What other pitches use fact shortcuts?
Lesson 4-8: Exploring Arrays and Facts		
Exploration B: Setting Up Chairs <i>(Teacher's Lesson Guide, page 285)</i>	GMP 1.1 Work to make sense of your problem. <i>See also:</i> GMP 1.2, GMP 2.1, GMP 4.1, GMP 4.2	What are some things you might do to help you solve this problem? What do problem solvers do before solving a problem?
Exploration C: Practicing Multiplication and Division Facts with a Fact Platter <i>(Teacher's Lesson Guide, page 285)</i>	GMP 5.1 Choose appropriate tools for your problem. <i>See also:</i> GMP 3.2, GMP 7.1	What tools might help you if you and your partner disagreed about the product for one of the multiplication facts on your platter? What tools might help you write a division fact for a multiplication fact?
Lesson 4-9: Estimating Distances with a Map Scale		
Math Message Follow-Up <i>(Teacher's Lesson Guide, page 289)</i>	GMP 7.1 Find, extend, analyze, and create patterns. <i>See also:</i> GMP 1.1, GMP 3.2	What information on the number lines might help you figure out the missing numbers? What happens to the numbers as you move to the right on a number line?

<p>Estimating Distances on a U.S. Map</p> <p><i>(Teacher’s Lesson Guide, pages 290-291)</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 2.1, GMP 4.2, GMP 5.2, GMP 6.2</p>	<p>After modeling the two methods to estimate using the map scale, ask: <i>Which method do you think is more accurate? Why?</i></p> <p>What other tools can help you estimate distances on maps using the scale?</p>
<p>Lesson 4-10: A Coin-Toss Experiment</p>		
<p>Math Message Follow-Up</p> <p><i>(Teacher’s Lesson Guide, pages 295–296)</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 2.2, GMP 6.1, GMP 8.1</p>	<p>What are the possible outcomes of tossing a coin?*</p> <p>How likely is a coin to land heads up? To land tails up?*</p> <p>NOTE: Pose the following questions after collecting the class data: <i>Based on the results from the coin-toss experiment, would you use a coin toss to decide who goes first in a game? Why or why not?</i></p>
<p>Conducting and Analyzing a Coin-Toss Experiment</p> <p><i>(Teacher’s Lesson Guide, pages 296 –297)</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 6.3</p>	<p>What might we learn from the class data table that we cannot learn from your data table?</p>

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Grade 3 Unit 5: Place Value in Whole Numbers and Decimals

Activity	<i>Everyday Mathematics Goal for Mathematical Practice</i>	Guiding Questions
Lesson 5-1: Place Value Through Ten-Thousands		
Reviewing Place Value <i>(Teacher's Lesson Guide, page 320)</i>	GMP 5.2 Use mathematical tools correctly and efficiently. <i>See also:</i> GMP 6.1, GMP 7.2	How might the place-value chart help you answer this question: <i>What would happen if the zero were left out of 5,072?*</i> Why is it important to know the value of each digit?
Solving Problems Involving Place Value <i>(Teacher's Lesson Guide, page 320)</i>	GMP 7.2 Use patterns and structures to solve patterns. <i>See also:</i> GMP 6.3, GMP 7.1	What patterns can you find in Problems 5 through 9 on journal page 102? How might these patterns help you fill in the missing numbers?
Lesson 5-2: Reading, Writing, and Ordering Numbers		
Reviewing How to Read and Compare Numbers <i>(Teacher's Lesson Guide, page 325)</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 7.2	How is a 7 in the thousands place different from a 7 in the hundreds place? What does $>$ mean? Give an example of a time when you would use the $>$ symbol. Why do we compare numbers?
Playing <i>Number Top-It</i> (5-Digit Numbers) <i>(Teacher's Lesson Guide, page 326)</i>	GMP 3.1 Explain both what to do and why it works. <i>See also:</i> GMP 2.1, GMP 2.2, GMP 3.2, GMP 5.2, GMP 6.3, GMP 7.2	How can you tell whose number is larger at the end of a round of <i>Number Top-It</i> ? Use the Place-Value Mat and number cards if they help you to explain your answer.

Lesson 5-3: Place Value to Millions		
<p>Discussing Place Value through Millions</p> <p><i>(Teacher's Lesson Guide, pages 331–333)</i></p>	<p>GMP 7.1 Find, extend, analyze, and create patterns.</p> <p><i>See also:</i> GMP 2.2, GMP 5.2, GMP 7.2</p>	<p>How did you use the pattern on the place-value chart to figure out the next number?</p> <p>How can 10 digits form all the whole numbers in our number system?</p>
<p>Writing Numbers in the Millions</p> <p><i>(Teacher's Lesson Guide, page 334)</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 words help you know how large a number is when you hear it read out loud?</p> <p>What do the commas mean in numbers in the millions?</p>
Lesson 5-4: Application: The U.S. Census		
<p>Comparing Populations of Cities</p> <p><i>(Teacher's Lesson Guide, pages 338–339)</i></p>	<p>GMP 4.1 Apply mathematical ideas to real-world situations.</p> <p><i>See also:</i> GMP 2.2, GMP 4.2, GMP 6.1, GMP 6.2</p>	<p>How might cities with larger populations be different from cities with smaller populations? Why?</p> <p>When might you read and write large numbers in real life?</p>
<p>Comparing the 1990 and 2000 Census Counts</p> <p><i>(Teacher's Lesson Guide, page 340)</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</p>	<p>How does the data in the Populations of 10 U.S. Cities table help you compare the population changes from 1990 to 2000?</p> <p>What other questions could this data help you to answer?</p>
Lesson 5-5: Very Large Numbers		
<p>Math Message Follow-Up</p> <p><i>(Teacher's Lesson Guide, page 343)</i></p>	<p>GMP 1.1 Work to make sense of your problem.</p> <p><i>See also:</i> GMP 2.1, GMP 4.1, GMP 7.2</p>	<p>What do you need to know to calculate your age in days? In hours? In minutes?</p>

<p>Calculating Age in Minutes <i>(Teacher's Lesson Guide, page 344)</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 2.1, GMP 5.2, GMP 6.1</p>	<p>How does your estimate of your age in minutes compare to your actual age in minutes?</p> <p>Based on your age in minutes, what would you estimate your mom/dad/teacher's age to be in minutes?</p> <p>How could you check your estimate using a calculator? What do you need to know to calculate your age in days? In hours? In minutes?</p>
Lesson 5-6: Exploring Estimates and Polygons		
<p>Exploration A: Finding the Value of Base-10 Blocks <i>(Teacher's Lesson Guide, page 349)</i></p>	<p>GMP 1.5 Check whether your solution makes sense.</p> <p><i>See also:</i> GMP 5.3, GMP 6.2, GMP 6.3</p>	<p>How did you go about estimating the value of the base-10 blocks for Exploration A?</p> <p>How did your group figure out the actual value of base-10 blocks?</p> <p>How can estimates help you check exact answers?</p>
<p>Exploration B: Identifying Squares, Rectangles, and Triangles <i>(Teacher's Lesson Guide, page 349)</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 5.2, GMP 6.3, GMP 7.1</p>	<p>Look at journal page 111. What makes a square a square, a rectangle a rectangle, and a triangle a triangle?</p>
Lesson 5-7: Model Decimals with Base-10 Blocks		
<p>Math Message Math Message Follow-Up <i>(Teacher's Lesson Guide, page 353)</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>How is the decimal point read in dollars and cents notation?</p> <p>What do the numbers to the left of the decimal point in dollars and cents notation mean? To the right of the decimal point?</p>

