Grade 3 • Curriculum Correlation

Grades K–3 Open Questions for the Three-Part Lesson and the 2020 Ontario Curriculum

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Grades K–3 Open Questions for the Three-Part Lesson: *Number Sense and Numeration* [Number]

2020 Ontario Curriculum Expectations	K–3 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 3, students will demonstrate an understanding of numbers and make connections to the way numbers are used in everyday life		
Whole Numbers		
B1.1 read, represent, compose, and decompose whole numbers up to and including 1000, using a variety of tools and strategies, and describe various ways they are used in everyday life	**Q:** You see the number 250 on an Internet news site. What do you think that number could describe?	Number • Page 90
	Q: A three-digit number has at least two 4s in it. One of the 4s is worth 10 times as much as the other 4. What might the number be?	
	Q: Tell as many things as you can about the number 5 ☐2. The number in the blank can be any digit from 0 to 9.	
	Q: How many words might you need to write a number less than 1000? When would it be more words? When would it be fewer?	Number • Page 91
	Q: Represent the number 300 in three or more ways. Describe what each way tells you about the number.	
	Q: One way to break up the number 312 is to write it as 3 hundreds and 12 ones. Choose a different three-digit number. Break it up into hundreds, tens, and ones at least three different ways. What do you notice?	
	Q: Look in newspapers or on the Internet for stories with numbers that are greater than 10 but less than 100 and are written out in words. What do those numbers represent? How would you write them in standard form?	
	Q: List two or more three-digit numbers that you can represent using 15 base ten blocks. The blocks can be all the same or different. For each number, tell another way it can be represented using a different number of blocks.	

B1.1 (continued)	**Q:** You read two numbers that are written in words. Everything is exactly the same when you read them except for one word. What could the numbers be? How are their standard forms alike? How are they different?	Number • Page 92
	Q: A student is asked how many tens there are in the number 412. Do you think that there is more than one answer? Explain.	
	Q: Do you think there are more ways to represent the number 210 or the number 211? Why do you think that?	
	Q: What numbers might be at the marked points? Justify your answers.	Number • Page 95
	Q: Choose the number of students in a school. Make sure your number makes sense. Describe how many students would be in the school if the principal said that an extra class was needed.	Number • Page 96
	Q: How long would it take you to do at least two of these things? • eat 1000 calories' worth of pizza • go to school 1000 days • read 1000 books • say 1000 words	Number • Page 97
	Q: How long would it take before you took 1000 steps? How many bags would make 1000 apples? How much space do 1000 people take up? Make up three or more questions about 1000 of something. Then, write statements that answer some of your questions.	
	Q: Find in the media (in newspapers, in magazines, or on the Internet) some examples of numbers greater than 100 but less than 1000 that are written out in words. What do these numbers represent? How would you write the numbers in standard form?	Grades 4–8 Book Number • Page 11
	Q: How many words might you need to write a number that is less than 1000? What numbers do you need a lot of words to write? What numbers do you not need many words to write?	
	Q: List four numbers less than 1000 that you could write using only two words. Write the numbers out in words. List four numbers you could not write out using only two words. Write these numbers out in words also.	
	Q: How many beads do you think you could hold in your hand? Would you have 100 beads in 10 handfuls?	Grades 4–8 Book Number • Page 16

B1.2 compare and order whole numbers up to and including 1000, in various contexts	**Q:** What numbers could you put at A and B? Why?	Number • Page 93
	Q: 92 and 4 are about the same distance apart as 1□9 and □□5. What might the missing digits be?	
	Q: What is the least number and what is the greatest number you would be comfortable estimating as 80? Why did you pick those numbers? When might you use an estimate like that?	
	Q: Make up the numbers of students in 10 schools. The numbers must follow these rules: • two of the ten numbers are very close together.• one of the numbers is a lot greater than all of the others.• one number is a lot less than all of the others. • at least three of the ten numbers are between 300 and 400.SEP Order the numbers from least to greatest. Explain how your numbers meet the conditions.	Number • Page 94
	Q: Use the digits 0 to 9, using each digit only once, to fill in the blanks. Then, put the numbers in order from least to greatest. Repeat two or more times with different numbers.	
	Q: You write down a three-digit number. You switch some of the digits around, and the value of your number increases by 54. What could your original number have been? Does finding one way help you find another way?	
	Q: What numbers might be at the marked points? Justify your answers.	Number • Page 95
	Q: A number with the digits 2 and 5 is greater than a number with the digits 7 and 8. How is that possible? The numbers can have two or three digits.	
	Q: You use base ten blocks to represent two numbers. Can you use fewer blocks to represent the greater number? Explain your thinking about whether and when it can or cannot happen.	
	Q: A number is estimated as 400. What might the number be? When might you use an estimate like that?	

B1.3 round whole numbers to the nearest ten or hundred, in various contexts	**Q:** When you read a number, you say the word *forty*. List three or more numbers it could be. List three or more numbers with 4s in them that it could not be.	Number • Page 90
	Q: What is the least number and what is the greatest number you would be comfortable estimating as 80? Why did you pick those numbers? When might you use an estimate like that?	Number • Page 93
	Q: A number is estimated as 400. What might the number be? When might you use an estimate like that?	Number • Page 95
	Q: Describe a situation where you might round to the nearest ten. Tell why that situation makes sense.	

B1.4 count to 1000, including by 50s, 100s, and 200s, using a variety of tools and strategies	**Q:** You skip count forward by a number and you say 40. What might you have been skip counting by? What were you not skip counting by? How do you know?	Number • Page 104
	Q: Choose a number to skip count backwards by and a starting number greater than 50. Then, tell a number you will say early in the skip count and a number you will say later.	
	Q: You start on the number 100 and skip count forward by 25s. What is a number you are sure you will not say? How do you know?	
	Q: You are skip counting forward starting at 50. How far might you get if you say 10 numbers? What numbers would you would say?	
	Q: Create a number line. Mark numbers on it by skip counting by 25s. Choose five numbers, some greater than 100, but none ending in 0 or 5. Place them on your number line. Explain how you knew where to place them.	Number • Page 105
	Q: Play a spinner game. One spinner tells you whether to start at 0, 50, or 100. Another tells you whether to skip count by 2s, 5s, 10s, 25s, or 100s. A third one tells you whether to say the 5^{th}, 6^{th}, 10^{th}, or 20^{th} number when you skip count. Play the game with a partner. The player with the lower number wins a point. Play until someone has 10 points.	
	Q: How can skip counting by 5s help you skip count by 10s? Can skip counting by 10s help you skip count by 5s?	Number • Page 106

