Grade 7 • Curriculum Correlation

Grades 4–8 • Open Questions for the Three-Part Lesson and the Grade 7 2020 Ontario Curriculum

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Open Questions for the Three-Part Lesson: *Number Sense and Numeration* [Number]

2020 Ontario Curriculum Expectations	Open Questions for the Three-Part Lesson: Number Sense and Numeration	Book & Page #
B. NUMBER		
B1. Number Sense **Overall Expectation:** By the end of Grade 7, students will demonstrate an understanding of numbers and make connections to the way numbers are used in everyday life		
Whole Numbers		
B1.1 read and compare whole numbers up to and including one billion, including in expanded form using powers of ten, and describe various ways they are used in everyday live	There are no Grade 7 Open Questions that meet this 2020 curriculum expectation.	
B1.2 identify and represent perfect squares, and determine their square roots, in various contexts	There are no Grade 7 Open Questions that meet this 2020 curriculum expectation.	
B1.3 read, represent, compare, and order rational numbers, including positive and negative fractions and decimal numbers to thousandths, in various contexts	**Q:** A rational number is just a little less than −.. What could this rational number be?	Number • Page 202
	Q: What are some ways you might represent −⅔?	
	Q: Suppose − 141a b > − 141cd. Explain which of the following could happen and when it could happen: a) a and b are closer together than c and d. ...	Number • Page 203
	Q: Use the digits 0 to 9 to order the fractions from least to greatest. Use each digit only once. Try to do it three or more ways.	
	Q: How could you justify why −⅔ < −.?	Number • Page 204

Fractions, Decimals, and Percents		
B1.4 use equivalent fractions to simplify fractions, when appropriate, in varous contexts	**Q:** Do you think that two negative integers could have the same difference as two positive integers? Why or why not?	Number • Page 173
	Q: Think about the different things that 5 − 2 could mean. Using these meanings, what should −2 − 2 mean?	
	Q: Without using a rule, explain why it makes sense that −4 − (−8) is less than −4 − (−10).	
B1.5 generate fractions and decimal numbers between any two quantities	**Q:** Fill in the blanks to make this expression true. Repeat with different digits.	Number • Page 158
B1.6 round decimal numbers to the nearest tenth, hundredth, or whole number, as applicable, in various contexts	There are no Grade 7 Open Questions that meet this 2020 curriculum expectation.	
B1.7 convert between fractions, decimal numbers, and percents, in various contexts	**Q:** A certain fraction is close to 30%. What might it be?	Number • Page 161
	Q: Find a recipe or a set of building instructions that uses lots of fractions. Rewrite the recipe or instructions using percents or decimals. Which version of the recipe or instructions do you think is better? Why?	Number • Page 162
	Q: Use all the digits from 0 to 9 to make these expressions true. Use each digit only once.	
	Q: Jane said that 3/10s is 3% instead of 30%. How could you convince her she is wrong?	Number • Page 163
	Q: People say that 57% is greater than 53% since 57 is greater than 53, but 57% is not 57 and 53% is not 53. Why are they still right?	
	Q: Can you think of a situation where comparing two fractions directly is easier than converting them to decimals or percents in order to compare them?	
	Q: Do you think that it is easiest to use decimals, percents, or fractions? Why?	

B2. Operations **Overall Expectation:** By the end of Grade 7, students will: use knowledge of numbers and operations to solve mathematical problems encountered in everyday life		
Properties and Relationships		
B2.1 use the properties and order of operations, and the relationships between operations, to solve problems involving whole numbers, decimal numbers, fractions, ratios, rates and percents, including those requiring multiple steps or multiple operations	**Q:** Do you think everyone will get the same result when calculating 3 + 4 X 7?	Number • Page 142
	Q. Create four different expressions, each involving at least three operations, which might be calculated differently if the person calculating did not know the rules for order of operations. Indicate which value is actually correct and why.	Number • Page 143
	Q. You want to divide a number in your head by first dividing it by a bigger number. What might you be dividing by and why?	Number • Page 144
	Q. Do you think we would need rules for the order of operations if all the math we did were based on story problems?	
	Q. Why might it be less obvious what X is than what X is?	
	Q: You have to subtract 3.89 from another number. What number would make the subtraction easy to do using mental math?	Number • Page 178
	Q: Create an expression using the numbers 4, 4.2, 5.1, and 6. Then, add parentheses that will change the result.	
	Q: Create three or more problems that you could solve by adding 4.25 and 3.8, then dividing by 3, and finally multiplying by 2.	Number • Page 179
	Q: A real-world problem involves four numbers. Two or more of these numbers are decimals. Solving the problem involves performing two or more operations. A reasonable estimate for the answer is 15. What might the problem be? Think of three or more possibilities.	
	Q: You are going to add 4.26 to 5.761. How could you do that mentally?	Number • Page 180
	Q: Why might different people estimate 4.58 + 3.59 different ways?	

Math Facts		
B2.2 understand and recall commonly used percents, fractions, and decimal equivalents	There are no Grade 7 Open Questions that meet this 2020 curriculum expectation.	

Mental Math		
B2.3 use mental math strategies to increase and decrease a whole number by 1%, 5%, 10%, 25%, 50%, and 100% and explain the strategies used	There are no Grade 7 Open Questions that meet this 2020 curriculum expectation.	

Addition and Subtraction		
B2.4 use objects, diagrams and equations to represent, describe, and solve situations involving addition and subtraction of integers	**Q:** Do you think that two negative integers could have the same difference as two positive integers? Why or why not?	Number • Page 173
	Q: Think about the different things that 5 − 2 could mean. Using these meanings, what should −2 − 2 mean?	
	Q: Without using a rule, explain why it makes sense that −4 − (−8) is less than −4 − (−10).	
	Q: The sum of two integers is four times their difference. What could the integers be? Think of three or more possibilities.	Number • Page 174
	Q: The sum and difference of two integers are 38 apart on a number line. What could the integers be? Show your answer on a number line.	
	Q: Choose a number between 1 and 10 for the [] . If you use [] times as many negative counters as positive counters, what integers can you represent?	
	Q: Create pairs of integers that meet the following requirements. Explain your thinking.	
	Q: Choose an integer you can represent with 10 tiles. Some of these 10 tiles are marked +1 and some are marked –1. Then, add that integer to a number represented with 6 tiles, all marked –1. What is the sum of the two integers? How many tiles would you need to represent the sum?	Number • Page 175
	Q: a − b = −8 and b is less than 10. What could a be?	
	Q: Choose a very negative integer and a very positive integer that are not the same distance from 0. What are their sum and their difference? Explain your answer.	

