Model Curricula Alignment Template for Mathematics

Resource Name: Imagine Learning Illustrative Mathematics Grade 2

Model Unit Name	Model Unit Standards	Resource Unit(s) Number and Lessons	Standard Frequency
This is the title of the unit in the model curricula	*These are the standards addressed in the unit*	*This is the unit(s) that aligns with the model unit from the resource*	*This is the total number of lessons the standard is addressed*
Pacing - Illustrative Mathematics K-2 lessons are designed to fit within a class period that is at least 60 minutes long. Pacing guidance for each activity is provided in the lesson plans.			
Fact Strategies (Addition and Subtraction) Up to Twenty and Money Identification			
	2.OA.A.1	Grade 2, Unit 1, Lesson 15: Diagrams with All Kinds of Compare Problems	24 Lessons
		Grade 2, Unit 2, Lesson 11: How Do You Solve Story Problems	
	2.OA.B.2	Grade 2, Unit 1, Lesson 1: Add and Subtract Within 10	31 Lessons
		Grade 2, Unit 1, Lesson 4: Add and Subtract Your Way	
	2.NBT.B.9	Grade 2, Unit 2, Lesson 2: Find the Unknown Addend	14 Lessons
		Grade 2, Unit 2, Lesson 8: Different Ways to Decompose	
	2.MD.C.8	Grade 2, Unit 6, Lesson 15: Identify Pennies, Nickels, and Dimes	7 Lessons

		Grade 2, Unit 6, Lesson 16: Identify Quarters	
Skip Counting and Place Value up to 1,000 Including Time and Money			
	2.NBT.A.1	Grade 2, Unit 5, Lesson 1: How Do We Compose a Hundred?	16 Lessons
		Grade 2, Unit 5, Lesson 4: Write Three-digit Numbers	
	2.NBT.A.2	Grade 2, Unit 4, Lesson 2: Features of a Number Line	22 Lessons
		Grade 2, Unit 6, Lesson 12: Count by 5 to Tell Time	
	2.NBT.A.3	Grade 2, Unit 5, Lesson 5: Expanded Form of Numbers	7 Lessons
		Grade 2, Unit 5, Lesson 11: Place Value Comparisons (Part 2)	
	2.NBT.A.4	Grade 2, Unit 5, Lesson 10: Place Value Comparisons (Part 1)	6 Lessons
		Grade 2, Unit 5, Lesson 12: Order Numbers	
	2.MD.C.7	Grade 2, Unit 6, Lesson 13: Is It a.m or p.m?	3 Lessons
		Grade 2, Unit 6, Lesson 11: Tell Time with Halves and Quarters	
	2.MD.C.8	Grade 2, Unit 6, Lesson 17: Let’s Make a Dollar	7 Lessons
		Grade 2, Unit 6, Lesson 18: Money Problems	
Fluency with Addition and Subtraction within 100 and Problem Solving with Money			
	2.OA.A.1	Grade 2, Unit 2, Lesson 14: Solve It Your Way	24 Lessons
		Grade 2, Unit 4, Lesson 12: Equations with Unknowns	

	2.OA.B.2	Grade 2, Unit 1, Lesson 11: Questions About Data Grade 2, Unit 1, Lesson 3: Relate Addition and Subtraction within 20	31 Lessons
	2.NBT.A.1	Grade 2, Unit 5, Lesson 5: Expanded Forms of Numbers Grade 2, Unit 7, Lesson 12: Decompose to Subtract	16 Lessons
	2.NBT.B.5	Grade 2, Unit 4, Lesson 9: The Difference Between Numbers Grade 2, Unit 2, Lesson 13: Story Problems and Equations	60 Lessons
	2.NBT.B.6	Grade 2, Unit 2, Lesson 7: Subtract Two Digits Grade 2, Unit 2, Lesson 16: Our Market's Inventory	7 Lessons
	2.NBT.B.9	Grade 2, Unit 7, Lesson 8: Compose Tens and Hundreds to Add Grade 2, Unit 7, Lesson 4: Add and Subtract Three-digit Numbers in Different Ways	14 Lessons
	2.MD.C.8	Grade 2, Unit 6, Lesson 19: More Money Problems Grade 2, Unit 6, Lesson 21: Pattern Block Puzzles	7 Lessons

Exploring Addition and Subtraction within 1000			
	2.OA.B.2	Grade 2, Unit 2, Lesson 5: Subtract Your Way Grade 2, Unit 8, Lesson 5: Patterns with Even and Odd Numbers	31 Lessons
	2.NBT.A.1	Grade 2, Unit 5, Lesson 14: Hundreds of Objects Grade 2, Unit 7, Lesson 12: Decompose to Subtract	16 Lessons
	2.NBT.B.5	Grade 2, Unit 2, Lesson 3: Add or Subtract to Solve Story Problems Grade 2, Unit 2, Lesson 9: Add and Subtract Within 100	60 Lessons
	2.NBT.B.7	Grade 2, Unit 7, Lesson 6: Use a Ten to Add Within 1000 Grade 2, Unit 7, Lesson 13: Decompose Tens or Hundreds	22 Lessons
	2.NBT.B.8	Grade 2, Unit 7, Lesson 1: Compare, Count on, and Count Back Grade 2, Unit 5, Lesson 12: Order Numbers	9 Lessons
	2.NBT.B.9	Grade 2, Unit 7, Lesson 16: Subtract Within 1000 Grade 2, Unit 7, Lesson 10: Add Within 1000	14 Lessons
Linear Measurement & Analyzing and Interpreting Data			
	2.OA.A.1	Grade 2, Unit 1, Lesson 16: Solve All Kinds of Compare Problems Grade 2, Unit 2, Lesson 12: Story Problems and Diagrams	24 Lessons
	2.MD.A.1	Grade 2, Unit 6, Lesson 3: Specific Side Lengths	