B1.4 (continued)	**Q:** Name some numbers you say when you skip count forward by either 2s or 5s and start on 100. Then, name some numbers you say when you skip count by both 2s and 5s.	Number • Page 106
	Q: Why do you think skip counting backwards by 100s from 1000 is not very hard?	
	Q: When you skip count forward by 10s and start at 47, what do you notice about all the numbers you say? Why does that make sense?	
	Q: You have seven quarters and seven nickels. What is a good way to figure out the total value?	Number • Page 44
B1.5 use place value when describing and representing multi-digit numbers in a variety of ways, including with base ten materials	**Q:** A three-digit number has at least two 4s in it. One of the 4s is worth 10 times as much as the other 4. What might the number be?	Number • Page 90
	Q: When you read a number, you say the word *forty*. List three or more numbers it could be. List three or more numbers with 4s in them that it could not be.	
	Q: Use any of the numbers 1, 10, 100, or 1000 to make this statement true: Ten ___s make one ___. Use models to prove you are right.	
	Q: How many words might you need to write a number less than 1000? When would it be more words? When would it be fewer?	Number • Page 91
	Q: One way to break up the number 312 is to write it as 3 hundreds and 12 ones. Choose a different three-digit number. Break it up into hundreds, tens, and ones at least three different ways. What do you notice?	
	Q: List two or more three-digit numbers that you can represent using 15 base ten blocks. The blocks can be all the same or different. For each number, tell another way it can be represented using a different number of blocks.	
	Q: When or why might it be useful to use expanded notation (e.g., 9 hundred + 6 tens + 3 ones) rather than standard notation (e.g., 963) to describe a number?	Number • Page 92
	Q: How do the 5s in 525 compare?	
	Q: A student is asked how many tens there are in the number 412. Do you think that there is more than one answer? Explain.	
	Q: You write down a three-digit number. You switch some of the digits around, and the value of your number increases by 54. What could your original number have been? Does finding one way help you find another way?	Number • Page 94

B1.5 (continued)	**Q:** A number with the digits 2 and 5 is greater than a number with the digits 7 and 8. How is that possible? The numbers can have two or three digits.	Number • Page 95
	Q: You use base ten blocks to represent two numbers. Can you use fewer blocks to represent the greater number? Explain your thinking about whether and when it can or cannot happen.	

Fractions		
B1.6 use drawings to represent, solve, and compare the results of fair-share problems that involve sharing up to 20 items among 2, 3, 4, 5, 6, 8 and 10 sharers, including problems that result in whole numbers, mixed numbers, and fractional amounts	**Q:** Draw a rectangle. Divide it into equal parts. Tell how you know the parts are equal.	Number • Page 100
	Q: Draw a picture to show what one-third looks like.	
	Q: Choose a number of strawberries. How many people can share them equally so that there are no strawberries left over? What number of strawberries are not easy to share equally?	
	Q: Kevin said he wanted the bigger half of the sandwich. Is it possible to have a bigger half?	
	Q: Show different pictures of one-half that look a lot different. Tell how the pictures are alike.	Number • Page 101
	Q: Draw an object of your choice. Break it up into equal parts. Tell what fraction you would name the parts. How do you know the parts are the same size?	
	Q: Use 10 counters to show three or more fractions. You can use different coloured counters if you want. Are all the fractions tenths? Why or why not?	
	Q: Draw two or more pictures that some people might think show one-third, but do not really show one-third. Tell why people might think that the pictures are one-third and why they are wrong.	Number • Page 102
	Q: Can one-half ever be less than one-fourth?	
	Q: Is it easy to show fractions using shapes with symmetry? Which fractions? Why or why not?	

B1.7 represent and solve fair-share problems that focus on determining and using equivalent fractions, including problems that involve halves, fourths, and eighths; thirds and sixths; and fifths and tenths	**Q:** Show different pictures of one-half that look a lot different. Tell how the pictures are alike.	Number • Page 101
	Q: Use 10 counters to show three or more fractions. You can use different coloured counters if you want. Are all the fractions tenths? Why or why not?	

B2. Operations **Overall Expectation:** By the end of Grade 3, students will: use knowledge of numbers and operations to solve mathematical problems encountered in everyday life		
Properties and Relationships		
B2.1 use the properties of operations and the relationships between multiplication and division, to solve problems and check calculations	**Q:** Draw a picture that explains why 4×6 is double of 4×3. Explain your answer.	Number • Page 117
	Q: Investigate to see how the results change when you start with a multiplication fact and increase the first number by 1 and decrease the second number by 1. Repeat this process again. Then try to decrease the first number by 1 and increase the second number by 1. Does a different thing happen?	Number • Page 118
	Q: Choose a multiplication equation that you are not sure of. Think of different ways to figure out the answer by using facts you are sure of. Repeat with two or more multiplication equations you are not sure of.	
	Q: If you know that $4 \times 5 = 20$, what other equations does knowing that help you with? Explain why.	Number • Page 119
	Q: Draw a picture that you think shows why $12 \div 3$ is double of $6 \div 3$.	Number • Page 120
	Q: Choose a division question. Solve it. Now increase both numbers by 1. Does the answer always, sometimes, usually, or never increase? Explain why that happens.	Number • Page 121
	Q: Choose a division fact that you are not sure of. Think of different ways to figure it out by using facts you are sure of.	Number • Page 122
	Q: Does knowing multiplication facts mean you automatically know division facts? Explain.	

Math Facts		
B2.2 recall and demonstrate multiplication facts of 2, 5, and 10, and related division facts	**Q:** You multiply two numbers, and the result is between 10 and 20. What might you have multiplied?	Number • Page 117
	Q: You can choose any two one-digit numbers to multiply in your head. Which two would you choose to make the task easy?	Number • Page 119

Mental Math		
B2.3 use mental math strategies, including estimation, to add and subtract whole numbers that add up to no more than 1000, and explain the strategies used	**Q:** You added two numbers in your head, and the sum was just a little bit greater than 25. What might the numbers have been?	Number • Page 108
	Q: What are two or more ways to add 19 + 9 in your head?	
	Q: Which estimate makes the most sense to you for 16 + 16 = ☐? 20, 30, or 40? Explain.	
	Q: How would you subtract 31 – 19 in your head? What other numbers would you subtract in a similar way?	
	Q: Use the digits 0 to 9, using each digit only once, to create five two-digit numbers. Add pairs of the numbers using mental math. Try to use different strategies. Be ready to talk about your strategies. Show your strategy on a number line.	Number • Page 109
	Q: List two two-digit numbers you would find: a) easy to add in your head b) easy to subtract in your head c) hard to add in your head d) hard to subtract in your head For the easy ones, explain why they are easy to add or subtract. For the hard ones, explain how you could add or subtract them in your head if you wanted to. Repeat with other numbers at least once more.	
	Q: Create a game that would require players to subtract two-digit numbers mentally to win. Explain how you would play the game. Play the game to test it.	
	Q: When would you add or subtract a little too much and then fix it to do an addition or subtraction in your head?	Number • Page 110
	Q: When you add or subtract two-digit numbers, do you think you always break up the numbers into parts to do the addition or subtraction?	
	Q: Do you think it is easier to add or to subtract two-digit numbers in your head? Explain.	
	Q: To subtract 53 – 18 in his head, Liam said he would subtract 55 – 20 instead and get the same answer. Do you agree? Why might Liam do this?	