B2.5 add and subtract fractions , including by creating equivalent fractions, in various contexts	**Q:** You are going to subtract two fractions, and you are sure the answer is less than even without doing the subtraction. What could the fractions be?	Number • Page 184
	Q: You are going to add two fractions, and you are sure the answer is less than ., even without doing the addition. What could the fractions be?	
	Q: You add two fractions. Each fraction is worth less than 1, and the sum is slightly less than 1 15 . What could the fractions be? Think of three or more possibilities.	Number • Page 185
	Q: Choose two fractions so that when you add them, the sum is ⅔ greater than the difference when you subtract them. What could the fractions be? Are these the only possibilities? How do you know whether these are the only possibilities?	Number • Page 186
	Q: Amir said that to add two fractions, you can add the two numerators to get the numerator of the sum and add the two denominators to get the denominator of the sum. How would you convince Amir that he is wrong? Could Amir be right?	
	Q: The difference between two fractions is .. What could the two fractions be if their denominators are not 4? Think of three or more sets of fractions. How can you easily create more sets of fractions?	

Multiplication and Division		
B2.6 determine the greatest common factor for a variety of whole numbers up to 144 and the lowest common multiple for two and three whole numbers	**Q:** What do the numbers 64 and 100 have in common?	Number • Page 166
	Q: Name two numbers that are different, but have exactly the same numbers for prime factors. Name two or more other pairs of numbers with the same prime factors. What do you notice?	Number • Page 206
	Q: Choose a manipulative that you could use to show a common multiple and a common factor of a two-digit number and one-digit number of your choice. Using the same numbers, repeat with another manipulative. Then, repeat the whole thing with other sets of numbers.	Number • Page 207
	Q: Two numbers, each number with three prime factors, have eight common factors. What could the numbers be? List three common multiples of the two numbers. Explain why they have eight common factors.	Number • Page 208
	Q: List two numbers less than 10 that could not possibly be common factors of _. Then, list three numbers that definitely are. Explain.	Number • Page 209
	Q: How could you show why 45 is a common factor of 450 and 315?	
	Q: How could you show that 90 is a common multiple of 6 and 45?	

B2.7 evaluate and express repeated multiplication of whole numbers using exponential notation, in various contexts	**Q:** A certain fraction is close to 30%. What might it be?	Number • Page 161
	Q: Use all the digits from 0 to 9 to make these expressions true. Use each digit only once.	Number • Page 162
	Q: Find a recipe or a set of building instructions that uses lots of fractions. Rewrite the recipe or instructions using percents or decimals. Which version of the recipe or instructions do you think is better? Why?	
	Q: A number is created by multiplying several 2s by several 5s. What could the number be? Show how you calculated it.	Number • Page 198
	Q: A number greater than 10 420 is written as the sum of powers of 10 (in expanded notation). What do you know about the expanded form?	
	Q: How is 23 like 2 X 3? How is it different?	
	Q: Use the form □, replacing the s with whole numbers, to create at least eight numbers with values between 1000 and 2000. Do you think there are other numbers with values between 1000 and 2000? Why or why not?	Number • Page 199
	Q: Suppose you use different numbers for x and y. When is xy > yx? When is xy < yx?	
	Q: Find as many instances as you can when each of these is true: ...	
	Q: Place the digits 2, 3, 4, 5, 6, and 8 in the blanks, and then write the number in standard form. Use each digit only once.	
	Q: Choose numbers between 1 and 15 for the blanks. Find the product and then write it in standard form.	Number • Page 200
	Q: Do you think that a change in the base or a change in the exponent has more effect on the size of a number?	
	Q: The number □ is much greater than 1000. What numbers might go in the two blanks? (You can use different numbers for the base and the exponent.) How do you know your numbers are correct?	
	Q: Do you think it's easier to change powers of 4 or powers of 5 to powers of other numbers? Explain.	

B2.7 (continued)	**Q:** Create a problem where you would add and multiply a decimal number to solve it. What is the answer?	Number • Page 214
	Q: You divide a decimal number by another number. The result has the same digits, but the decimal point moves two places. What number could you have divided by what number? Explain why.	
	Q: You solved a problem involving multiplying decimals, and the answer was close to 4.2. What could the problem have been?	
	Q: Do you think that 3(2+1) and 32 + 1 should be worth the same or not? Explain.	Number • Page 220
	Q: If ab < ba, what might a and b be?	Number • Page 222

B2.8 multiply and divide fractions by fractions, using tools in various contexts	**Q:** How might you use drawings or tools to help you figure out what 5 divided by 0.2 is?	Number • Page 181
	Q: How might you use pattern blocks to show a fraction multiplication question?	Number • Page 215
	Q: Use a series of diagrams to show why a lot of fraction products can be ...	Number • Page 217

B2.9 multiply and divide decimal numbers by decimal numbers, in various contexts	**Q:** The product of two decimal numbers is close to 16. What might the numbers be?	Number • Page 178
	Q: What sorts of problems might involve multiplying decimal numbers?	Number • Page 180
	Q: Explain why 12 divided by 0.25 is greater than 12 without actually figuring out the answer.	Number • Page 183
	Q: What division question involving decimals could you solve by counting out how many coins are in a larger amount of money?	
	Q: The answer to 5 X 43 is the same as the answer you get when you multiply a different whole number by a different fraction. What could the other whole number and fraction be?	Number • Page 186
	Q: How is dividing by 3.14 like dividing by a whole number? How is it different from dividing by a whole number?	Number • Page 212

B2.10 identify proportional and non-proportional situations and apply proportional reasoning to solve problems	**Q:** Choose a rate to describe a realistic scale for a map of a real place. Then, decide how far apart five pairs of places would be on the map. Explain your thinking.	Number • Page 189
	Q: Choose a car speed. Then, describe that same speed using as many alternative rates as you can. Make sure that some of your alternative descriptions are unit rates.	
	Q: Use a store flyer or the Internet to find 10 prices that are written as rates. For example, you might find 2 for $1.35, or 1 L for $1.99. Convert each price into several other unit rates. Which rates are more useful to write as unit rates? Which rates are not useful as unit rates?	
	Q: Fill in the blanks with decimal numbers so that the statements are realistic.	Number • Page 190
	Q: Describe a problem where you would calculate a unit rate by multiplying. Then, describe a problem where you would calculate a unit rate by dividing.	
	Q: Give an example of when you might use a unit rate to compare two rates.	
	Q: A map's scale is given as a ratio such as 1:10 000, 1:1000, or 1:200. Choose a map ratio, and rewrite it as a rate using two different units.	
	Q: Suppose you knew how far you could drive in 35 minutes. For what other times would it be easy for you to calculate how far you could drive?	Number • Page 227
	Q: Describe a situation where if you double one amount, a related amount also doubles.	Number • Page 228
	Q: You want to draw a graph to show the relationship between two amounts, but you want the graph to be a line. What might the relationship between the two amounts be?	Number • Page 230
	Q: Describe a situation where you might figure out something by using the proportion $\frac{3}{8} = \frac{21}{8}$.	