<p>Comparing and Ordering Decimals on a Square Grid</p> <p><i>(Teacher's Lesson Guide, page 355)</i></p>	<p>GMP 7.2 Use patterns and structures to solve problems.</p> <p><i>See also:</i> GMP 1.6, GMP 2.1, GMP 6.3</p>	<p>How are the grids on journal page 115 the same as base-10 flats? Show 0.7 and 0.07 with base-10 blocks and a grid. How are the two decimals different?</p> <p>Which decimal has the larger value? How do you know?</p>
Lesson 5-8: Tenths and Hundredths		
<p>Exploring Place Value for 1- and 2-Place Decimals</p> <p><i>(Teacher's Lesson Guide, page 360)</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 3.1, GMP 5.2, GMP 6.3</p>	<p>Explain how you used the grid and base-10 blocks to represent 13 hundredths.</p> <p>How did representing the decimals with base-10 blocks on the grid help you know how to write the decimals and fractions?</p>
<p>Solving Place-Value Problems for Decimals</p> <p><i>(Teacher's Lesson Guide, page 361)</i></p>	<p>GMP 5.2 Use mathematical tools correctly and efficiently.</p> <p><i>See also:</i> GMP 2.1, GMP 6.3</p>	<p>What decimal did you show on the grid with the cubes you took?</p> <p>Why might someone want to use tools like cubes and a grid to learn about decimals?</p>
Lesson 5-9: Tenths and Hundredths of a Meter		
<p>Math Message Follow-Up</p> <p><i>(Teacher's Lesson Guide, page 364)</i></p>	<p>GMP 4.1 Apply mathematical ideas to real-world situations.</p> <p><i>See also:</i> GMP 2.2, GMP 6.1</p>	<p>How can the picture of the python on <i>Student Reference Book</i>, page 219 and your own knowledge of a python help you understand the length of 9 meters?</p> <p>How can real-world examples help you understand measurement units?</p>

<p>Writing Metric Measurements in Decimal Notation</p> <p><i>(Teacher's Lesson Guide, page 366)</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 5.2, GMP 6.3</p>	<p>How can you use base-10 blocks and a meterstick to show .36 meter?</p> <p>How are representing decimals on a meterstick similar to representing decimals on a flat or hundred grid? How are they different?</p>
Lesson 5-10: Application: Rainfall		
<p>Introducing 3-Place Decimals</p> <p><i>(Teacher's Lesson Guide, page 370)</i></p>	<p>GMP 7.1 Find, extend, analyze, and create patterns.</p> <p><i>See also:</i> GMP 2.1, GMP 6.3</p>	<p>How are 0.2, 0.02, 0.002 the same? How are they different?</p> <p>Which is largest? Smallest? How do you know?</p>
<p>Plotting and Comparing Data</p> <p><i>(Teacher's Lesson Guide, page 371)</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 5.2, GMP 6.3</p>	<p>What do the numbers and lines between the numbers on the rain gauge mean?</p> <p>When might someone need to know how to use a rain gauge?</p>
Lesson 5-11: Place Value in Decimals		
<p>Suggesting Place-Value Book Routines</p> <p><i>(Teacher's Lesson Guide, pages 375–377)</i></p>	<p>GMP 5.2 Use mathematical tools correctly and efficiently.</p> <p><i>See also:</i> GMP 2.2, GMP 6.3, GMP 7.1, GMP 7.2</p>	<p>What kinds of numbers can you show with your Place-Value Book?</p> <p>How could you and your partner use your Place-Value Books to compare decimals?</p>
<p>Practicing Decimal Place-Value Skills</p> <p><i>(Teacher's Lesson Guide, page 377)</i></p>	<p>GMP 5.1 Choose appropriate tools for your problem.</p> <p><i>See also:</i> GMP 2.1, GMP 5.2, GMP 6.3, GMP 7.1, GMP 7.2</p>	<p>What tools could help you figure out the missing numbers on the number lines in Problems 12 and 13 on journal page 123?</p> <p>What other tools could help you complete this journal page and how might you use them?</p>

Lesson 5-12: Sunrise-Sunset Line Graphs		
<p>Math Message Follow-Up</p> <p><i>(Teacher's Lesson Guide, page 380)</i></p>	<p>GMP 8.1 Use patterns and structures to create and explain rules and shortcuts.</p> <p><i>See also:</i> GMP 2.2, GMP 7.1</p>	<p>What has happened to the length of the days since the beginning of the school year? How do you know?</p> <p>How did you find the difference between the lengths of the longest and shortest days?</p>
<p>Making a Line Graph of the Lengths of Days</p> <p><i>(Teacher's Lesson Guide, pages 380–382)</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 7.1</p>	<p>What do the points on the line graph stand for and what does the line connecting each point tell you?</p> <p>What does the shape of the graph show about the length of days?</p>

*denotes a question that is currently in the *Everyday Mathematics* materials

Grade 3 Unit 6: Geometry

Activity	<i>Everyday Mathematics</i> Goal for Mathematical Practice	Guiding Questions
Lesson 6-1: Investigating Line Segments, Rays, and Lines		
Reviewing Line Segments Introducing Rays Introducing Lines <i>(Teacher's Lesson Guide, pages 403–405)</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 5.2	After completing the three activities ask: <i>How are a line segment, a line, and a ray alike and different?</i> <i>How might straw models help someone understand what a line/line segment/ray is?</i>
Drawing Line Segments, Rays, and Lines <i>(Teacher's Lesson Guide, page 405)</i>	GMP 6.3 Be accurate when you count, measure, and calculate. <i>See also:</i> GMP 5.2	For Problems 3 and 4 on journal page 128, how did you make sure that you drew <i>all</i> of the possible line segments? What does it mean to be accurate?
Lesson 6-2: Parallel & Intersecting Line Segments, Rays, and Lines		
Discussing Parallel and Intersecting Line Segments, Rays, and Lines <i>(Teacher's Lesson Guide, pages 409–410)</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 5.2	What are some examples of things that are parallel inside the classroom?*
Going on a Geometry Hunt <i>(Teacher's Lesson Guide, page 411)</i>	GMP 4.1 Apply mathematical ideas to real-world situations. <i>See also:</i> GMP 2.1, GMP 6.1	How might it help someone to learn what <i>parallel</i> and <i>intersect</i> mean if they find things that are parallel and intersecting in real life?

Lesson 6-3: Angles and Turns		
Performing Turns Calisthenics <i>(Teacher's Lesson Guide, page 415)</i>	GMP 1.6 Connect mathematical ideas and representations to one another. <i>See also:</i> GMP 2.1, GMP 6.1	How many quarter-turns make a full turn?*
		What are other ways besides turning your body to show quarter-turns, half-turns, and full turns?
Showing Turns with Two Connected Straws <i>(Teacher's Lesson Guide, page 416)</i>	GMP 6.3 Be accurate when you count, measure, and calculate. <i>See also:</i> GMP 2.1, GMP 5.2	If you start with both straws touching and pointing up, what kind of angle can you draw if you make a 1/4 clockwise turn with one straw? A 1/4 counterclockwise turn?
Lesson 6-4: Triangles		
Constructing Triangles with Straws <i>(Teacher's Lesson Guide, pages 422–423)</i>	GMP 8.1 Use patterns and structures to create and explain rules and shortcuts. <i>See also:</i> GMP 2.1, GMP 2.2	What is true of all equilateral triangles? What is true of all right triangles? How are <i>all</i> triangles alike?
Measuring the Sides of a Triangle <i>(Teacher's Lesson Guide, page 423)</i>	GMP 5.2 Use mathematical tools correctly and efficiently. <i>See also:</i> GMP 6.2, GMP 6.3	How might you explain to someone how to use a measuring tool to measure each side of the triangle on journal page 134 to the nearest 1/4 inch?
Lesson 6-5: Quadrangles		
Naming Quadrangles <i>(Teacher's Lesson Guide, page 428)</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 6.1	Why do we give letter names to quadrangles and other polygons?