B2.3 (continued)	**Q:** The sum of two numbers that are pretty close is a little less than 800. What could the numbers be?	Number • Page 111
	Q: Create one sentence that uses the following words and numbers: difference, hundred, greater, 810	
	Q: Describe three or more ways to estimate 448 + 469.	Number • Page 113
	Q: The answer to a subtraction question is one less than the answer to 300 – 155. What might the subtraction question be?	
	Q: Sometimes you might estimate the sum of two three-digit numbers by just adding the hundreds, but sometimes not. Give an example of when you would add hundreds and when you would not. Explain your thinking.	
	Q: What are two numbers that are greater than 10 but less than 100 that would be easy for you to add in your head? Why is it easy to add them?	Grades 4–8 Book Number • Page 32
	Q: What's a smart way to add 49 + 49 in your head?	
	Q: Which estimate makes the most sense to you for 37 + 37: 60 or 70 or 80? Explain why.	
	Q: You add two numbers and the sum is close to 40, but not quite 40. What might the numbers be?	
	Q: Which expression does not belong? Why? 38 + 99 52 + 48 29 + 19 50 + 50	
	Q: You are asked to create a blog post to explain how to add two-digit numbers using mental strategies. Think about the strategies you would include. Write your blog.	Grades 4–8 Book Number • Page 33
	Q: Use a hundred chart. Think of a down arrow as going down one row, an up arrow as going up one row, a right arrow as going right one number, and a left arrow as going left one number. ...	
	Q: List at least three pairs of two-digit numbers for each of the following: a) two-digit numbers that ...	
	Q: I added a number to 35 in my head by adding a little too much and taking some away. What number might I have added?	Grades 4–8 Book Number • Page 34
	Q: Is it true that any two two-digit numbers can be added mentally by most people? Explain.	
	Q: Do you think there are more strategies to figure out 62 + 38 mentally or more strategies to figure out 62 − 38 mentally? Explain.	
	Q: Choose a three-digit number and a two-digit number to subtract mentally. Then, tell how you would subtract the two numbers.	Grades 4–8 Book Number • Page 90
	Q: List three pairs of two-digit or three-digit numbers that are: a) easy to add in your head ...	Grades 4–8 Book Number • Page 91

Addition and Subtraction		
B2.4 demonstrate an understanding of algorithms for adding and subtracting whole numbers by making connections to and describing the way other tools and strategies are used to add and subtract	**Q:** 150 is the answer to a real-life problem that takes more than one step to solve. Think of two or more problems where 150 might be the answer. Tell how you know.	Number • Page 98
	Q: You subtract two three-digit numbers, and the number of tens in the answer is greater than the number of hundreds. What numbers might you have subtracted?	Number • Page 111
	Q: Which addition do you think doesn't belong? Why? 300 + 200 417 + 123 399 + 99 250 + 251	
	Q: Create a story problem that you could solve by subtracting two three-digit numbers but where there is more than one answer. Solve the problem to get several answers.	Number • Page 112
	Q: Fill in the blanks with digits 0 to 9, using each digit only once, to make each equation true.	
	Q: You can show a number that is greater than 100 with 5 base ten blocks. You can show another number that is greater than 100 with 10 base ten blocks. You add the two numbers. How many base ten blocks might you need to represent the answer? Is there more than one possible answer?	
	Q: Choose a three-digit number that has an 8 in the ones place. What do you have to add to get these answers: 481, 511, and 621? How are your three answers related? Why does that make sense?	
	Q: The highest waterfall in the world is in Venezuela. It is called Angel Falls, and it is 979 m high. Create and solve several problems by comparing the height of Angel Falls to the heights of other tall landforms.	Number • Page 113
	Q: How does what you know about reading and representing numbers help you add and subtract them?	

B2.5 represent and solve problems involving the addition and subtraction of whole numbers that add up to no more than 1000, using various tools and algorithms	**Q:** Jane's cousin lives 128 km farther away from her than her grandmother does. How far from Jane might her grandmother and her cousin live?	Number • Page 96
	Q: Draw a picture that explains why 4 × 6 is double of 4 × 3. Explain your answer.	Number • Page 117
	Q: Create a sentence that uses the following words and numbers: groups, greater, 2, 8	
	Q: Draw a picture that shows multiplication. Tell why it does.	
	Q: Choose numbers for the blanks × . Draw a picture to show that multiplication. Then, increase the first number by 1, and draw a picture to show that. Then, increase the second number by 1, and draw a picture to show that. How do the pictures change each time? Do they change the same way?	Number • Page 118
	Q: Choose several numbers of skateboards that might be in the park. With each number, tell how many wheels there would be altogether, and write a number sentence to describe the situation. How are the number sentences alike? How are they different? If you show the number of wheels on a number line, what do you notice?	
	Q: Why might some people say this picture shows multiplication and some say it doesn't?	Number • Page 119
	Q: How is skip counting related to multiplication?	

Multiplication and Division		
B2.6 represent multiplication of numbers up to 10 x 10 and division up to 100 ÷ 10, using a variety of tools, and drawings, including arrays	**Q:** What division might this be describing? Notice that the arrow at the left is smaller than all the others. All the other arrows are equal.	Number • Page 120
	Q: You divide two numbers, and the answer is less than 3. What numbers might you have been dividing?	
	Q: Which expression do you think does not belong?	
	Q: Choose a number of cookies to be shared. Decide how many people will share them. Tell how many cookies each person gets. Repeat two or more times with different numbers of cookies and different numbers of people sharing them.	Number • Page 121
	Q: Describe different problems you could solve by calculating 24 ÷ 6. How are the problems alike? How are they different?	
	Q: Draw a number line picture that shows division. What makes it show division?	Number • Page 122
	Q: Some people say that division is repeated subtraction. Does that make sense to you? Explain.	
B2.7 represent and solve problems involving multiplication and division, including problems that involve groups of one half, one fourth, and one third, using tools and drawings	**Q:** How many 250 mL measuring cups do you think you would need to hold 400 buttons? Explain your reasoning.	Number • Page 96
	Q: How long would it take you to do at least two of these things? • eat 1000 calories' worth of pizza• go to school 1000 days• read 1000 books • say 1000 words	Number • Page 97
	Q: There are 8 hamburger buns in a package. How would you figure out how many packages might be needed for a big family event with 220 people?	
	Q: How long would it take before you took 1000 steps? How many bags would make 1000 apples? How much space do 1000 people take up? Make up three or more questions about 1000 of something. Then, write statements that answer some of your questions.	
	Q: Suppose you know how many quarters make $100. What other dollar amounts in quarters would you know?	Number • Page 98
	Q: How might knowing that there are 60 seconds in a minute help you solve other math problems involving time?	

B2.7 (continued)	**Q:** 150 is the answer to a real-life problem that takes more than one step to solve. Think of two or more problems where 150 might be the answer. Tell how you know.	Number • Page 98
	Q: If you are asked how long it would take you to do something 1000 times and didn't want to do it that many times, how would you calculate the time it would take?	
B2.8 represent the connection between the numerator of a fraction and the repeated addition of the unit fraction with the same denominator using various tools and drawings, and standard fractional notation	There are no Grade 3 Open Questions that meet these 2020 curriculum expectations.	
B2.9 use the ratios of 1 to 2, 1 to 5, and 1 to 10 to scale up numbers and to solve problems		

Grades K–3 Open Questions for the Three-Part Lesson: *Measurement • Patterning & Algebra* [MPA]

2020 Ontario Curriculum Expectations	K–3 Open Questions for the Three-Part Lesson: Measurement • Patterning & Algebra	Book & Page #
C. ALGEBRA		
C1. Patterns and Relationships **Overall Expectation:** By the end of Grade 3, 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 describe repeating elements and operations in a variety of patterns, including patterns found in real-life contexts	There are no Grade 3 Open Questions that meet this 2020 curriculum expectation.	
C1.2 create and translate patterns that have repeating elements, movements, or operations using various representations, including shapes, numbers, and tables of values	**Q:** A shape pattern has two of these changes: colour changes, shape changes, and position changes. One of the changes follows an AB pattern. The other does not. What might the pattern look like?	MPA • Page 125
C1.3 determine pattern rules and use them to extend patterns, make and justify predictions, and identify missing elements in patterns that have repeating elements, movements or operations	There are no Grade 3 Open Questions that meet these 2020 curriculum expectations.	
C1.4 create and describe patterns to illustrate relationships among whole numbers up to 1000		