Open Questions for the Three-Part Lesson: *Measurement • Patterning & Algebra* [MPA]

C. ALGEBRA		
C1. Patterns and Relationships **Overall Expectation:** By the end of Grade 7, students will identify, describe, extend, create, and make predictions about a variety of patterns, including those found in real-life contexts		
Patterns		
C1.1 identify and compare a variety of repeating, growing, and shrinking patterns, including patterns found in real-life contexts, and compare linear growing patterns on the basis of their constant rates and initial values	There are no Grade 7 Open Questions that meet this 2020 curriculum expectation.	
C1.2 create and translate repeating, growing, and shrinking patterns involving whole numbers and decimal numbers using various representations, including algebraic expressions and equations for linear growing patterns	**Q:** You have to predict the 100th term of a pattern where the terms increase by the same amount each time. Think of a pattern for which it would be easy for you to predict the 100th term. Why is it easy?	MPA • Page 138
	Q: What pattern might this graph represent? Explain your thinking.	
	Q: Choose a value. Create a pattern that shows the multiples of that number (the number × 1, the number × 2, the number × 3, and so on), and show the first 6 terms. Build a model of your pattern using toothpicks. Explain how you would figure out the 40th term. Write the general term using an algebraic expression.	MPA • Page 139
	Q: You use toothpicks to build a pattern that requires 4 more toothpicks for each term than it requires for the term before. What could your pattern be? How many terms could you show with 200 toothpicks in total?	
	Q: Create a linear growing pattern by making a pattern in which each term increases by the same amount to get the next term. Create two other patterns that include all the same values as the first pattern but have other terms too. How are the increases from term to term related?	MPA • Page 140
	Q: A linear growing pattern is graphed on a coordinate grid. The graph goes through the point (10, 32). What could the pattern be? Write the first 10 rows of its table of values. What is the pattern rule?	

C1.2 (continued)	**Q:** Choose three possible speeds (in km/h) that a car might be travelling on a highway. Create a pattern for each speed to show the distances travelled in different numbers of hours. Graph each pattern. What do you notice? How could you describe each distance travelled over different numbers of hours using an algebraic expression?	MPA • Page 144
	Q: Create an algebraic expression involving the variable *n*. Create a pattern whose 1st, 2nd, 3rd, ... terms are the values you get when *n* = 1, 2, 3, ... Make sure that 150 is included in your pattern. Which term number is 150? Repeat for two or more expressions.	MPA • Page 145
C1.3 determine pattern rules and use them to extend patterns, make and justify predictions, and identify missing elements in repeating, growing, and shrinking patterns involving whole numbers and decimal numbers, and use algebraic representations of the pattern rules to solve for unknown values in linear growing patterns	**Q:** Is it easier for you to predict the 100th term of Pattern A or of Pattern B? Explain. Pattern A: Start at 1 and keep adding 5. Pattern B: The value of a term is 2 more than 7 times its term number.	MPA • Page 138
	Q: Two patterns start at the same number, but one gets to greater numbers much faster. What could the pattern rules for the two patterns be?	
	Q: Choose a value. Create a pattern that shows the multiples of that number (the number × 1, the number × 2, the number × 3, and so on), and show the first 6 terms. Build a model of your pattern using toothpicks. Explain how you would figure out the 40th term. Write the general term using an algebraic expression.	MPA • Page 139
	Q: Start with a number greater than 100 as the first term of a pattern. Choose an amount to add to each term to get the next term. Show two ways to predict the 50th term.	
	Q: Choose a value less than 20 to start a pattern. Add that value to get from one term to the next. What algebraic expression could describe the general term?	
	Q: You use toothpicks to build a pattern that requires 4 more toothpicks for each term than it requires for the term before. What could your pattern be? How many terms could you show with 200 toothpicks in total?	
	Q: Pattern A passes a term value of 1000 before Pattern B does, but Pattern B passes a term value of 600 faster than Pattern A does. What could the rules for each pattern be? ...	MPA • Page 140
	Q: A linear growing pattern is graphed on a coordinate grid. The graph goes through the point (10, 32). What could the pattern be? Write the first 10 rows of its table of values. What is the pattern rule?	

C1.3 (continued)	**Q:** The *n*th term of a pattern is $k \times n$. Choose a value for *k* and describe the pattern.	MPA • Page 141
	Q: Choose a number greater than 83 to be the first term of a pattern. The pattern grows by 1 from term to term. What is the general term for the pattern?	
	Q: Is the 100th term of a linear growing pattern usually double the 50th term? Explain your thinking.	
	Q: How might multiplying by 8 help you figure out the 100th term of this pattern? 9, 17, 25, 33, 41, ...	
	Q: In a certain linear growing pattern, two of the term values are exactly 100 apart. What could the pattern be? Could there be other terms that are exactly 100 apart?	
	Q: Choose three possible speeds (in km/h) that a car might be travelling on a highway. Create a pattern for each speed to show the distances travelled in different numbers of hours. Graph each pattern. What do you notice? How could you describe each distance travelled over different numbers of hours using an algebraic expression?	MPA • Page 144
	Q: Create an algebraic expression involving the variable *n*. Create a pattern whose 1st, 2nd, 3rd, ... terms are the values you get when $n = 1, 2, 3, \ldots$. Make sure that 150 is included in your pattern. Which term number is 150? Repeat for two or more expressions.	MPA • Page 145

C1.4 create and describe patterns to illustrate relationships among integers	There are no Grade 7 Open Questions that meet this 2020 curriculum expectation.	