<p>Constructing Quadrangles <i>(Teacher's Lesson Guide, page 428–429)</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 5.2, GMP 6.1</p>	<p>How are all of your group's quadrangles alike? How are they different?*</p> <p>How are the quadrangles you made different from the triangles you made in the previous lesson?</p>
Lesson 6-6: Polygons		
<p>Discussing Characteristics of Polygons; Introducing Regular Polygons <i>(Teacher's Lesson Guide, page 434)</i></p>	<p>GMP 2.1 Represent problems and situations mathematically with numbers, words, pictures, symbols, gestures, tables, graphs, and concrete objects.</p> <p>GMP 2.2, GMP 3.2, GMP 5.2, GMP 6.1, GMP 7.1</p>	<p>How can straw constructions help you learn about polygons?</p> <p>What are other ways to represent polygons?</p>
<p>Measuring the Sides of a Polygon and Estimating Its Perimeter <i>(Teacher's Lesson Guide, page 435)</i></p>	<p>GMP 7.2 Use patterns and structures to solve problems.</p> <p><i>See also:</i> GMP 5.2, GMP 5.3, GMP 6.2, GMP 6.3</p>	<p>How did you figure out the perimeter of your polygon in the Try This problem on journal page 139?</p> <p>In what order did you add the lengths of the polygon? Why?</p>
Lesson 6-7: Drawing Angles		
<p>Making Angles with Straws <i>(Teacher's Lesson Guide, pages 439–440)</i></p>	<p>GMP 1.6 Connect mathematical ideas and representations to one another.</p> <p><i>See also:</i> GMP 2.1, GMP 6.1, GMP 6.3</p>	<p>How are the straws you use to show angles like hands on a clock?</p> <p>What else could you use to show different-sized angles?</p>
<p>Drawing Angles to Record Rotations <i>(Teacher's Lesson Guide, pages 440–441)</i></p>	<p>GMP 5.2 Use mathematical tools correctly and efficiently.</p> <p><i>See also:</i> GMP 2.1</p>	<p>How did you use your connected straws to help you draw angles in Part 1? Part 2?</p> <p>How did you use the connected straws differently in Part 1 and in Part 2?</p>

Lesson 6-8: Measuring Angles		
<p>Introducing the Degree as a Unit of Measure for Turns</p> <p><i>(Teacher's Lesson Guide, pages 445– 446)</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 5.2, GMP 6.1, GMP 6.3</p>	<p>About how big is a measure of 1°? Use your connected straws to help explain your answer.</p> <p>How might a round pizza help you understand the size of 1°? 90°? 180°? 270°?</p>
<p>Measuring Angles with the Angle Measurer</p> <p><i>(Teacher's Lesson Guide, page 447)</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>How did you use the angle measurer for the problems on journal page 144?</p> <p>Why do you need different tools to solve different problems?</p>
Lesson 6-9: Symmetry		
<p>Exploring Properties of Symmetric Figures</p> <p><i>(Teacher's Lesson Guide, pages 451– 452)</i></p>	<p>GMP 6.1 Communicate your mathematical thinking clearly and precisely.</p> <p><i>See also:</i> GMP 2.1, GMP 5.2</p>	<p>What is a mirror image?</p> <p>Discuss the relationship between the printed pattern and its mirror image. How are they alike? How are they different?*</p> <p>How do you know if a shape has a line of symmetry?</p>
<p>Completing Symmetric Figures</p> <p><i>(Teacher's Lesson Guide, page 452)</i></p>	<p>GMP 7.2 Use patterns and structures to solve problems.</p> <p><i>See also:</i> GMP 2.1</p>	<p>How were you able to tell whether you correctly drew the other half of each symmetric shape on journal page 146?</p>
Lesson 6-10: Exploring Congruence, Line Segments, and Decimals		
<p>Exploration A: Exploring Congruent Shapes</p> <p><i>(Teacher's Lesson Guide, page 458)</i></p>	<p>GMP 1.4 Solve your problem in more than one way.</p> <p><i>See also:</i> GMP 2.1, GMP 5.2, GMP 7.2</p>	<p>How many different arrangements of pattern blocks did you make for each of the three sets of shapes?</p> <p>Why are there many ways to solve this problem?</p>

<p>Exploration B: Creating an 8-Point Design</p> <p><i>(Teacher’s Lesson Guide, page 458)</i></p>	<p>GMP 6.1 Communicate your mathematical thinking clearly and precisely.</p> <p><i>See also:</i> GMP 2.1, GMP 5.2, GMP7.1</p>	<p>Where are parallel line segments and intersecting line segments in your design? Name them.</p> <p>What other geometry vocabulary can you talk about using your design?</p>
Lesson 6-11: Polyhedrons, Part 1		
<p>Math Message Follow-Up</p> <p><i>(Teacher’s Lesson Guide, page 463)</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 4.1, GMP 6.1</p>	<p>How are 2-D shapes different from 3-D shapes? How are they the same</p>
<p>Discussing Characteristics of the Pyramid and Prism</p> <p><i>(Teacher’s Lesson Guide, pages 464– 465)</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 7.1</p>	<p>How are a cone and a pyramid alike? Different?*</p> <p>How are a prism and a cylinder alike? Different?</p> <p>What can you learn from discussing the similarities and differences of polyhedrons?</p>
Lesson 6-12: Polyhedrons, Part 2		
<p>Identifying the Bases of a Rectangular Prism</p> <p><i>(Teacher’s Lesson Guide, page 469)</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 7.1</p>	<p>What do you know about bases of rectangular prisms?</p> <p>Why is this true of rectangular prisms: any pair of opposite faces can be bases of the prism?</p>

<p>Discussing the Shapes of the Faces of Prisms</p> <p><i>(Teacher's Lesson Guide, page 470)</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 6.1, GMP 7.1, GMP 8.1</p>	<p>What did tracing around the faces of the pattern-block prisms help you learn about faces and bases of prisms?</p> <p>How does knowing the shapes of the faces of the prisms help you understand how the prisms are named?</p>
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*denotes a question that is currently in the *Everyday Mathematics* materials

Grade 3 Unit 7: Multiplication and Division

Activity	<i>Everyday Mathematics</i> Goal for Mathematical Practice	Guiding Questions
Lesson 7-1: Patterns in Products		
Math Message Follow-Up <i>(Teacher's Lesson Guide, pages 577– 578)</i>	GMP 7.2 Use patterns and structures to solve problems. <i>See also:</i> GMP 1.6, GMP 2.1, GMP 7.1	How could you use the patterns in the array and the patterns in the square products on journal page 157 to figure out the answer to 11×11 ?
Finding Patterns in the Multiplication/Division Facts Table <i>(Teacher's Lesson Guide, pages 578– 579)</i>	GMP 7.1 Find, extend, analyze, and create patterns. <i>See also:</i> GMP 2.2, GMP 5.2, GMP 6.1	What patterns did you and your group find in the multiplication and division table? How might these patterns help you learn your multiplication and division facts? Which pattern(s) helps you the most? Why?
Lesson 7-2: Multiplication Facts Survey		
Math Message Follow-Up <i>(Teacher's Lesson Guide, page 583)</i>	GMP 8.1 Use patterns and structures to create and explain rules and shortcuts. <i>See also:</i> GMP 7.1	What is one of the rules for odd and even factors and their products? How do you know that this rule is true? How could you use these rules to help you check your answers to multiplication facts?
Identifying the Multiplication Facts to Be Learned <i>(Teacher's Lesson Guide, page 584)</i>	GMP 5.2 Use mathematical tools correctly and efficiently. <i>See also:</i> GMP 5.1	How might it help you to shade in the multiplication facts you know? When do you use the multiplication/division facts table?