C2. Equations and Inequalities **Overall Expectation:** By the end of Grade 3, students will demonstrate an understanding of variables, expressions, equalities, and inequalities, and apply this understanding in various contexts		
Variables		
C2.1 describe how variables are used, and use them in various contexts as appropriate	There are no Grade 3 Open Questions that meet this 2020 curriculum expectation.	
Equalities and Inequalities		
C2.2 determine whether given sets of addition, subtraction, multiplication and division expressions are equivalent or not	There are no Grade 3 Open Questions that meet these 2020 curriculum expectations.	
C2.3 identify and use equivalent relationships for whole numbers up to 1000, in various contexts		

C3. Coding **Overall Expectation:** By the end of Grade 3, 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 code, including code that involves sequential, concurrent, and repeating events	There are no Grade 3 Open Questions that meet these 2020 curriculum expectations.	
C3.2 read and alter existing code, including code that involves sequential, concurrent, and repeating events, and describe how changes to the code affect the outcomes		

C4. Mathematical Modelling **Overall Expectation**: By the end of Grade 3, 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:** How long would it take you to do at least two of these things? • eat 1000 calories' worth of pizza • go to school 1000 days • read 1000 books • say 1000 words	MPA • Page 97
	Q: There are 8 hamburger buns in a package. How would you figure out how many packages might be needed for a big family event with 220 people?	
	Q: How long would it take before you took 1000 steps? How many bags would make 1000 apples? How much space do 1000 people take up? Make up three or more questions about 1000 of something. Then, write statements that answer some of your questions.	

E2. Measurement **Overall Expectation:** By the end of Grade 3, students will compare, estimate, and determine measurements in various contexts		
Attributes		
E2.1 use appropriate units of length to estimate, measure, and compare the perimeters of polygons and curved shapes, and construct polygons with a given perimeter	**Q:** One rectangle has a perimeter 4 cm longer than another rectangle. How is that possible?	MPA • Page 13
	Q: Cut two pieces of string the same length. Arrange the string to make two different shapes. Describe your shapes. What do you know about their perimeters?	
	Q: The perimeter of a rectangle is greater than 10 cm. What do you know for sure about the length and width of the rectangle?	
	Q: What number patterns might this shape pattern show? Include one pattern involving perimeter.	MPA • Page 14
	Q: *(Show students two rectangles that have similar perimeters but different dimensions.)* Which shape do you think has the greater perimeter? Why? Test your prediction.	
	Q: Three congruent rectangles are put together end to end. The total perimeter around the new rectangle is between 70 cm and 100 cm. What might the perimeter of each smaller rectangle be? Show your thinking.	MPA • Page 15

E2.1 (continued)	**Q:** A six-sided shape has a perimeter of 60 cm. Use centimetre grid paper to draw the shape.	MPA • Page 15
	Q: On a centimetre grid, draw a letter of the alphabet using horizontal and vertical straight lines so that the perimeter is at least 20 cm. Measure the perimeter.	
	Q: Three different shapes each have a perimeter of 40 toothpicks. What might the shapes look like? Build them to be sure they work.	
	Q: The perimeter of a rectangle is about six times the length of one of its sides. What might the dimensions of the rectangle be? Explain.	
	Q: The shortest side of a hexagon is 5 cm and the longest side is 12 cm. What do you know for sure about the perimeter? How do you know?	MPA • Page 16
	Q: Estimate the perimeter of each shape. Explain.	
	Q: You are measuring the perimeter of an irregular octagon and you need to measure only four side lengths to figure it out. What could the octagon look like? Draw it. Show which side lengths you need to know to determine the perimeter. What is the perimeter?	
	Q: Two rectangles that are not identical have the same perimeter. What might their lengths and widths be?	
	Q: Draw a polygon with a perimeter of more than 20 cm but less than 30 cm.	
	Q: What other shape might belong with these two? Explain your choice.	MPA • Page 52
	Q: When might someone who is not in school need to calculate the perimeter of a shape? What units might he or she use?	
	Q: Choose a two-digit number. Create a four-sided shape, a five-sided shape, and a six-sided shape with a perimeter of that many centimetres.	MPA • Page 53
	Q: You have two shapes, each with a perimeter of 50 cm. When you join them, you create another shape that has a perimeter of 70 cm. Show how this is possible.	
	Q: Use grid paper to create a shape with at least 10 sides. What is its perimeter?	

E2.1 (continued)	**Q:** Why is it possible to create several shapes with the same perimeter?	MPA • Page 54
	Q: How is it possible to figure out the perimeter of some shapes when not all of the side lengths are marked and you don't use a ruler?	
	Q: Do shapes with more sides usually have greater perimeters?	
	Q: A shape has a perimeter of about 45 cm. Do you think the shape would fit on top of a piece of loose-leaf paper? Explain your thinking.	
	Q: Which shape do you predict will have the greater perimeter? Why?	MPA • Page 55
	Q: The perimeter of a rectangle is at least 10 times its width. What is the relationship between the length and the width of the rectangle?	MPA • Page 57
	Q: The perimeter of a rectangle is almost 4 times one of its side lengths. What might the dimensions of the rectangle be?	
	Q: Each side length of a rectangle is a whole number of centimetres. Describe a perimeter that is possible and a perimeter that is impossible for the rectangle to have. Explain your thinking.	MPA • Page 58
	Q: Describe how to calculate the perimeter of a rectangle.	
	Q: Use plastic links to make a rectangle with a perimeter of 32 links. Is it easy to make a different rectangle with that same perimeter? Explain.	MPA • Page 92
	Q: A parallelogram has a perimeter of 22 cm. How could you use what you know about the perimeter of the parallelogram to create other parallelograms that have perimeters that would be easy for you to figure out?	MPA • Page 95

E2.2 explain the relationships between millimetres, centimetres, metres, and kilometres as metric units of length and use benchmarks for these units to estimate lengths	**Q:** If it takes you an hour to walk to school, about how far away from school would you be?	MPA • Page 10
	Q: You are going to cut a sheet of paper into thin strips and tape the strips together end to end. Predict the length of the taped-together strip. Test your prediction.	MPA • Page 11
	Q: Choose two items that are less than 10 m long. Estimate the length of each item in metres, then measure. Choose two other items that are less than 10 cm long to estimate and measure using centimetres. Repeat using millimetres.	
	Q: Estimate how many steps you would take to walk 1 km. Describe how you estimated.	
	Q: When would you measure something in decimetres?	MPA • Page 12
	Q: How would you convince someone that there are 1000 mm in a metre?	
	Q: A person is about 135 cm tall. About how old is that person likely to be?	
	Q: Kyle drew a line with a length measured in millimetres. Lia drew a line with a length measured in centimetres. Lia's line is a little shorter than Kyle's. How long might their lines be?	
	Q: Someone said that 1000 units in length is very long. Do you agree or disagree? Explain.	
	Q: Estimate the length, width, height, or perimeter of two items in centimetres. Then, measure them. Do the same for two items using using millimetres.	MPA • Page 53
	Q: One person described a distance in metres, and another person described the same distance in kilometres. Could both choices make sense? Explain.	MPA • Page 54