C2. Equations and Inequalities **Overall Expectation:** By the end of Grade 7, students will demonstrate an understanding of variables, expressions, equalities, and inequalities, and apply this understanding in various contexts		
Variables and Expressions		
C2.1 add and subtract monomials with degree 1 that involve whole numbers, using tools	There are no Grade 7 Open Questions that meet this 2020 curriculum expectation.	
C2.2 evaluate algebraic expressions that involve whole numbers and decimal numbers	**Q:** Create four algebraic expressions involving the variable *n* that use different constants. Create tables of values to show how the values of the expressions change as the value of *n* increases by 1. How do the changes relate to the values in the expressions?	MPA • Page 145
	Q: The value of an algebraic expression involving *p* increases by 10 when *p* increases by 1. What might the expression be?	MPA • Page 146
	Q: Substitute lots of whole-number values for *x* in the expression $3x + 9$. What do you notice about the values you get for the expression? Why does that make sense?	
	Q: The value of the expression $3x + 9$ is a negative integer. What might the value of *x* be? Then, suppose the value of the expression is a fraction or a decimal. What might the value of *x* be?	MPA • Page 174
	Q: Use integer values for *f* and *p,* and evaluate the expression $8f - 6p + 4$. What do you notice about the values that you get for the expression?	MPA • Page 175
	Q: What is a value that you will never get when you evaluate $4x - 12y$ with integer values for *x* and *y*? Explain why you will never get that value.	MPA • Page 178

Equalities and Inequalities		
C2.3 solve equations that involve multiple terms, whole numbers, and decimal numbers in various contexts, and verify solutions	**Q:** Create an equation to model with algebra tiles. Solve the equation. Use tiles as shown for *x*, –1, and 1.	MPA • Page 143
	Q: You model an equation using from 10 to 20 tiles. What equation might you be solving? What is the solution? Use tiles as shown for *x*, −1, and 1.	MPA • Page 144
	Q: Think of something you do every day more than once, for example, brushing your teeth, eating a meal, turning on a light, sending a message, and so on. Use a table of values to estimate how long it would take for you to do this activity 30 000 times.	MPA • Page 145
	Q: An equation that includes –22 has a solution of –4. What could the equation be?	MPA • Page 179
C2.4 solve inequalities that involve multiple terms and whole numbers, and verify and graph the solutions	**Q:** You know that $4x - 8$ is more than $2x$ and x is a positive integer. What else do you know?	MPA • Page 146

C3. Coding **Overall Expectation:** By the end of Grade 7, students will solve problems and create computational representations of mathematical situations using coding concepts and skills		
Coding Skills		
C3.1 solve problems and create computational representations of mathematical situations by writing and executing efficient code, including code that involves events influenced by a defined count and/or sub-program and other control structures	There are no Grade 7 Open Questions that meet this 2020 curriculum expectation.	
C3.2 read and alter existing code, including code that involves events influenced by a defined count and/or sub-program and other control structures, and describe how changes to the code affect the outcomes and the efficiency of the code	There are no Grade 7 Open Questions that meet this 2020 curriculum expectation.	

C4. Mathematical Modelling **Overall Expectation**: By the end of Grade 7, students will apply the process of mathematical modelling to represent, analyse, make predictions, and provide insight into real-life situations		
This overall expectation has no specific expectations. Mathematical modelling is an iterative and interconnected process that is applied to various contexts, allowing students to bring in learning from other strands. Students' demonstration of the process of mathematical modelling, as they apply concepts and skills learned in other strands, is assessed and evaluated.	**Q:** Research how much wood you would need to have to create a bookcase. What area of wood is needed?	MPA • Page 127
	Q: Research sizes and prices of small, medium, and large pizzas. Which pizza is the best deal?	MPA • Page 157
	Q: Research the typical growth of a child from birth until age 18. Describe each stage in terms of what percent and fraction of adult height the child is likely to be.	Number • Page 162
	Q: Record what foods you eat in one day. Calculate how many calories are in each food item. What percent of your calorie intake is at breakfast? Lunch? Dinner? Fruits and vegetables? Think of some other ways to describe your food intake using percents.	Number • Page 192

Open Questions for the Three-Part Lesson:
Geometry and Spatial Sense • Data Management and Probability [GSSDP]

D. DATA		
D1. Data Literacy **Overall Expectation:** By the end of Grade 7, students will manage, analyse, and use data to make convincing arguments and informed decisions, in various contexts drawn from real life		
Data Collection and Organization		
D1.1 explain why percentages are used to represent the distribution of a variable for a population or sample in large sets of data, and provide examples	**Q:** How can you describe something about this data set by using a percentage?	GSSDP • Page 138
D1.2 collect qualitative data and discrete and continuous quantitative data to answer questions of interest, and organize the sets of data as appropriate, including using percentages	**Q:** Pick a topic. Tell what discrete and continuous data could be collected about this topic. Tell how you would collect each.	GSSDP • Page 138
	Q: Research and record secondary data about a topic that interests you. Then, display the data in a circle graph and one other type of graph by using a digital device. Tell why you chose the second graph type for your data. Then, explain how your graphs are similar and different.	GSSDP • Page 140
	Q: Conduct a survey with four or more categories that will help you learn something about your classmates. Next, display the data in a relative frequency table. Then, using a digital device, display the data in a circle graph. Tell what your circle graph highlights about your categorical data.	
	Q: Give an example of when it would be better to use a relative frequency table instead of a circle graph. Then, give an example of when it would be better to use a circle graph instead of a relative frequency table.	GSSDP • Page 141
	Q: Ask your classmates a survey question, and give them three answers to choose from. Then, conduct your survey again, but this time, allow your classmates to answer however they like. Tell what you notice about the results.	GSSDP • Page 144
	Q: This relative frequency table shows data regarding cars that passed through an intersection	GSSDP • Page 148

D1.2 (continued)	**Q:** You would like to form a convincing argument about something food-related. Collect either primary or secondary data about your topic. Using a digital device, make a graph that supports your argument. Tell how your graph does this.	GSSDP • Page 148
	Q: Graphs can be used to show weather trends. Use a digital device to make two graphs that do this. Describe the trend in each one.	GSSDP • Page 149
	Q: How could you organize recyclable materials into different categories?	GSSDP • Page 180
	Q: Conduct a survey about your classmates with the following conditions: • There are three or more categories ...	GSSDP • Page 182
	Q: Survey your classmates on a topic of your choice where the results are numbers. Using a digital device, display the data on two very different types of graphs. Tell which one you think gives a better sense of the data and why.	GSSDP • Page 185

Data Visualization		
D1.3 select from among a variety of graphs, including circle graphs, the type of graph best suited to represent various sets of data, display the data in the graphs with proper sources, titles and labels and appropriate scales; and justify their choice of graphs	**Q:** Which of these graphs is the least like the others?	GSSDP • Page 138
	Q: Collect primary and secondary data that will help you assess the environmental impact of walking, biking, getting a ride, and/or taking the bus to school each day. Display the data on graphs using a digital device. Then, tell how these data values are helpful.	GSSDP • Page 139
	Q: Research and record secondary data about a topic that interests you. Then, display the data in a circle graph and one other type of graph by using a digital device. Tell why you chose the second graph type for your data. Then, explain how your graphs are similar and different.	GSSDP • Page 140
	Q: Conduct a survey with four or more categories that will help you learn something about your classmates. Next, display the data in a relative frequency table. Then, using a digital device, display the data in a circle graph. Tell what your circle graph highlights about your categorical data.	
	Q: What type of graph do you think a circle graph is most like? What type of graph do you think a circle graph is least like? Why?	GSSDP • Page 141
	Q: Daphne is looking at a graph about three companies and makes the following conclusions	GSSDP • Page 143
	Q: Collect primary or secondary data regarding a sport of your choice. Using a digital device, display the data on two of the same type of graph using very different scales for each one. What does each graph suggest about the data?	