Lesson 7-3: Fact Power		
Math Message Follow-Up <i>(Teacher's Lesson Guide, page 589)</i>	GMP 1.1 Work to make sense of your problem. <i>See also:</i> GMP 6.3, GMP 7.2, GMP 8.1	What did you do to complete the <i>What's My Rule?</i> problems? How are these two <i>What's My Rule?</i> problems different?
Playing <i>Multiplication Bingo</i> <i>(Teacher's Lesson Guide, page 590)</i>	GMP 5.1 Choose appropriate tools for your problem. <i>See also:</i> GMP 6.3	What tools could you use to help you with multiplication facts while playing <i>Multiplication Bingo</i> ? What tools help you play other math games?
Lesson 7-4: Number Models with Parentheses		
Comparing Punctuation Marks to Parentheses <i>(Teacher's Lesson Guide, pages 595–596)</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 6.3, GMP 8.1	How can parentheses change the meaning of a number sentence? What other symbols in number sentences help you understand how to solve them?
Writing Number Models with Parentheses <i>(Teacher's Lesson Guide, pages 597– 598)</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 1.1, GMP 1.4, GMP 6.3, GMP 8.2	When writing a number sentence, how do you know when you need to use parentheses? Some number models have letters. What do the letters mean?
Lesson 7-5: Scoring in Basketball: An Application		
Math Message Math Message Follow-Up <i>(Teacher's Lesson Guide, page 601)</i>	GMP 4.2 Use mathematical models such as numbers, graphs, drawings, tables, symbols, and diagrams to solve problems. <i>See also:</i> GMP 2.1, GMP 2.2, GMP 3.2, GMP 6.1, GMP 8.2	How did you figure out how to write a number model for the Math Message?

<p>Finding Different Ways to Score 10 Points in Basketball</p> <p><i>(Teacher’s Lesson Guide, page 602)</i></p>	<p>GMP 1.4 Solve your problem in more than one way.</p> <p><i>See also:</i> GMP 2.1, GMP 2.2, GMP 3.2, GMP 4.1, GMP 6.3, GMP 8.2</p>	<p>How did you figure out <i>different</i> ways to score 10 points in basketball?</p> <p>Why might it be helpful to know how to solve a problem in more than one way?</p>
<p>Lesson 7-6: Extended Facts: Multiplication and Division</p>		
<p>Multiplying by Multiples of 10, 100, and 1,000</p> <p><i>(Teacher’s Lesson Guide, pages 608–609)</i></p>	<p>GMP 7.1 Find, extend, analyze, and create patterns.</p> <p><i>See also:</i> GMP 2.2, GMP 7.2</p>	<p>What patterns do you see within each set of problems?</p> <p>How could you continue these patterns?</p>
<p>Solving Extended Multiplication and Division Facts</p> <p><i>(Teacher’s Lesson Guide, page 610)</i></p>	<p>GMP 3.1 Explain what to do and why it works.</p> <p><i>See also:</i> GMP 2.1, GMP 2.2, GMP 7.1, GMP 7.2</p>	<p>How did you solve the first multiplication and division puzzle on journal page 169?</p> <p>How could you help someone else learn how to do these puzzles?</p>
<p>Lesson 7-7: Estimating Costs</p>		
<p>Math Message Follow-Up</p> <p><i>(Teacher’s Lesson Guide, page 613)</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 3.2, GMP 6.1</p>	<p>Why don’t you need to find the exact cost of the party balloons to figure out whether \$6 is enough?</p> <p>What strategy did you use to <i>estimate</i> if you have enough money?</p> <p>When else might you estimate how much something costs rather than finding an exact cost?</p>
<p>Solving Problems by Estimation</p> <p><i>(Teacher’s Lesson Guide, pages 615–616)</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, GMP 6.2</p>	<p>If you make an estimate that is different from someone in your group, can you both be correct? Why or why not?</p>

Lesson 7-8: Extended Facts: Products of Tens		
<p>Math Message Follow-Up</p> <p><i>(Teacher’s Lesson Guide, page 619)</i></p>	<p>GMP 7.2 Use patterns and structures to solve problems.</p> <p><i>See also:</i> GMP 2.1, GMP 4.1, GMP 6.3, GMP 7.1</p>	<p>What patterns can you find in the factors and products in Problems 1 through 6 on journal page 173?</p> <p>How might these problems help you solve other extended-facts problems?</p>
<p>Introducing Products of Multiples of 10</p> <p><i>(Teacher’s Lesson Guide, pages 619–620)</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 3.2, GMP 6.1, GMP 6.3, GMP 7.2</p>	<p>One number model for the landscape company number story is $40 \times 30 = ?$ What does 40 mean? What does 30 mean?</p> <p>Why is it important to know what the numbers mean when writing number models and solving number stories?</p>
Lesson 7-9: Exploring Ratios and Geometric Figures		
<p>Exploration B: Exploring Ratio Problems</p> <p><i>(Teacher’s Lesson Guide, page 627)</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</p>	<p>On the back of Math Masters, page 229, or on a separate piece of paper, write a group report telling what your group did to find the answers to Problems 1–3.*</p>
<p>Exploration C: Solving a Geometry Problem</p> <p><i>(Teacher’s Lesson Guide, page 627)</i></p>	<p>GMP 1.3 Try different approaches when your problem is hard.</p> <p><i>See also:</i> GMP 1.1, GMP 1.6, GMP 8.2</p>	<p>What did you try first to make 5 triangles out of 9 straws?</p> <p>What did you do if it didn’t work the first time?</p> <p>Why is it important to keep trying to solve challenging math problems?</p>

*denotes a question that is currently in the *Everyday Mathematics* materials

Grade 3 Unit 8: Fractions

Activity	<i>Everyday Mathematics</i> Goal for Mathematical Practice	Guiding Questions
Lesson 8-1: Naming Parts with Fractions		
Reviewing Fractions as Names for Parts of Regions <i>(Teacher’s Lesson Guide, page 650)</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 2.2, GMP 6.1	What is another way to show $\frac{1}{2}$ of your slate? $\frac{1}{3}$? $\frac{1}{6}$? $\frac{3}{4}$? How might pictures help you understand fractions?
Reviewing Fractions as Names for Parts of Sets <i>(Teacher’s Lesson Guide, page 651)</i>	GMP 4.1 Apply mathematical ideas to real-world situations. <i>See also:</i> GMP 2.1, GMP 2.2	When could you use fractions of sets in real life? Explain your answer. When might you need $\frac{1}{2}$ of something? $\frac{1}{4}$?
Lesson 8-2: Blocks-in-a-Bag Experiment		
Making Predictions in a Random-Draw Experiment <i>(Teacher’s Lesson Guide, pages 655–656)</i>	GMP 8.3 Reflect on your thinking before, during, and after you solve a problem. <i>See also:</i> GMP 1.1, GMP 4.2, GMP 5.3	How did you use the data that we collected so far to make predictions about the color and number of the blocks in the bag? If more data is collected, would you change your predictions? Why or why not? How might data help you make predictions?
Solving Problems Involving Chance Outcomes <i>(Teacher’s Lesson Guide, page 656)</i>	GMP 4.2 Use mathematical models such as number, graphs, drawings, tables, symbols, and diagrams to solve problems. <i>See also:</i> GMP 1.5, GMP 2.1	How does your picture for Problem 1 on journal page 183 show that you are <i>sure</i> of taking out a blue block?