E2.3 use non-standard units appropriately to estimate, measure and compare capacity, and explain the effect that overfilling or underfilling, and gaps between units, have on accuracy	**Q:** Estimate the capacity of this vase. How did you make your estimate?	MPA • Page 25
E2.4 compare, estimate, and measure the mass of various objects, using a pan balance and non-standard units	**Q:** Sometimes, the minute and hour hands on the classroom clock form a right angle. Other times, they form an acute or an obtuse angle. At about what time might you have looked at the clock to see each of these three types of angles? Draw a time on a clock for each angle type.	MPA • Page 45
	Q: About how much mass might be on each side of a pan balance if the pan balance looks like this?	MPA • Page 22
	Q: Choose five objects and use a pan balance to order them from lightest to heaviest. Sketch what your pan balance looks like when you compare the masses to prove you are right.	MPA • Page 23
	Q: Can you just look at an object and estimate its mass? Explain.	MPA • Page 24
	Q: You want to put four objects in order from lightest to heaviest. How would you do this if you didn't have a scale?	
E2.5 use various units of different sizes to measure the same attribute of a given item, and demonstrate that even though using different-sized units produces a different count, the size of the attribute remains the same	There are no Grade 3 Open Questions that meet this 2020 curriculum expectation.	

Time		
E2.6 use analog and digital clocks and timers to tell time in hours, minutes and seconds	**Q:** Someone reading the time says the words “after,” “ten,” “five,” and one or more other words. What time could it be? Is there only one possible time?	MPA • Page 28
	Q: Choose values for the blanks to create a time. Show that time on an analogue clock.	
	Q: All three hands on a clock are at almost the same place. About what time could it be?	MPA • Page 65

Area		
E2.7 compare the areas of two-dimensional shapes by matching, covering or decomposing and recomposing the shapes, and demonstrate that different shapes can have the same area	**Q:** Which pattern blocks do you expect to see a lot of when you are covering a design with the least number of blocks possible? Show and tell why this makes sense.	MPA • Page 114
	Q: How does the area of your hand compare to the area of your foot?	MPA • Page 60
E2.8 use appropriate non-standard units to measure area, and explain the effect that gaps and overlaps have on accuracy	**Q:** Make a triangle out of 10 or more pattern blocks. Trace it. What is the greatest and least number of pattern blocks that you can use to cover your triangle?	MPA • Page 110
	Q: Picture a design made out of four to six hexagon pattern blocks. Imagine that you cover the design using triangle pattern blocks. How many of these blocks would it take to cover your design? Tell how you know.	MPA • Page 113
	Q: On grid paper, draw two polygons that have many sides and an area of 11 square units each.	MPA • Page 18
	Q: What other shape might belong with these? Build the shape with square tiles and explain why you chose this shape.	MPA • Page 59
	Q: Use pattern blocks to create two very different designs with the same area. How do you know the designs have the same area?	
	Q: Use grid paper to draw some irregular shapes with areas that would be easy to figure out. Then, draw some regular shapes with areas that would be harder to figure out. Explain your thinking.	
	Q: When might someone who is not in school need to calculate the area of something?	

E2.8 (continued)	**Q:** Use a geoboard to create several polygons. Figure out the area of each shape.	MPA • Page 60
	Q: Choose an area between 4 and 30 square tiles. Build a 4-sided shape, a 6-sided shape, and an 8-sided shape with that area.	
	Q: About how much floor area would all the boots of the students in your class cover?	
	Q: *(Provide students with a variety of entertainment and business magazines.)* About what fraction of the area of a page in an entertainment magazine is covered by pictures? About what fraction of the page is not covered by pictures? Are these fractions the same for a news or business magazine? Describe your method of figuring this out.	
	Q: What is a reasonable estimate for the area of a paper plate? How do you know?	MPA • Page 61
	Q: Is it easy to know the number of yellow pattern blocks it would take to cover a shape that is made of 20 green and 4 red blocks? Explain your thinking.	
	Q: Construct a growing pattern of equilateral triangles using green pattern blocks. What areas (in triangle units) and perimeters (in triangle side-length units) are you able to make? What areas and perimeters can't you make?	MPA • Page 92
	Q: On a geoboard, make a shape with an area of 8 squares and a perimeter between 10 and 15 units. How do you know the area and perimeter are correct?	MPA • Page 19
	Q: Research the sizes of rugs. Estimate the areas of three different rectangular rugs.	
	Q: Create two rectangles and two other polygons on centimetre grid paper. Determine the area of each shape. Double all the side lengths and calculate the area of each larger shape. What do you notice about the areas of the larger shapes compared to the smaller shapes?	MPA • Page 20
	Q: Create a rectangle that has about the same area as two yellow pattern blocks. Explain how you know your rectangle is a reasonable size.	
	Q: When might you care more about the area of a shape than about its perimeter?	MPA • Page 21
	Q: On grid paper, draw a polygon with five or more sides that has an area between 20 and 30 squares.	
	Q: A picture is hanging on a wall in the principal's office. Do you think the picture is more likely to have an area of about 50 cm2, 500 cm2, 5000 cm2, or 50 000 cm2? Explain.	MPA • Page 61
	Q: Without measuring, cut a piece of paper that you think has an area of about 150 cm2. Explain how you estimated its area. Check your estimate.	MPA • Page 88

K–3 Open Questions for the Three-Part Lesson:
Geometry and Spatial Sense • Data Management and Probability [GSSDP]

2020 Ontario Curriculum Expectations	Open Questions for the Three-Part Lesson: Geometry and Spatial Sense • Data Management and Probability	Book & Page #
E. SPATIAL SENSE		
E1. Geometric and Spatial Reasoning **Overall Expectation:** By the end of Grade 3, 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 sort, construct, and identify cubes, prisms, pyramids, cylinders, and cones by comparing their faces, edges, vertices, and angles	**Q:** *(Show students a collection of 3-D figures and two sorting hoops.)* Make up a sorting rule about the faces of 3-D figures. Then, sort these figures into the sorting hoops using your rule. Afterwards, make up a sorting rule about vertices. Then, sort the figures using your new rule.	GSSDP • Page 73
	Q: Build one or two prisms or pyramids with an even number of toothpicks. Use modelling clay to join the toothpicks. Then, build one or two prisms or pyramids with an odd number of toothpicks. Tell what figures you build each time. How many faces, edges, and vertices do your figures have?	GSSDP • Page 74
	Q: Pick one of the following figures: triangle-based prism pentagon-based pyramid rectangle-based prism cube. Use the chart below to list details about your figure. List a few details in each column. Then, repeat the exercise for one of the other figures.	GSSDP • Page 75
	Q: Choose one of the following figures without saying your choice	GSSDP • Page 76
	Q: If you know the number of vertices on the base of a 3-D figure, what else do you know for sure about the figure?	
	Q: Using toothpicks and modelling clay, make two prisms that look different from each other. Then, make two pyramids that look different from each other. Tell all the things that you notice about each figure.	
	Q: Choose a cube, a prism, or a pyramid. Then, do the following ...	GSSDP • Page 77
	Q: If you were sorting 3-D figures, which two of the figures below might go together? Explain your answer.	GSSDP • Page 115