D1.3 (continued)	**Q:** This relative frequency table shows data regarding cars that passed through an intersection	GSSDP • Page 148
	Q: You would like to form a convincing argument about something food-related. Collect either primary or secondary data about your topic. Using a digital device, make a graph that supports your argument. Tell how your graph does this.	
	Q: Jacquie is looking at a circle graph and makes the following conclusions:	GSSDP • Page 149
	Q: Graphs can be used to show weather trends. Use a digital device to make two graphs that do this. Describe the trend in each one.	
	Q: A circle graph looks like this: Add information to the graph that makes sense. Draw conclusions about the graph. Then, add different information so that the graph makes sense in another way. Draw conclusions about the new graph. Tell how the same shape of data can tell a much different story.	GSSDP • Page 150
	Q: Tell how displaying data in different ways can affect the conclusions that people make when viewing data.	
	Q: Gracelyn notices a fact on a graph and makes a conclusion. Tobin notices a trend on the same graph and makes a much different conclusion that contrasts the one Gracelyn made. Explain how this could be possible.	

D1.4 create infographic about a data set representing the data in appropriate ways, including in tables, and circle graphs, and incorporating any other relevant information that helps to tell a story about the data	There are no Grade 7 Open Questions that meet this 2020 curriculum expectation.	

Data Analysis		
D1.5 determine the impact of adding and removing data from a data set on a measure of central tendency, and describe how these changes alter the shape and distribution of the data	**Q:** Show how one value in a set of data can significantly affect the mean. Then, tell how knowing that one value can do this might help you make conclusions about data.	GSSDP • Page 74
	Q: Create a set of data with more than 12 values where knowing only its mode might give someone the wrong impression about the data. Give the mean, median, and mode of the data to show that you are right.	GSSDP • Page 142
	Q: Explain why adding a value to a data set sometimes has a large effect on its mean, median, and mode and, other times, it has no effect at all. Use examples to help you explain.	GSSDP • Page 145
D1.6 analyze different sets of data presented in various ways, including in circle graphs and in misleading graphs, by asking and answering questions about the data, challenging preconceived notions, and drawing conclusions, then make convincing arguments and informed decisions	**Q:** Construct two graphs. One should show how the radius and area of a circle are related, and the other should show how the radius and circumference of a circle are related. How are these graphs different? How are they the same?	MPA • Page 159
	Q: What might this graph be about?	GSSDP • Page 138
	Q: How are these graphs similar? How are they different?	GSSDP • Page 142
	Q: Daphne is looking at a graph about three companies and makes the following conclusions ...	GSSDP • Page 143
	Q: Collect primary or secondary data regarding a sport of your choice. Using a digital device, display the data on two of the same type of graph using very different scales for each one. What does each graph suggest about the data?	
	Q: Describe or use a digital device to show how it's possible to use a graph in order to mislead someone.	GSSDP • Page 146
	Q: Choose two of these graphs. Describe the shape of the data in them.	GSSDP • Page 147
	Q: What might this graph be showing?	
	Q: What information could you add that would make sense for this graph? What would the graph show after you added this information?	
	Q: This relative frequency table shows data regarding cars that passed through an intersection	GSSDP • Page 148
	Q: You would like to form a convincing argument about something food-related. Collect either primary or secondary data about your topic. Using a digital device, make a graph that supports your argument. Tell how your graph does this.	

D1.6 (continued)	**Q:** Jacquie is looking at a circle graph and makes the following conclusions:	GSSDP • Page 149
	Q: A circle graph looks like this: Add information to the graph that makes sense. Draw conclusions about the graph. Then, add different information so that the graph makes sense in another way. Draw conclusions about the new graph. Tell how the same shape of data can tell a much different story.	GSSDP • Page 150

D2. Probability **Overall Expectation:** By the end of Grade 7, students will describe the likelihood that events will happen, and use that information to make predictions		
D2.1 describe the difference between independent and dependent events, and explain how their probabilities differ, providing examples	**Q:** You would like to make some predictions about a population of people. When might it be more useful to look at one probability about the population and when might it be more useful to look at a trend of probabilities about the population to help you? Explain your answer by giving an example for each case.	GSSDP • Page 154
D2.2 determine and compare the theoretical and experimental probabilities of two independent events happening and of two dependent events happening	There are no Grade 7 Open Questions that meet this 2020 curriculum expectation.	

E. SPATIAL SENSE		
E1. Geometric and Spatial Reasoning **Overall Expectation:** By the end of Grade 7, students will describe and represent shape, location, and movement by applying geometric properties and spatial relationships in order to navigate the world around them		
Geometric Reasoning		
E1.1 describe and classify cylinders, pyramids, and prisms according to their geometric properties, including plane and rotational symmetry	There are no Grade 7 Open Questions that meet this 2020 curriculum expectation.	
E1.2 draw top, front, and side views, as well as perspective views, of objects and physical spaces, using appropriate scales	**Q:** Some people say that isometric sketches of 3-D figures are not very useful because you can't always see the whole structure. Do you agree? Why or why not?	GSSDP • Page 93

Location and Movement		
E1.3 perform dilations and describe the similarity between the image and the original shape	**Q:** Make two quadrilaterals that are mathematically similar. Then, make two quadrilaterals that are almost mathematically similar but not quite. Tell how your shapes work for each case.	GSSDP • Page 125
	Q: Tell some things that you notice about these two rectangles	GSSDP • Page 131
	Q: Draw a triangle or a quadrilateral. Measure its sides and angles. Next, perform dilatations of your shape to make a much bigger version and a much smaller version of it. Measure the sides and angles of your new shapes. Tell all the things that are mathematically similar and different about your three shapes.	GSSDP • Page 132
	Q: Design a piece of geometric art that includes lots of different types of transformations. Describe each transformation in detail.	GSSDP • Page 133
	Q: Make an irregular polygon on a geoboard. Then, show what a reflection, rotation, translation, and dilatation of your shape would look like using different colours of elastics. Show the line of reflection for your reflection and the point of rotation for your rotation, and describe your translation and dilatation.	
	Q: A pattern shows a rotation, a reflection, and a dilatation. What might the pattern look like?	GSSDP • Page 134
	Q: How might you convince someone that two shapes are mathematically similar?	GSSDP • Page 135
	Q: On centimetre grid paper, draw a rectangle. Next, draw two different rectangles that are mathematically similar to your first one. Tell how you know that your three rectangles are mathematically similar. Measure the side lengths, perimeter, area, and angles of each rectangle, and show the measurements in a table. Tell what relationships you see among the measurements.	GSSDP • Page 171
	Q: On centimetre grid paper, draw a right triangle with one side that is 6 cm and one side that is 8 cm. Find its area. Then, create two similar right triangles, and calculate their areas. What do you notice about the relationships between the side lengths and areas of each of your triangles?	