Lesson 8-3: Exploring Fractions, Re-Forming Squares, and Combinations		
<p>Math Message Follow-Up</p> <p><i>(Teacher's Lesson Guide, page 660)</i></p>	<p>GMP 1.1 Work to make sense of your problem.</p> <p><i>See also:</i> GMP 3.1, GMP 3.2, GMP 5.1</p>	<p>What do you know from the problem and what do you need to find out?</p> <p>What helps you get started when trying to solve a new problem?</p>
<p>Exploration B: Taking Apart and Putting Together Squares</p> <p><i>(Teacher's Lesson Guide, page 661)</i></p>	<p>GMP 1.3 Try different approaches when your problem is hard.</p> <p><i>See also:</i> GMP 2.1, GMP 7.1</p>	<p>What would you do if you cannot put the pieces back together into a single square on the first try?</p> <p>How could working with a partner help you solve challenging problems?</p>
Lesson 8-4: Number-Line Posters for Fractions		
<p>Making a Number-Line Poster for Fractions</p> <p><i>(Teacher's Lesson Guide, page 667)</i></p>	<p>GMP 1.6 Connect mathematical ideas and representations to one another.</p> <p><i>See also:</i> GMP 2.1, GMP 4.1, GMP 5.2</p>	<p>How is your Fraction Number-Line Poster like other number lines?</p> <p>How is your Fraction Number-Line Poster like a ruler?</p> <p>Why might it be helpful to think about how math tools, such as number lines, rulers, and the Fraction Number-Line Poster, are alike and different?</p>
<p>Reviewing Fraction Concepts</p> <p><i>(Teacher's Lesson Guide, page 668)</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 6.3, GMP 7.2</p>	<p>How does your Fraction Number-Line Poster help you compare fractions?</p>

Lesson 8-5: Equivalent Fractions		
<p>Using Fraction Cards to Extend Fraction Concepts</p> <p><i>(Teacher's Lesson Guide, page 672)</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 5.2</p>	<p>How could the picture side on one of your fraction cards help you understand the fraction on the other side of the card?</p>
<p>Investigating Equivalent Fractions</p> <p><i>(Teacher's Lesson Guide, page 673)</i></p>	<p>GMP 7.1 Find, extend, analyze, and create patterns.</p> <p><i>See also:</i> GMP 1.4, GMP 4.2, GMP 5.2, GMP 8.1</p>	<p>Describe any patterns you see in the table on journal page 194.*</p> <p>How could you use these patterns to figure out other equivalent fractions?</p> <p>How could patterns help you find equivalent names for numbers?</p>
Lesson 8-6: Comparing Fractions		
<p>Math Message Follow-Up</p> <p><i>(Teacher's Lesson Guide, page 678)</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 6.3, GMP 7.1</p>	<p>How would you explain to someone what a unit fraction is?</p> <p>What does it mean for fractions to be in order?</p> <p>When else might it be helpful to put numbers in order from least to greatest?</p>
<p>Comparing Fractions to $\frac{1}{2}$, 0, and 1</p> <p><i>(Teacher's Lesson Guide, page 679)</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 6.1, GMP 7.2</p>	<p>What are some things that you notice about all of the fractions less than $\frac{1}{2}$ that are on your Fraction Cards? More than $\frac{1}{2}$?</p>

Lesson 8-7: Fractions Greater Than ONE		
<p>Naming Fractional Parts Greater than ONE</p> <p>(<i>Teacher's Lesson Guide</i>, pages 684–685)</p>	<p>GMP 6.1 Communicate your mathematical thinking clearly and precisely.</p> <p><i>See also:</i> GMP 2.1, GMP 4.2</p>	<p>What does <i>equivalent</i> mean?</p> <p>How are $\frac{3}{2}$ and $1\frac{1}{2}$ <i>equivalent</i>? Use Problem 1 on journal page 197 to help you explain your answer.</p> <p>How can mathematical vocabulary help you describe numbers?</p>
<p>Naming Parts with Fractions and Mixed Numbers</p> <p>(<i>Teacher's Lesson Guide</i>, page 685)</p>	<p>GMP 2.1 Represent problems and situations mathematically with numbers, graphs, words, pictures, symbols, gestures, tables, and concrete objects.</p> <p><i>See also:</i> GMP 6.3</p>	<p>How could the pictures for Problem 3 on journal page 198 help you know that $\frac{5}{4}$ and $1\frac{1}{4}$ are equivalent?</p>
Lesson 8-8: Fractions in Number Stories		
<p>Writing and Solving Fraction Number Stories</p> <p>(<i>Teacher's Lesson Guide</i>, pages 689–690)</p>	<p>GMP 5.1 Choose appropriate tools for your problem.</p> <p><i>See also:</i> GMP 1.1, GMP 2.1, GMP 4.2, GMP 5.2, GMP 6.3</p>	<p>Why did you choose the tool(s) you used to help you solve the fraction number stories?</p> <p>What could you do if you don't know how to use a tool?</p>
<p>Solving Fraction Stories</p> <p>(<i>Teacher's Lesson Guide</i>, page 691)</p>	<p>GMP 3.2 Work to make sense of others' mathematical thinking.</p> <p><i>See also:</i> GMP 5.1, GMP 5.2</p>	<p>How did your partner solve your fraction number story on journal page 201?</p> <p>Would you have solved it the same way or a different way? Why?</p>

*denotes a question that is currently in the *Everyday Mathematics* materials

Grade 3 Unit 9: Multiplication and Division

Activity	<i>Everyday Mathematics</i> Goal for Mathematical Practice	Guiding Questions
Lesson 9-1 Multiply and Divide with Multiples of 10, 100, and 1,000		
Modeling How to Solve Multiplication and Division Number Stories <i>(Teacher's Lesson Guide, pages 713–714)</i>	GMP 1.2 Make a plan for solving your problem. <i>See also:</i> GMP 1.1, GMP 1.5, GMP 2.1, GMP 2.2, GMP 3.1, GMP 4.2, GMP 5.1, GMP 6.2, GMP 7.2	What do you understand from the story?* What could you do to find which animal weighs about 30 times as much as the sea otter?* What helps you make a plan to solve a new problem?
Writing and Solving Number Stories with Multiples of 10, 100, and 1,000 <i>(Teacher's Lesson Guide, page 715)</i>	GMP 7.2 Use patterns and structures to solve problems. <i>See also:</i> GMP 1.1, GMP 1.2, GMP 1.5, GMP 2.1, GMP 2.2, GMP 3.1, GMP 4.2, GMP 5.1, GMP 6.2	How might you use what you know about place value to help you solve these problems?
Lesson 9-2 Using Mental Math to Multiply		
Math Message Follow-Up <i>(Teacher's Lesson Guide, pages 719–720)</i>	GMP 1.4 Solve your problem in more than one way. <i>See also:</i> GMP 3.1, GMP 3.2, GMP 6.2	What strategies did you and your classmates use to solve this problem? Write number models for your strategies on the board.* Are some strategies better suited for certain problems than others? Why or why not?
Practicing Mental Math Strategies <i>(Teacher's Lesson Guide, page 721)</i>	GMP 3.1 Explain both what to do and why it works. <i>See also:</i> GMP 6.2, GMP 6.3	Explain the strategy you used.* Why does your strategy work?