E1.1 (continued)	**Q:** Tell three or four things that you know about one of these figures:	GSSDP • Page 115
	Q: Fill in the two blanks below with the same 2-D shape. • a(n) _____-based prism • a(n) _____-based pyramid Use toothpicks and modelling clay to make these two figures. Then, describe your figures.	GSSDP • Page 116
	Q: *(Show students two overlapped sorting hoops with a pentagon-based pyramid in the centre.)* This figure belongs in the overlapped section of these two hoops. Working in a group, describe the figure. Sort other figures using the hoops by applying rules that explain why the pentagon- based pyramid is in the middle. Tell what rules you used for the hoops.	
	Q: A riddle goes like this: A 3-D figure has double the number of vertices as the 2-D shape on its base has. What might the figure be? Answer the riddle. Then, make and answer your own riddle about 3-D figures. Include the word “faces,” “vertices,” or “edges” in your riddle.	GSSDP • Page 117
	Q: *(Show students a sorting hoop.)* This hoop has a sorting rule that has something to do with a 2-D shape on the face of a figure. Sort a collection of prisms and pyramids using your rule. *(Show students another sorting hoop.)* This hoop has a sorting rule that has something to do with vertices or edges. Sort the same figures using your sorting rule and this hoop. Then, overlap the hoops. Use the same sorting rules that you used before for each hoop, and sort the same figures again.	
	Q: How does the name of a prism or a pyramid help you to know the number of vertices and edges that the figure has?	GSSDP • Page 118
	Q: Imagine that you have to tell as many things as you can about a 3-D figure that is a pyramid or a prism. Do you think that it is more useful to know the 2-D shape on its base or to know if it’s a pyramid or a prism? Explain your thinking.	
	Q: Think of a pyramid and a prism with the same 2-D shape on their bases. Tell all the things that are the same and all the things that are different about the two figures.	
	Q: Dylan starts building a 3-D figure like this: What figure could Dylan be building? What figure could Dylan not be building?	GSSDP • Page 16
	Q: Tell some things that you know about either a pyramid or a prism.	
	Q: You sort prisms and pyramids into two or three categories and have a lot more figures in one category than the other(s). What might your sorting rule be? Sort figures to show that your answer makes sense.	GSSDP • Page 17

E1.1 (continued)	**Q:** Using 3-D construction shapes, what 3-D figures can you make using only congruent 2-D shapes?	GSSDP • Page 17
	Q: Build three uncommon 3-D figures. Make one from linking cubes, one from 3-D construction shapes, and one from toothpicks and modelling clay. Then, ask a partner to make copies of your 3-D figures using the same materials that you used. Have your partner explain how he or she knows that his or her figures are the same as yours.	
	Q: A 3-D figure has more than twice as many edges as faces. What could the figure be? Make your own riddle about 3-D figures using the words "edges," "faces," and/or "vertices." Share it with a partner to see if he or she can solve it.	GSSDP • Page 18
	Q: Use modelling clay and toothpicks to create two different 3-D figures. Use fewer than a total of 40 toothpicks for both figures. Then, sketch your figures. Tell some things that you notice about each of your figures.	GSSDP • Page 19
	Q: Build at least three prisms and at least three pyramids out of 3-D construction shapes. Tell how you know that each is a prism or a pyramid.	
	Q: Choose either a triangle-based prism or a rectangle-based prism. Make a toothpick skeleton, a net, a drawing, and a modelling-clay figure of the prism that you chose. Describe what each model quickly tells you about the prism. Then, tell what is the same and different about your models.	GSSDP • Page 20
	Q: What is the least amount of information that you need to know about a prism or a pyramid to figure out how many faces, edges, and vertices the figure has? Explain your answer.	
	Q: How are these figures alike? How are they different?	GSSDP • Page 50
	Q: Choose two of the nets below. Would these two nets fold into a square-based pyramid? Explain your answer.	
	Q: Build two or three figures from toothpicks and modelling clay. All of their faces must be quadrilaterals. One figure must have all rectangle faces, and one figure must not have any rectangle faces. What might the figures look like?	GSSDP • Page 51
	Q: Find or make two examples of each of these types of figures: • right prisms • prisms that are not right prisms • figures that are not prisms	
	Q: Sort 3-D figures using sorting hoops that are set up like the following ...	GSSDP • Page 52

E1.2 compose and decompose various structures, and identify the two-dimensional shapes and three-dimensional objects that these structures contain.	**Q:** A hexomino is a shape made from six squares. This hexomino folds into a cube	GSSDP • Page 74
	Q: Build a structure using six 3-D figures. Then, have a partner look at your structure for 3 seconds. Challenge your partner to recreate your structure. Compare your structures. Then, discuss what 2-D shapes are in your structures.	
	Q: Imagine that you need to build a tall tower out of 3-D figures. What 3-D figures and 2-D shapes would you expect to see more of at the bottom and top of your structure? Build a tall tower out of 8 to 10 blocks to show that your answer makes sense.	GSSDP • Page 77
	Q: This 2-D shape is one of the faces of a 3-D figure. What might the figure be? What could the figure not be?	GSSDP • Page 115
	Q: A triangle could be a face on a(n) _____, but it could not be a face on a(n) _____. Fill in the blanks with the names of two 3-D figures to make this statement true.	
	Q: A rectangle-based prism made from linking cubes has…What might the prism look like?	GSSDP • Page 117
	Q: What do you notice about these nets?	GSSDP • Page 16
	Q: Trace and cut out each of the faces of a prism or a pyramid. Arrange them in two ways so that they would fold into the prism or pyramid that you chose if they were connected. Then, arrange them in two ways so that they would not fold into the prism or pyramid that you chose. Explain why your arrangements work for each case.	GSSDP • Page 18
	Q: Choose a pyramid or a prism. Trace one face from the figure that you chose. Then, carefully roll your figure onto another face, and trace this second face. Continue to roll and trace until you have created a net for your figure. Then, repeat these steps to create a second net for the same figure that looks different. Compare your nets.	
	Q: Choose one of these nets that are each missing a face. Predict what 3-D figure the net would fold into if you added a 2-D face to it. Then, experiment to find out if you are right. Tell one or more places where you could add this 2-D face to complete the net for this figure.	GSSDP • Page 19
	Q: Stella would like to make 3-D figures from congruent shapes. What advice would you give her to help her make these figures? Tell why your advice is important.	GSSDP • Page 20