E1.4 describe and perform translations, reflections, and rotations on a Cartesian plane and predict the results of these transformations	**Q:** Draw an irregular polygon in the first quadrant of a Cartesian coordinate grid. Have one of its vertices be at (0, 0). Next, perform a 90° rotation of your polygon around this vertex three times so that you have a mapped rotation of your polygon in each of the remaining quadrants. Then, repeat with an irregular polygon that does not touch (0, 0).	GSSDP • Page 133
	Q: What might the coordinates of one or more vertices of a reflection of this parallelogram be? Explain your answer.	GSSDP • Page 173
	Q: Draw an irregular polygon in one of the quadrants of a Cartesian coordinate grid. Using the *x*-axis and *y*-axis as reflection lines, draw a reflection of your shape in two quadrants.	
	Q: A polygon is reflected on a Cartesian coordinate grid. One vertex of the original polygon is (1,), and one vertex of the reflected polygon is (, 4). Show how the polygon might have been reflected.	GSSDP • Page 175
	Q: Show four different ways that you can rotate an irregular polygon on a Cartesian coordinate grid. Use a variety of 90°, 180°, and 270° rotations and different points of rotation. Challenge a classmate to identify each of your rotations in detail.	
	Q: Show reflections by doing the following: 1. Draw an irregular polygon with five or more sides in the first quadrant of a Cartesian coordinate grid. ...	GSSDP • Page 176
	Q: "It's harder to reflect a shape using a diagonal line of reflection compared to a vertical or horizontal line of reflection." Do you agree with this statement? Why or why not?	GSSDP • Page 177

Open Questions for the Three-Part Lesson: *Measurement • Patterning and Algebra* [MPA]

E2. Measurement **Overall Expectation:** By the end of Grade 7, students will compare, estimate, and determine measurements in various contexts		
The Metric System		
E2.1 describe the differences and similarities between volume and capacity, and apply the relationship between millilitres (mL) and cubic centimetres (cm3) to solve problems	There are no Grade 7 Open Questions that meet this 2020 curriculum expectation.	
Angles		
E2.2 solve problems involving perimeter, area, and volume that require converting from one metric unit of measurement to another	There are no Grade 7 Open Questions that meet this 2020 curriculum expectation.	
E2.3 use the relationships between the radius, diameter, and circumference of a circle to explain the formula for finding the circumference and to solve related problems	**Q:** How might this drawing help you estimate the circumference of the circle? How might it help you estimate the area of the circle?	MPA • Page 155
	Q: The circumference of a certain circle is about equal to the perimeter of a certain rectangle. What could the dimensions of the shapes be?	MPA • Page 156
	Q: The radius of Circle A is 1 cm greater than the radius of Circle B. Compare the diameters, circumferences, and areas of the two circles.	MPA • Page 158
	Q: Three circles have a radius, diameter, and circumference of 10 cm respectively. What might the other measurements of each circle be? What would the area of each circle be?	
	Q: Construct two graphs. One should show how the radius and area of a circle are related, and the other should show how the radius and circumference of a circle are related. How are these graphs different? How are they the same?	MPA • Page 159

Area and Surface Area		
E2.4 construct circles when given the radius, diameter, or circumference	**Q:** Using a compass and grid paper, draw two or more different circles with the centre (5, 5). Then, draw two or more different circles where the circumference of each one runs through (5, 5).	GSSDP • Page 163
	Q: Use a compass and the first quadrant of a Cartesian coordinate grid to draw three circles — one for each of the following conditions:	GSSDP • Page 164
	Q: You think that it's easy to draw a circle of a specific size and location on a Cartesian coordinate grid with just two pieces of information. What is the information likely to be? Why?	GSSDP • Page 166
E2.5 show the relationships between the radius, diameter, and area of a circle, and use these relationships to develop the formula for measuring the area of a circle and to solve related problems	**Q:** If you know the area of a regular decagon, how could that help you to figure out the area of a circle that fits just inside the decagon?	MPA • Page 155
	Q: Estimate the area of the faceoff circle at the centre of an NHL hockey rink. Explain your thinking.	
	Q: Create a design made of at least three circles with a total area of approximately 100 cm2. How do you know your design is correct?	MPA • Page 156
	Q: The number of square centimetres in the area of one circle is less than the number of centimetres in its circumference. What could the radius be? What could the radius not be?	
	Q: The area of a certain circle is about half the area of a certain triangle. What could the dimensions of the two shapes be?	
	Q: Draw a right triangle with three different side lengths. On each side of the triangle, draw a half circle so that each side of the triangle is the flat side of a half circle. Determine the area of each half circle. What relationship do you notice among the areas of the three half circles?	MPA • Page 157
	Q: Research sizes and prices of small, medium, and large pizzas. Which pizza is the best deal?	
	Q: How could you create a triangle with an area of about 1⁄3 of the area of a circle? The three points of the triangle must touch the edge of the circle. Why do you think your triangle works?	

E2.5 (continued)	**Q:** The radius of Circle A is 1 cm greater than the radius of Circle B. Compare the diameters, circumferences, and areas of the two circles.	MPA • Page 158
	Q: Draw a picture to show why the area of a circle with a radius of 1 unit is about 3 square units.	
	Q: Three circles have a radius, diameter, and circumference of 10 cm respectively. What might the other measurements of each circle be? What would the area of each circle be?	
	Q: Construct two graphs. One should show how the radius and area of a circle are related, and the other should show how the radius and circumference of a circle are related. How are these graphs different? How are they the same?	MPA • Page 159
	Q: Would it be easier for you to draw a circle with four times the area of another circle or to draw a circle with four times the circumference of another circle? Explain.	