Lesson 9-3 Exploring Arrays, Areas, and Fractions		
<p>Math Message Follow-Up</p> <p><i>(Teacher's Lesson Guide, page 725)</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 5.2, GMP 6.3</p>	<p>How do you know whether you used the <i>fewest</i> number of base-10 blocks to show 36?</p>
<p>Exploration C: Finding Fractions of Fractions of Regions</p> <p><i>(Teacher's Lesson Guide, page 727)</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 4.2, GMP 7.1, GMP 8.2</p>	<p>What rule can you make to help you complete the number models without folding the rectangles on <i>Math Masters</i>, page 277?</p> <p>Use your rule to predict $\frac{1}{8}$ of $\frac{1}{2}$ of a rectangle. Check your prediction by folding rectangle I.*</p> <p>How did the patterns in the number models help you make up the rule?</p>
Lesson 9-4 A Multiplication Algorithm		
<p>Introducing a Multiplication Algorithm</p> <p><i>(Teacher's Lesson Guide, pages 731–733)</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 5.2, GMP 6.3</p>	<p>Explain how the array you made for Problem 1 on <i>Math Masters</i>, page 279, is a way to model 4×28.</p> <p>What are other ways to model multiplication?</p>
<p>Using an Algorithm to Multiply 1-Digit Numbers by Multidigit Numbers</p> <p><i>(Teacher's Lesson Guide, page 733)</i></p>	<p>GMP 3.2 Work to make sense of others' mathematical thinking.</p> <p><i>See also:</i> GMP 1.5, GMP 6.1, GMP 6.3</p>	<p>After completing journal page 214, compare your answers with a partner's answers. If you disagree, discuss your strategies with each other. Then try the problems again.*</p> <p>How could it help you to check your answers with a partner?</p>

Lesson 9-5 Buying at the Stock-Up Sale		
<p>Applying the Partial-Products Algorithm</p> <p><i>(Teacher's Lesson Guide, pages 738-739)</i></p>	<p>GMP 4.2. Use mathematical models such as numbers, graphs, drawings, tables, symbols, and diagrams to solve problems.</p> <p><i>See also:</i> GMP 1.1, GMP 1.2, GMP 2.1, GMP 4.1, GMP 6.3</p>	<p>What do you need to know before you write a number model for a number story?</p> <p>How can number models help you solve number stories?</p>
<p>Solving Stock-Up Sale Stories</p> <p><i>(Teacher's Lesson Guide, page 740)</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 3.2, GMP 4.1, GMP 4.2, GMP 6.3</p>	<p>How could you use your estimates on journal page 217 to check your answers?</p> <p>When should you check whether your answers make sense? Why?</p>
Lesson 9-6 Factors of a Whole Number		
<p>Math Message Follow-Up</p> <p><i>(Teacher's Lesson Guide, pages 743–744)</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>Describe the factors of 24.*</p> <p>How do you know whether you named all of the factors of 24?</p>
<p>Introducing <i>Factor Bingo</i></p> <p>Playing <i>Factor Bingo</i></p> <p><i>(Teacher's Lesson Guide, page 745)</i></p>	<p>GMP 1.1 Work to make sense of your problem.</p> <p><i>See also:</i> GMP 1.4, GMP 7.1, GMP 7.2</p>	<p>Which numbers at the bottom of journal page 219 have the most factors?</p> <p>Can you choose numbers for your board that will give you a better chance of winning?</p>

Lesson 9-7 Sharing Money		
<p>Sharing Play Money</p> <p><i>(Teacher's Lesson Guide, pages 749–750)</i></p>	<p>GMP 4.2 Use mathematical models such as numbers, graphs, drawings, tables, symbols, and diagrams to solve problems.</p> <p><i>See also:</i> GMP 1.1, GMP 1.2, GMP 1.3, GMP 1.5, GMP 2.2, GMP 4.1, GMP 5.2</p>	<p>Ask a volunteer to write a division number model for the story about sharing \$54 equally among 3 people on the board while the rest of the children write it in their journals.*</p> <p>How can sharing money help you to write division number models for equal-sharing number stories?</p>
<p>Solving Division Problems</p> <p><i>(Teacher's Lesson Guide, page 751)</i></p>	<p>GMP 1.3 Try different approaches when your problem is hard.</p> <p><i>See also:</i> GMP 1.1, GMP 2.1, GMP 4.2, GMP 6.3</p>	<p>What could you try if you are not sure how to solve the problems on journal page 222?</p> <p>What can you learn from trying to solve difficult math problems?</p>
Lesson 9-8 Broken-Calculator Division		
<p>Math Message Follow-Up</p> <p><i>(Teacher's Lesson Guide, pages 755–756)</i></p>	<p>GMP 6.3 Be accurate when you count, measure, and calculate.</p> <p><i>See also:</i> GMP 1.5, GMP 2.1, GMP 2.2, GMP 4.2, GMP 6.2</p>	<p>In the problem about the farmer packing his eggs, what does the 20.5 in the calculator display stand for?*</p> <p>Is 20.5 cartons the answer to the problem?*</p> <p>Why do you have to understand what the decimals in your calculator display mean before you can tell the answer?</p>
<p>Exploring Strategies for Finding Quotients</p> <p><i>(Teacher's Lesson Guide, pages 756–757)</i></p>	<p>GMP 1.4 Solve your problem in more than one way.</p> <p><i>See also:</i> GMP 1.5, GMP 3.2, GMP 6.1, GMP 6.3</p>	<p>Explain ways that you could use a calculator with a broken division key to solve the following problem: A farmer packs 576 eggs into cartons that hold a dozen eggs each. How many full cartons does she pack?*</p>

Lesson 9-9 Lattice Multiplication		
<p>Exploring the Lattice Method of Multiplication</p> <p><i>(Teacher's Lesson Guide, pages 761–762)</i></p>	<p>GMP 7.2 Use patterns and structures to solve problems.</p> <p><i>See also:</i> GMP 2.1, GMP 3.2, GMP 6.3, GMP 7.1</p>	<p>What is the same about all of the problems in Column A on journal page 226?</p> <p>How could the problems in Column A help you solve the problems in Column B?</p>
<p>Practicing Lattice Multiplication</p> <p><i>(Teacher's Lesson Guide, page 763)</i></p>	<p>GMP 5.2 Use mathematical tools correctly and efficiently.</p> <p><i>See also:</i> GMP 2.1, GMP 3.2, GMP 6.3, GMP 7.2</p>	<p>Explain how you solved Problem 1 on journal page 227.</p> <p>Would you recommend using the lattice method of multiplication to a friend? Why or why not?</p>
Lesson 9-10 Exploring Arrays, Equilateral Triangles, and Strength of Paper		
<p>Exploration E: Finding Number Patterns by Building Equilateral Triangles</p> <p><i>(Teacher's Lesson Guide, page 769)</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 4.1, GMP 7.2</p>	<p>What happened to the number of 1-inch triangles as the equilateral triangles got larger? Why do you think this happened?</p> <p>How many 1-inch triangles would fit inside a larger triangle measuring 12 inches on each side?</p>
<p>Exploration F: Building Bridges and Testing Their Strength</p> <p><i>(Teacher's Lesson Guide, page 769)</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>Look at your completed record sheet. What are some things that you can say about the three bridges and the weights they can hold?</p> <p>If you were building something, what shape might you use to hold lots of weight?</p>