E1.2 (continued)	**Q:** Choose a type of prism or pyramid that you know well. Visualize and sketch what you think a net for it could look like if you unfolded the figure.	GSSDP • Page 50
	Q: You see a net that includes triangles. What figure might it fold up into? What figure could it not fold up into?	
	Q: Make nets by using six 3-D construction squares for each one. Make three or four different nets that you know can fold into a cube. Then, make three or four different nets that you know cannot fold into a cube. Tell what you notice.	GSSDP • Page 51
	Q: Use 3-D construction shapes to make three or four pyramids and prisms. Next, carefully unfold each figure into a net. Then, share your nets with a partner, and challenge him or her to predict what figures you had made.	
	Q: What different ways might you determine what figure a net would fold into if you weren't able to touch the net?	GSSDP • Page 52
	Q: Choose three or four of the following pentomino shapes. Decide where you could add a square tile to each one to make a net for a cube.	
	Q: Using toothpicks and modelling clay, make a prism that has perpendicular faces and a prism that does not have perpendicular faces. Use a tool to show that your figures work. Then, explain which of your figures are right prisms.	GSSDP • Page 126
E1.3 identify congruent lengths , angles, and facts of three-dimensional shapes by mentally and physically matching them, and determine if the objects are congruent	**Q:** Working in a group, make six or more squares or six or more triangles using tangram pieces. Which of the squares or triangles that you created are congruent (the same size and shape)? Tell how you know.	GSSDP • Page 111
	Q: You want to draw two congruent triangles. Tell what you would do to make sure that they are congruent.	GSSDP • Page 114
	Q: You built these rectangle- based prisms: What does each model show about rectangle-based prisms?	GSSDP • Page 118

Location and Movement		
E1.4 give and follow multistep instructions involving movements from one location to another, including distances and half- and quarter- turns	**Q:** Pick two spots in the classroom. Tell a partner how to get from one spot to the other.	GSSDP • Page 119
	Q: Drew moves five times to get to the hidden treasure chest. Draw a grid like the one here, and mark three places where the treasure chest might be with a different coloured *X*. What five moves would Drew make to get to each *X*?	GSSDP • Page 120
	Q: A grid map has a circle and a square on it. You want to help Harman get to the circle and then to the square. What information would you include with your directions to help Harman get to his destinations as easily as possible?	GSSDP • Page 121
	Q: Think of an area or object in the classroom. Describe to a partner where it is without telling him or her what the area or object is. Then, ask your partner to guess what the area or object is.	GSSDP • Page 21
	Q: Addison and Jack are looking at the same letter on the grid below. Why might they describe the location of the letter in very different ways?	GSSDP • Page 24

D. DATA

D1. Data Literacy

Overall Expectation: By the end of Grade 3, 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 sort sets of data about people or things according to two and three attributes, using tables and logic diagrams, including Venn, Carroll, and tree diagrams, as appropriate	**Q:** Use five or six sentences to describe one piece of clothing that a classmate is wearing.	GSSDP • Page 124
	Q: This stick figure can be sorted with one of the two stick figures below. Explain which one it could be sorted with.	
	Q: Find three classroom objects that are similar in two ways. Tell how they are similar.	
	Q: What is an object that you use a lot in class? Describe its colour, size, shape, and texture.	
	Q: Which two of these items do you think are the most alike? Explain your answer.	
	Q: The first hoop has a rule about colour. The second hoop has a rule about texture. Make a rule for each, and find six to eight objects in the classroom to put in the hoops. Tell why each object belongs where you put it.	GSSDP • Page 125
	Q: A train of pictures starts like this…Two or more things change about the shape each time you go to the next section of the train. What could go in the rest of the boxes? Tell what changes each time.	
	Q: A shape pattern has two of these changes: colour changes, shape changes, and position changes. One of the changes follows an AB pattern. The other does not. What might the pattern look like?	
	Q: This coloured pencil goes where these two sorting hoops overlap: Tell what sorting rule you think that each hoop might have. Then, list three objects that could go in each hoop and three objects that could go into the overlapped section, according to your rules.	GSSDP • Page 126

	Q: Which one of these stick figures do you think is the least like the others? Using this as a model, find or draw four objects to make your own "Which do you think is the least like the others?" puzzle. Try to make it so that there could be a reason that each object might not belong. Tell why the objects might not belong. Test your puzzle out on a classmate.	GSSDP • Page 126
	Q: How does making a list of descriptions about an object help you to find two or more things that it has in common with other objects? Give an example to explain your answer.	
D1.2 collect data through observations, experiments, and interviews to answer questions of interest that focus on qualitative and quantitative data, and organize the data using frequency tables	**Q:** Someone asks, "What is your favourite book?" Who might ask this question, and why might he or she ask it?	GSSDP • Page 127
	Q: You ask your classmates, "What is your favourite kind of_____?" Fill in the blank. Then, collect the results. Show how you would organize the results on a graph using circles. Use 1 circle to represent each set of 2 answers that you get.	GSSDP • Page 128
	Q: What do you think are the three most important things that Grade 3 students can do to protect the environment? Design a survey to see which of your classmates do these things. Collect the results. Organize the results into a bar graph by using 1 square on your grid paper to represent 3 answers.	
	Q: Make a list of three to five objects that you see a lot in school. Go for a short walk around the school, and record how many times you see these things. Collect and organize your results in more than one way.	GSSDP • Page 129
	Q: The answer to a survey question that you ask your classmates is yes or no. What question might you ask? Ask your classmates your question. Collect and organize the results in a way that will make them easy to read.	
	Q: How are these survey questions below similar? How are these survey questions different? A. Is your favourite colour red? B. Which is your favourite warm colour: red, yellow, or orange? C. What is your favourite colour?	GSSDP • Page 130
	Q: You are conducting a survey that will help to _____. Fill in the blank. What are some useful questions that you could ask? Explain why you would ask these questions.	

Data Visualization		
D1.3 display sets of data, using many-to-one correspondence, in pictographs and bar graphs with proper sources, titles, and labels, and appropriate scales	**Q:** What information is missing from this graph? What information could you add that would make sense for this graph? Explain your answer.	GSSDP • Page 127
	Q: You have a pictograph that starts off looking like this: 12 people answer "other" for their shirt colour. How might you show this on the graph even though there are only 7 blank boxes for each category?	
	Q: You ask your classmates, "What is your favourite kind of _____?" Fill in the blank. Then, collect the results. Show how you would organize the results on a graph using circles. Use 1 circle to represent each set of 2 answers that you get.	GSSDP • Page 128
	Q: What do you think are the three most important things that Grade 3 students can do to protect the environment? Design a survey to see which of your classmates do these things. Collect the results. Organize the results into a bar graph by using 1 square on your grid paper to represent 3 answers.	
	Q: This graph shows that 4 people have blue eyes, and 2 people have green eyes…Most of the people who were surveyed have brown eyes. Choose how many of them have brown eyes, and draw what the "brown" column would look like on this graph. Explain your answer.	GSSDP • Page 129
	Q: Make a list of three to five objects that you see a lot in school. Go for a short walk around the school, and record how many times you see these things. Collect and organize your results in more than one way.	
	Q: Imagine that you are asked to make a pictograph with this set of data: What Is Your Favourite Sport to Watch on TV? Football: 18 Basketball: 6 Hockey: 12 How might you show this information using fewer than 20 symbols in total? Explain your answer.	GSSDP • Page 130

Data Analysis		
D1.4 determine the mean and identify the mode(s), if any, for various data sets, involving whole numbers, and explain what each of these measures indicates about the data	There are no Grade 3 Open Questions that meet this 2020 curriculum expectation.	
D1.5 analyse different sets of data presented in various ways, including in frequency diagrams and in graphs with different scales., by asking and answering questions about the data and drawing conclusions, then make convincing arguments and informed decisions	**Q:** You overhear someone say the word "fewer" while looking at the graph below. What might he or she have said?	GSSDP • Page 131
	Q: Pick one of the graphs below. Tell all the things that you notice about the graph, and compare the data values in it to one another. What story might the data be telling?	GSSDP • Page 132
	Q: Krish looks at a graph and concludes that it is summer. What might the graph look like?	GSSDP • Page 134
	Q: A graph looks like this:What Footwear Are You Wearing? What do you know for sure by looking at the graph? What might be true about this set of data, but you aren't sure? What do you predict would happen if another student's response were added to the graph?	