E2.6 represent cylinders as nets and determine their surface area by adding the areas of their parts	**Q:** The surface area of a cylinder is close to 100 cm^2. What could the dimensions of the cylinder be?	MPA • Page 162
	Q: The surface area of one cylinder is about double the surface area of another cylinder. What could the dimensions of the two cylinders be?	MPA • Page 163
	Q: The area of the curved face of a cylinder is about 60 cm^2. What could the area of the base of the cylinder be?	
	Q: You can ask for two measurements to help you figure out the surface area of a cylinder. If you can't ask for the radius and height, what would you ask for?	MPA • Page 164

E2.7 show that the volume of a prism or cylinder can be determine by multiplying the area of its base by its height, and apply this relationship to find the area of the base, volume, and height of prisms and cylinders when given two of the three measurements	**Q:** You build a prism that looks like this from the top. What could the volume of the prism be? What couldn't the volume be? Why?	MPA • Page 25
	Q: Use linking cubes to build three or more prisms with bases that are 2 cubes by 3 cubes. What is the volume of each prism? What couldn't the volume of a prism be?	MPA • Page 26
	Q: Use linking cubes to build a rectangle. Imagine your rectangle as the base of a rectangle-based prism. What are some examples of a volume your prism could have? What are some examples of a volume it could not have?	MPA • Page 62
	Q: Use linking cubes. Can you make a short rectangle-based prism that has a big volume? How?	
	Q: If you were describing the size of a cupboard or drawer, would you talk about its volume or its capacity?	
	Q: When you put something in water, the water level rises. What could you put in a glass of water to make the water level rise just a little? What could you put in it to make the water level rise a lot?	
	Q: Choose a two-digit number. Represent that number with ones blocks. Submerge the blocks in 500 mL of water in a 1 L measuring cup. Record the height of the water before and after you submerge the blocks. Repeat this several times with different numbers of base ten blocks. What do you notice?	MPA • Page 63
	Q: Build a rectangle-based prism with base ten blocks. Use the same number of hundreds blocks as ones blocks and twice as many tens blocks as hundreds blocks. What is the area of the base of the prism? What is the height of the prism? What is the volume of the prism?	
	Q: A plastic container in the shape of a rectangle-based prism holds about 250 mL of water. What could the dimensions of the container be? Think of two or three possible sets of dimensions.	
	Q: Could a rectangle-based prism that is 5 cubes high have the same volume as a rectangle-based prism that is 12 cubes high? Explain why or why not.	MPA • Page 64
	Q: How is it helpful to understand how capacity and volume are related?	
	Q: To calculate the volume of a rectangle-based prism, you calculate the area of the base and multiply it by the number of layers high it is. If you build a rectangle-based prism with 60 cubes, what could the height be?	
	Q: What might the mass in kilograms of the water in a swimming pool be?	MPA • Page 89

E2.7 (continued)	**Q:** A non-rectangular prism has about 10 times the volume of a rectangular prism. How might their heights and the area of their bases compare?	MPA • Page 129
	Q: Suppose the base of a prism has an area of 0 cm^2. What could the volume of the prism be?	
	Q: How does the number of sides of the base influence the calculation of the volume of a prism? Or does it?	MPA • Page 130
	Q: Describe, sketch, or build a hexagonal prism that has a greater number of cubic centimetres in its volume than square centimetres in its surface area.	
	Q: A juice container is the shape of a hexagonal prism. Decide how many millilitres of juice the container might hold if it were filled to the very top. Then, decide what the area of the base and the height of the container could be.	MPA • Page 131
	Q: Two hexagonal prisms have the same surface area, but they have different volumes. Show how that could happen.	
	Q: Choose a volume in cubic centimetres. With cardboard or centimetre linking cubes, build two different kinds of prisms with that volume. Sketch the bases and label the dimensions.	MPA • Page 132
	Q: Build a linking-cube structure that forms a non-rectangular prism. Then, build another linking-cube structure with a volume 1.25 times as much as the volume of your original structure. What is the ratio of the surface areas?	
	Q: A triangular prism has double the volume of a hexagonal prism. Show how this could happen.	MPA • Page 133
	Q: Would you find it easer to triple the volume of a prism or triple the surface area of a prism? Explain.	MPA • Page 134
	Q: How is figuring out the volume of a hexagonal prism like figuring out its surface area? How is it different?	
	Q: How could you compare the volumes of these two prisms?	
	Q: You need three measurements to figure out the volume of a prism. What could the prism look like, and what would the measurements be of?	
	Q: Estimate the number of cubic metres that would fit in your classroom. How did you make your estimate?	MPA • Page 152
	Q: Is it possible for a figure with a volume of 1 m^3 to sit on a table with an area of 10 cm^2? If so, how is it possible?	

E2.7 (continued)	**Q:** Choose three or more objects that you think have volumes greater than 500 cm3. Use displacement to determine the actual volume of each object.	MPA • Page 153
	Q: Create and solve a problem that requires calculating the volume of a hexagonal prism and then converting the volume to a different unit.	
	Q: Describe a volume using two different metric units. One value should be about 1000 greater than the other.	
	Q: A piece of food is shaped like a cylinder and has a small volume but a big surface area. What might it be?	MPA • Page 160
	Q: Which is probably greater — the volume of a roll of forty quarters or the volume of a roll of twenty-five $1 coins? Why do you think that?	
	Q: The volume of a certain cylinder is about 3⁄4 as much as the volume of a rectangular prism. How might their heights and widths compare?	MPA • Page 161
	Q: What might the volume of a soup can be? Why do you think that?	
	Q: How might you estimate the volume of a fist?	
	Q: The number of square centimetres in the surface area of a cylinder is much greater than the number of cubic centimetres in its volume. What could the radius and height of the cylinder be?	MPA • Page 162
	Q: You want to set up an aquarium for fish. What might the dimensions of your aquarium be? How many 1 L containers of water will your aquarium hold?	
	Q: The volume of a cylinder is close to 1000 cm^3. What could the dimensions of the cylinder be?	MPA • Page 163
	Q: The volume of one cylindrical pot is four times as much as the volume of another cylindrical pot. How might their heights and radii compare?	MPA • Page 164
	Q: Is it easier to make a cylinder with six times the volume of a given cylinder by changing the height of the cylinder or by changing the radius of the cylinder, or are both ways easy? Explain.	
	Q: Which of these two is easier to figure out: how many times as great the volume of Cylinder B is than the volume of Cylinder A or how much greater the volume of Cylinder B is than the volume of Cylinder A? Explain.	
	Q: How is figuring out the volume of a cylinder similar to figuring out the volume of a rectangular prism? How is it different?	