Lesson 9-11 Products of 2-Digit Numbers, Part 1		
<p>Extending the Partial-Products Algorithm</p> <p><i>(Teacher's Lesson Guide, pages 774–775)</i></p>	<p>GMP 8.2 Use properties, rules, and shortcuts to solve problems.</p> <p><i>See also:</i> GMP 1.1, GMP 2.1, GMP 2.2, GMP 4.2, GMP 7.1</p>	<p>What multiplication shortcuts might help you solve multiplication problems with multiples of 10?</p> <p>How could knowing the basic facts and these shortcuts help you solve multiplication problems with 2-digits?</p>
<p>Using the Partial-Products Algorithm</p> <p><i>(Teacher's Lesson Guide, page 775)</i></p>	<p>GMP 3.1 Explain both what to do and why it works.</p> <p><i>See also:</i> GMP 1.3, GMP 2.1, GMP 2.2, GMP 3.2, GMP 6.3</p>	<p>How did you use partial products to solve one of the problems on journal page 233? Explain to your partner what you did and why you did it that way.</p> <p>Would you recommend using the partial-products method to someone? Explain your reasons.</p>
Lesson 9-12 Products of 2-Digit Numbers, Part 2		
<p>Extending the Partial-Products Algorithm</p> <p><i>(Teacher's Lesson Guide, pages 779 –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 4.2, GMP 6.3, GMP 7.2</p>	<p>How might the different colors used in the arrays that represent 2-digit multiplication help you solve multiplication problems?</p> <p>How could arrays help you solve partial-products problems?</p> <p>How do visual models help you solve problems?</p>
<p>Finding Products of 2-Digit Numbers</p> <p><i>(Teacher's Lesson Guide, page 781)</i></p>	<p>GMP 3.1 Explain both what to do and why it works.</p> <p><i>See also:</i> GMP 1.3, GMP 2.1, GMP 2.2, GMP 3.2, GMP 6.3</p>	<p>Why might you have to try one or more of the problems on journal page 235 again?</p> <p>How could you help your partner redo one of these problems?</p>

Lesson 9-13 Positive and Negative Numbers		
<p>Writing Temperature above and below Zero</p> <p><i>(Teacher's Lesson Guide, page 786)</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 4.1</p>	<p>Pretend someone tells you that the temperature is 46. What is missing from what they said?</p> <p>How do thermometers help you read and write the temperature?</p>
<p>Expressing Changes with Positive and Negative Numbers</p> <p>Solving Number Stories with Positive and Negative Numbers</p> <p><i>(Teacher's Lesson Guide, page 787)</i></p>	<p>GMP 4.1 Apply mathematical ideas to real-world situations.</p> <p><i>See also:</i> GMP 1.1, GMP 2.1, GMP 4.2, GMP 5.1, GMP 6.3</p>	<p>What types of problems did you do today that used negative numbers?</p> <p>Write your own number story using positive and negative numbers.*</p> <p>When might you use negative numbers in your life?</p>

*denotes a question that is currently in the *Everyday Mathematics* materials

Grade 3 Unit 10: Measurement and Data

Activity	<i>Everyday Mathematics</i> Goal for Mathematical Practice	Guiding Questions
Lesson 10-1: Review: Length		
Discussing Tools Used to Measure Distances <i>(Teacher's Lesson Guide, page 810)</i>	GMP 5.1 Choose appropriate tools for your problem. <i>See also:</i> GMP 5.3, GMP 6.2	Would it make sense to measure the distance between two cities with a yardstick? Why or why not? How could you measure the circumference (distance around) of the lid of a jar?
Renaming Measurements <i>(Teacher's Lesson Guide, pages 810–811)</i>	GMP 7.2 Use patterns and structures to solve problems. <i>See also:</i> GMP 2.1, GMP 5.2	What information do you need to figure out an equivalent name for 18 inches? What do you know about equivalent measures for 1 foot, 1 yard, and 1 meter that can help you when finding equivalent measurements for n feet, n yards, and n meters?
Lesson 10-2: Volume		
Math Message Follow-up <i>(Teacher's Lesson Guide, page 815)</i>	GMP 3.2 Work to make sense of others' mathematical thinking. <i>See also:</i> GMP 2.1, GMP 6.1	Would you change an answer that your classmate gave to your question about area in any way? Why or why not? How might talking about math questions and their answers with others help you understand more about mathematics?
Introducing the Volume of a Rectangular Prism <i>(Teacher's Lesson Guide, pages 815–817)</i>	GMP 5.3 Estimate and use what you know to check the answers you find using tools. <i>See also:</i> GMP 2.1, GMP 4.1, GMP 6.3	How do your estimates on journal page 244 compare to the actual number of cubes in each box? When might you need to estimate the volume of something?

Lesson 10-3: Weight		
<p>Math Message Follow-Up</p> <p><i>(Teacher's Lesson Guide, page 820)</i></p>	<p>GMP 6.1 Communicate your mathematical thinking clearly and precisely.</p> <p><i>See also:</i> GMP 2.2</p>	<p>What parts of the discussion about the meaning of weight and units of weight could help you better understand what weight means?</p>
<p>Naming Objects to Weigh with Scales</p> <p><i>(Teacher's Lesson Guide, page 821)</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 5.1</p>	<p>Which scales have you used or seen someone use in real life? What were you (or someone else) weighing?</p> <p>If you wanted to weigh yourself, which scale would you use? Why?</p>
Lesson 10-4: Exploring Weight and Volume		
<p>Exploration B: Measuring Mass of Objects</p> <p><i>(Teacher's Lesson Guide, page 827)</i></p>	<p>GMP 5.2 Use mathematical tools correctly and efficiently.</p> <p><i>See also:</i> GMP 2.1, GMP 6.1</p>	<p>Why do you need to zero the pan balance before using it?</p> <p>Why might you use the liter bottle of water instead of the base-10 cubes to balance the pans?</p>
<p>Exploration C: Weighing Objects on Scales</p> <p><i>(Teacher's Lesson Guide, page 828)</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 3.2, GMP 5.2</p>	<p>How might the weights of the benchmark items help you estimate the weights of other items? Give an example.</p> <p>How can you get more accurate at estimating weight?</p>
Lesson 10-5: Capacity		
<p>Math Message Follow-Up</p> <p><i>(Teacher's Lesson Guide, page 831)</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 3.1</p>	<p>When might you need to know how many cups are in a pint (or other measurement equivalences)?</p> <p>When can measurement equivalencies help you in real life?</p>