D2. Probability **Overall Expectation:** By the end of Grade 3, students will describe the likelihood that events will happen, and use that information to make predictions		
D2.1 use mathematical language, including the terms “impossible”, "unlikely: :"equally likely", , and “certain”, to describe the likelihood of complementary events happening, and use that likelihood to make predictions and informed decisions	**Q:** If someone were to spin these spinners, what words describe how likely it would be for each spinner to land on red?	GSSDP • Page 61
	Q: You overhear a classmate say, “I am very likely to do that tomorrow.” What do you think that this person might be talking about?	
	Q: Make one spinner for each of the following descriptions so that…Tell why you think that your spinners work for the descriptions. Spin each spinner 10 times to test your prediction.	GSSDP • Page 62
	Q: Skip count by 1s, 2s, 5s, or 10s up to 100. Write down the numbers that you say on a sheet of paper. Are you more likely to say a number with a 2 or a 5 in it when you skip count by the number you chose? Repeat the exercise by skip counting by one of the other numbers.	
	Q: Put some linking cubes into bags so that each of the following descriptions would make sense if you picked a cube from each one of them.	GSSDP • Page 63
	Q: Pick a place that you know really well. Make a list of things that someone would likely, unlikely, certainly, and certainly not see there. Tell why you chose “likely,” “unlikely,” “certainly,” or “certainly not” for each thing.	
	Q: Think of four different events. Think of: • one that is impossible; • one that is unlikely;• one that is certain to happen;• one that is likely to happen. Then, tell a partner your four events, but don’t tell him or her which event goes with each description above. Ask your partner to tell you if your events are impossible, unlikely, certain, or likely to happen.	
	Q: The answer to a question is “almost always.” What could the question be?	GSSDP • Page 99
	Q: You predict that when a spinner is spun, its arrow is: • more likely to land on grey than white;• unlikely to land on blue;• equally likely to land on yellow as white; • certain to not land on purple. Draw a picture to show what the spinner might look like.	

D2.1 (continued)	**Q:** Think of an event or a special tradition that you celebrate. Use all of the words below to talk about things that you do or that happen during the event or special tradition.	GSSDP • Page 100
	Q: Play a probability game with a partner where he or she will pull linking cubes out of a bag. Make at least two rules for your game. You can use the template below to help you, or you can come up with your own probability statements.	
	Q: If you placed one of each type of Canadian coin in a paper bag, what do you think is…	
	Q: Something is very unlikely to happen today, and you are happy about this. What could it be? Something else is very likely to happen today, and you are happy about that as well. What could it be? How is it possible that something very unlikely and something very likely can both be things that make you happy?	GSSDP • Page 101
	Q: A probability line looks like this: impossible certain. Where would you put the following terms along the line? Using a different colour for each term, colour sections along the probability line that show where each term falls.	
	Q: Give two or three examples of how the words “equally likely” can be used in different situations.	
	Q: A player gets a point when the arrow on the spinner below lands on his or her colour. Stephanie predicts that yellow will get the most points because it is a big piece. Olivia predicts that red will get the most points because there are 2 red pieces. Which person do you agree with? Why?	GSSDP • Page 135
	Q: Write a sentence using the phrase “a lot more likely” to describe a situation.	
	Q: Imagine that these linking cubes are in a bag: Choose three of the terms below. Write one sentence for each one to talk about the chance of pulling certain colours out of the bag.	

D2.1 (continued)	**Q:** A player gets a point when the arrow on a spinner lands on his or her colour. Make a spinner for each situation below. 1. Each player has a fair chance at getting a point, but this is hard to see. 2. The game is a little unfair for one of the players. 3. The game is very unfair for one of the players. Tell how each spinner works for each situation. Predict what the results for each game would be if the spinner were spun 10 times. Then, test your predictions by playing each game.	GSSDP • Page 136
	Q: Malaya has 8 linking cubes in a bag. She pulls out one cube and then places it back into the bag. She does this 20 times. She predicts that she will pull out a lot of red cubes, a small number of yellow cubes, and 5 blue cubes. What 8 cubes might be in the bag? Create a bag with the cubes, and test your prediction. What do you notice?	
	Q: Braeden and Carlene got the following results after rolling a number cube 10 times each. Why does it make sense that their results are different? What results would you predict that they would get if they each rolled a number cube 100 times?	GSSDP • Page 137
	Q: Each player gets a point when the arrow on a spinner lands on his or her colour. Draw two or three different spinners that some people might think are fair to all players but really are not. Tell why some people might think that the spinners are fair and why they are not.	
	Q: Imagine that you need a spinner to help you choose among three things. How could you design the spinner so that there is an equally likely chance that the spinner will land on each choice? Draw the spinner, and tell why it works.	

D2.2 make and test predictions about the likelihood that the mean and the mode(s) of a data set will be the same for data collected from a different population	**Q:** In what situations are you certain of which person will win a probability game?	GSSDP • Page 137

F. FINANCIAL LITERACY

F1. Money and Finances

Overall Expectation: By the end of Grade 3, students will demonstrate an understanding of the value of Canadian currency

Money Concepts

F1.1 estimate and calculate the change required for various simple cash transactions involving whole-dollar amounts and amounts less than one dollar	**Q:** If you bought something for 40¢, what coins would you get back if you paid with coins worth more than 40¢?	Grades K–3 Number • Page 114
	Q: Why do you think that some people add up when making change?	
	Q: Why do you think that some people add up to count change?	Grades 4–8 Book Number • Page 41
	Q: Why might you end up getting more coins in change than the number of coins you used to pay for the item?	Grades 4–8 Book Number • Page 43

Grade 3 Open Questions that now align with other grades in the Ontario 2020 Curriculum

Grade 3 Open Questions that align with Grade 2 Expectations		
Grade 2 **F1.1**	**Q:** You show an amount of money using three coins. What might that amount be?	Number • Page 114
	Q: You represent an amount of money with seven coins. What might that amount be? Is it sometimes possible to use fewer coins to represent that same amount? If it is, give an example.	
	Q: When you trade coins for different coins of equal value (e.g., one quarter for five nickels), how might the number of coins change?	Number • Page 116
	Q: When you estimate the value of a pile of coins, what coins do you pay the most attention to and what coins do you ignore?	
	Q: Do you think it's usually or always useful to group coins of the same amount when you are counting a pile of coins? Why or why not?	
	Q: How could two children have the same amount of money even though one has many fewer coins?	

Grade 3 Open Questions that align with Grade 5 Expectations		
Grade 5 **F1.2**	**Q:** You buy something and pay the clerk $10. You get one bill and five coins back. How much might your item have cost? Think of different possibilities, and show your thinking.	Number • Page 115
	Q: You buy three items, and your change from $10 is $3.15. Whatcould each of your three items have cost? Explain your answer. Think of three or more possibilities.	
	Q: Twenty coins are worth about $8. What might the coins be? Give three or more possibilities.	
	Q: Choose two digits to fill in the boxes: []. You can use different digits or the same digit twice. Tell three or more ways you can show that amount of money.	