E2.7 (continued)	**Q:** Two prisms have these bases. Is it possible for the prisms to have the same volume? Explain.	MPA • Page 100
	Q: How can a triangular prism have a greater volume than a rectangular prism?	
	Q: The base of a rectangular prism has an area greater than 10 cm^2. Can the volume of the prism be less than 5 cm^3? Explain why or why not.	
	Q: You build a rectangular prism with 20 linking cubes. What could its dimensions be? Can you think of another possibility?	
	Q: Choose a volume greater than 50 cm^3. Use base ten blocks or linking cubes to build a rectangular prism with that volume. Then, use stiff paper to create a triangular prism with the same volume (or draw a triangular prism with the same volume). What are the dimensions of the two prisms?	MPA • Page 101
	Q: The height and two sides of the base of this triangular prism are the same length. If that value is a whole number, what are some possible volumes for the prism?	
	Q: A triangular prism has triple the volume of a rectangular prism. Show how this is possible.	
	Q: The volume of a triangular prism is about double the volume of a rectangular prism. How might their heights and the areas of their bases compare?	MPA • Page 103
	Q: Suppose the volume of a prism is doubled. Will the surface area of the prism also double? Explain.	
	Q: If one prism has a greater volume than another, is it likely to also have a greater surface area?	
	Q: Choose three or more objects that you think have volumes greater than 500 cm.. Use displacement to determine the actual volume of each object.	MPA • Page 153
	Q: Create and solve a problem that requires calculating the volume of a hexagonal prism and then converting the volume to a different unit.	
	Q: Describe a volume using two different metric units. One value should be about 1000 greater than the other.	

F. FINANCIAL LITERACY		
F1. Money and Finances **Overall Expectation:** By the end of Grade 7, students will demonstrate an understanding of the value of Canadian currency		
Money Concepts		
F1.1 identify and compare exchange rates, and convert foreign currencies to Canadian dollars and vice versa	There are no Grade 7 Open Questions that meet this 2020 curriculum expectation.	
Financial Management		
F1.2 identify and describe various reliable sources of information that can help with planning for and reaching a financial goal	There are no Grade 7 Open Questions that meet these 2020 curriculum expectations.	
F1.3 create, track and adjust sample budgets designed to meet longer term financial goals for various scenarios		
Consumer and Civic Awareness		
F1.4 identify various society and personal factors that may influence financial decision making and describe the effects that each might have	There are no Grade 7 Open Questions that meet these 2020 curriculum expectations.	
F1.5 explain how interest rates can impact saving, investments and the cost of borrowing to pay for goods and services over time		
F1.6 compare interest rates and fees for different accounts and loans offered by various financial institutions, and determine the best option for different scenarios		

Grade 7 Open Questions that now align with other grades in the Ontario 2020 Curriculum

Grade 5		
Grade 5 **B2.9**	**Q:** A model of yellow and red counters shows the ratio 4:5. What fractions might it also show?	Number • Page 161

Grade 6		
Grade 6 **B1.2**	**Q:** When might you see the number −2 other than in math class?	Number • Page 170
	Q: What do the integers −8 and −20 have in common?	
	Q: Represent –8 in three or more ways. For each representation, describe one thing it tells about –8 and one thing that it doesn't make clear about –8.	Number • Page 171
	Q: Do you think negative integers are more like counting numbers or more like fractions?	Number • Page 172
	Q: Could an integer and its opposite be 25 apart? Explain.	
	Q: Why do you think –4 is an even integer?	
Grade 6 **B1.3**	**Q:** Choose a decimal hundredth and a fraction so that it's easy to tell which is greater. Explain your thinking.	Number • Page 158
	Q: Is it possible for .23 to be a lot greater than .894?	
	Q: Suppose 14 > 51 . What could the fractions be? Tell how you know your answers are right.	
	Q: Look up statistics from sporting events where the results are decimal numbers. For each event, order the decimal numbers from least to greatest. Which score won — the lowest score or the highest one? Why?	Number • Page 159
	Q: Use the digits 0 to 9 in the following blanks to make decimal numbers. Use each digit only once.	
	Q: Use the digits from 0 to 9 to create four fractions. Use each digit only once. Make both proper and improper fractions. Then, order the fractions from least to greatest. Repeat, creating different sets of fractions.	
	Q: Do you think it's easier to compare decimals to decimals or fractions to fractions? Why?	Number • Page 160
	Q: When comparing decimals, is it usually sufficient to compare only the whole number parts? Why or why not?	
	Q: What number is 3. 1 less than?	
	Q: If 36 a < b38 , what do you know for sure about the relationship between a and b ? Why?	

Grade 6 **B1.3** (continued)	**Q:** What do you know for sure about the fraction that the decimal 0.4 represents?	Number • Page 161
	Q: Two fractions represent decimals that are 0.04 apart. What might the fractions be? Could they have different denominators? Explain how you know.	
	Q: Name two negative integers to make this sentence true. Explain how you know it is true. and are just a little closer together than 4 and 23.	Number • Page 170
	Q: An integer is a lot less than 8. What might the integer be? What makes it a lot less?	
	Q: List five integers that meet these requirements: • Two of the integers are little closer together than two of the other integers. ...	Number • Page 171
	Q: On a number line, there are four negative integers, A, B, C, and D. A and B are twice as far apart as B and C. B and C are three times as far apart as C and D. ...	
	Q: Why does it make sense that –5 is less than –2?	Number • Page 172
Grade 6 **B2.6**	**Q:** What number between 100 and 200 do you think might have a lot of factors? Why did you pick that number?	Number • Page 166
	Q: What do the numbers 64 and 100 have in common?	
	Q: The difference between __ and __is greater than the difference between __ and __. How can you show this fact using drawings?	
	Q: A number is a multiple of 25. Tell as many things as you can about the number.	
	Q: Make a list of as many numbers as you can that have exactly four factors. What do these numbers have in common (besides having four factors)?	Number • Page 167
	Q: Every fourth multiple of one number matches every sixth multiple of another number. What could the numbers be?	
	Q: Make a list of the numbers __ __. Make a list of the factors of each of these numbers. What do the lists of factors have in common?	
	Q: If you chose a number at random, is it more likely to be a factor of more numbers or a multiple of more numbers?	Number • Page 168
	Q: If the factors of number A are all factors of number B, what do you know about the relationship between A and B?	
	Q: Why do you think so few numbers are perfect squares?	
Grade 6 **B2.7**	**Q:** If a yellow hexagon pattern block is worth 5.1, make three or more designs worth 16.15. Explain your answers.	Number • Page 179
Grade 6 **B2.11**	**Q:** A real-life problem involves dividing a decimal by a whole number. What might the problem be?	Number • Page 178