<p>Working with Units of Measure</p> <p><i>(Teacher's Lesson Guide, page 833)</i></p>	<p>GMP 6.2 Use the level of precision you need for your problem.</p> <p><i>See also:</i> GMP 2.1, GMP 4.1, GMP 5.1</p>	<p>Could you use a foot to measure the thickness of a dime?* Why or why not?</p> <p>What does it mean to be precise in measuring?</p>
Lesson 10-6: The Mean and the Median		
<p>Math Message Follow-Up</p> <p><i>(Teacher's Lesson Guide, page 836)</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 6.1</p>	<p>What do the numbers and bars represent on the graph on journal page 253?</p> <p>What information does this bar graph show?</p>
<p>Finding the Mean Number of Children</p> <p><i>(Teacher's Lesson Guide, pages 836–837)</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 1.4, GMP 2.1, GMP 4.1, GMP 6.1</p>	<p>How could you use the bar graph and counters to figure out the mean (or average) number of children in the families?</p> <p>Which method do you prefer for finding the mean: using the bar graph or drawing a circle for each family? Why?</p>
Lesson 10-7: Calculating the Mean		
<p>Finding the Mean Arm Span of the Class</p> <p><i>(Teacher's Lesson Guide, pages 842–843)</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 does the median arm span and the mean arm span help you know about arm spans in our class?</p> <p>Why might someone need to find the median of a set of data in the real world? The mean?</p>
<p>Finding Median and Mean Heights and Arm Spans</p> <p><i>(Teacher's Lesson Guide, page 843)</i></p>	<p>GMP 6.1 Communicate your mathematical thinking clearly and precisely.</p> <p><i>See also:</i> GMP 1.1, GMP 3.2</p>	<p>How did you find the median height of the adults and children for your group?</p> <p>How did you find the mean height of the adults and children for your group?</p>

Lesson 10-8: Calculator Memory		
<p>Playing <i>Memory Addition/Subtraction</i></p> <p>(<i>Teacher's Lesson Guide</i>, page 849)</p>	<p>GMP 3.2 Work to make sense of others' mathematical thinking.</p> <p><i>See also:</i> GMP 1.5, GMP 5.2, GMP 6.3</p>	<p>What are some ways to keep track of what your partner adds or subtracts on the calculator?</p>
<p>Using Memory Keys on the Calculator</p> <p>(<i>Teacher's Lesson Guide</i>, page 849)</p>	<p>GMP 1.5 Check whether your answer makes sense.</p> <p><i>See also:</i> GMP 5.2, GMP 6.3</p>	<p>How did you make your guess for each problem on journal page 258?</p> <p>How did you check your guess using the calculator memory?</p> <p>What other tools could help you check whether an answer makes sense?</p>
Lesson 10-9: Frequency Distributions		
<p>Making a Frequency Table of Waist-to-Floor Measurements</p> <p>(<i>Teacher's Lesson Guide</i>, page 853)</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 4.1, GMP 6.3</p>	<p>What does each tally mark represent?</p> <p>What other kinds of data could you represent in a frequency table?</p>
<p>Finding the Median and Mean of the Data Set</p> <p>(<i>Teacher's Lesson Guide</i>, page 854)</p>	<p>GMP 1.4 Solve your problem in more than one way.</p> <p><i>See also:</i> GMP 2.1, GMP 5.2, GMP 6.3</p>	<p>Which is more efficient – finding the median from the unordered data on the Class Data Pad or from the frequency table? Why?*</p> <p>Did anyone use the memory keys on the calculator to find the mean? How might you do this?*</p>

Lesson 10-10: Coordinate Grids		
<p>Using Ordered Pairs to Locate Points</p> <p><i>(Teacher's Lesson Guide, pages 859–860)</i></p>	<p>GMP 8.2 Use properties, rules, and shortcuts to solve problems.</p> <p><i>See also:</i> GMP 2.1, GMP 6.3</p>	<p>What rules do you need to follow when locating points on a coordinate grid using ordered pairs?</p> <p>What other kinds of rules do you use in math?</p>
<p>Plotting Points on a Coordinate Grid</p> <p><i>(Teacher's Lesson Guide, page 860)</i></p>	<p>GMP 3.2 Work to make sense of others' mathematical thinking.</p> <p><i>See also:</i> GMP 2.1, GMP 6.3, GMP 8.2</p>	<p>How could you check whether your partner plotted the ordered pairs correctly?</p> <p>How would you help if your partner was plotting the ordered pairs by first moving up the grid and then to the right?</p>

*denotes a question that is currently in the *Everyday Mathematics* materials

Grade 3 Unit 11: Probability; Year-Long Projects, Revisited

Activity	<i>Everyday Mathematics</i> Goal for Mathematical Practice	Guiding Questions
Lesson 11-1: Length of Day Project Revisited		
Discussing the Length-of-Day Graph <i>(Teacher's Lesson Guide, page 880)</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, GMP 7.1	How does the length-of-day graph help you answer questions about the shortest and longest days of the year? What other questions could your length-of-day graph help you answer?
Discussing the Sunrise/Sunset Record <i>(Teacher's Lesson Guide, pages 880–881)</i>	GMP 4.1 Apply mathematical ideas to real-world situations. <i>See also:</i> GMP 2.1, GMP 2.2, GMP 4.2	How could you use the Sunrise/Sunset Chart to describe how light or dark it will be during different seasons? Why might this information be helpful?
Lesson 11-2: National High/Low Temperatures Summaries		
Activity 1: Reporting Extreme Temperatures <i>(Teacher's Lesson Guide, page 884)</i>	GMP 7.1 Find, extend, analyze, and create patterns. <i>See also:</i> GMP 2.1, GMP 4.1, GMP 4.2, GMP 7.2	Can you find any geographical patterns?* Are any states on both lists?* What could these patterns tell you about extreme temperatures?
Activity 2: Finding the Most Frequent Temperature Difference <i>(Teacher's Lesson Guide, page 885)</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	How would your frequency chart look different if you organized temperature differences by 1-degree intervals? How could organizing data help you use it to solve problems?

Lesson 11-3: Spinner Experiments		
Demonstrating Making and Using a Spinner <i>(Teacher's Lesson Guide, page 889)</i>	GMP 5.2 Use mathematical tools correctly and efficiently. <i>See also:</i> GMP 4.1	How can you make sure you are using your spinner correctly? What could happen that would make a spin <i>not</i> fair?
Conducting Equally Likely and Not Equally Likely Experiments <i>(Teacher's Lesson Guide, pages 890–891)</i>	GMP 8.3 Reflect on your thinking before, during, and after you solve a problem. <i>See also:</i> GMP 2.1, GMP 2.2, GMP 3.2, GMP 6.1, GMP 8.1	Did your thoughts about the chances of the paper clip landing on the shaded and unshaded parts of the spinners change as you used the spinners? How? Why is it more likely that the actual results more closely match the predicted results when you collect a lot of data?
Lesson 11-4: Designing Spinners		
Math Message Follow-Up <i>(Teacher's Lesson Guide, pages 895–896)</i>	GMP 1.1 Work to make sense of your problem. <i>See also:</i> GMP 1.3	What does <i>same chance</i> mean? How is this important to solving Problem 1 on journal page 272? How might the degree marks on the edge of the circle help you solve the problem?
Designing Spinners to Match Given Descriptions <i>(Teacher's Lesson Guide, page 896)</i>	GMP 1.4 Solve your problem in more than one way. <i>See also:</i> GMP 1.3, GMP 3.2	What are different ways to design a spinner so the paper clip is twice as likely to land on blue as on red? How can there be different ways to design spinners with a predicted outcome?
Lesson 11-5: Using Data to Predict Outcomes		
Making Predictions <i>(Teacher's Lesson Guide, page 902)</i>	GMP 7.2 Use patterns and structures to solve problems. <i>See also:</i> GMP 1.1, GMP 2.1, GMP 4.1, GMP 6.2, GMP 7.1	How could you use the data to predict how many teachers could be left-handed? What else could you predict using this data?

<p>Solving Random-Draw Problems</p> <p><i>(Teacher's Lesson Guide, page 902)</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 2.2, GMP 3.2</p>	<p>For each problem, how did you choose which jar represents the data?</p> <p>Why does your method work?</p>
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*denotes a question that is currently in the *Everyday Mathematics* materials