		Grade 2, Unit 3, Lesson 8: What is an Inch?	15 Lessons
	2.MD.A.2	Grade 2, Unit 3, Lesson 9: From Feet to Inches	1 Lesson
	2.MD.A.3	Grade 2, Unit 3, Lesson 4: Measure and Estimate in Centimeters Grade 2, Unit 3, Lesson 5: Measure in Meters	7 Lessons
	2.MD.A.4	Grade 2, Unit 3, Lesson 2: Measure in Centimeters Grade 2, Unit 3, Lesson 3: Create and Use a Ruler	6 Lessons
	2.MD.B.5	Grade 2, Unit 3, Lesson 6: Compare Reptile Lengths in Story Problems Grade 2, Unit 4, Lesson 13: Represent Story Problems	8 Lessons
	2.MD.B.6	Grade 2, Unit 4, Lesson 1: Whole Numbers on the Number Line Grade 2, Unit 3, Lesson 18: Make a Yard Stick	20 Lessons
	2.MD.D.9	Grade 2, Unit 3, Lesson 14: What is a Line Plot? Grade 2, Unit 3, Lesson 16: Interpret Measurement Data	6 Lessons
	2.MD.D.10	Grade 2, Unit 1, Lesson 8: Interpret Picture Graphs Grade 2, Unit 1, Lesson 10: Represent Data Using Picture and Bar Graphs	11 Lessons

Exploring Multiplication			
	2.NBT.A.2	Grade 2, Unit 2, Lesson 2: Find the Unknown Addend	22 Lessons
		Grade 2, Unit 5, Lesson 8: Three Digit Numbers on the Number Line	
	2.OA.C.3	Grade 2, Unit 8, Lesson 2: Partners Make Pairs	9 Lessons
		Grade 2, Unit 8, Lesson 3: Is it Odd or Even?	
	2.OA.C.4	Grade 2, Unit 8, Lesson 7: What is an Array?	6 Lessons
		Grade 2, Unit 8, Lesson 9: A Sum of Equal Addends	
	2.G.A.2	Grade 2, Unit 8, Lesson 11: Arrays and Rectangles	2 Lessons
		Grade 2, Unit 8, Lesson 12: Partition Rectangles into Squares	
Reasoning with Shapes			
	2.G.A.1	Grade 2, Unit 6, Lesson 1: Identify and Sort Shapes	10 Lessons
		Grade 2, Unit 6, Lesson 6: Compose and Decompose Shapes	
	2.G.A.3	Grade 2, Unit 6, Lesson 7: Make Halves, Thirds, and Fourths	3 Lessons
		Grade 2, Unit 6, Lesson 8: Are All Pieces Created Equal?	

Scope and Sequence			
If a district uses this resource to implement the state model curriculum for grade 3, the following scope and sequence should be followed to ensure alignment and attention to the progressions of mathematics.			
Unit Number/Title	**Lesson Title**	**Lesson Objectives**	**# of Days/Weeks (assume 1 hour of instruction)**
Unit 1: Adding, Subtracting, and Working with Data			**16-20 Days of Instruction -- 4 Weeks**
	Add and Subtract Within 20		
	Lesson 1	Add and subtract within 10	
	Lesson 2	Find the value that makes equations within 20 true	
		Write equations with unknown addends and sums of 10 and their related subtraction equations	
	Lesson 3	Find the number that makes equations within 20 true using the relationship between addition and subtraction	
	Lesson 4	Add and subtract within 20 in a way that makes sense to them	
	Lesson 5	Add within 50 in a way that makes sense to them	
	Lesson 6 - Optional	Learn the structure of center day lessons	
		Practice adding and subtracting within 10 or 20	
		Practice adding within 50	
	Ways to Represent Data		
	Lesson 7	Analyze different representations of the same data to identify common features	
		Represent data in a way that makes sense to them	
	Lesson 8	Answer questions based on a picture graph	
		Determine whether a question can be answered by a given picture graph	

		Interpret data represented in a picture graph	
	Lesson 9	Answer questions based on a bar graph	
		Interpret data represented in a bar graph	
	Lesson 10	Explain how picture graphs, bar graphs, and tables represent the same data	
		Represent data using a picture graph and a bar graph	
	Lesson 11	Generate and answer questions about data represented in picture graphs and bar graphs	
	Lesson 12 - Optional	Practice adding and subtracting within 10 or 20	
		Practice adding within 50	
		Represent data using picture and bar graphs	
	Diagrams to Compare		
	Lesson 13	Solve Compare problems with an unknown difference within 20	
		Write equations to represent Compare problems	
	Lesson 14	Solve Compare problems with an unknown difference within 20	
		Use understanding of bar graphs to make sense of tape diagrams	
	Lesson 15	Interpret tape diagrams that represent Compare problems, with unknowns in all positions within 100	
	Lesson 16	Solve Compare problems with unknowns in all positions within 100	
	Lesson 17	Count large collections of objects	
		Practice adding within 50	
		Represent data using picture and bar graphs	
	Lesson 18 - Optional	Collect, organize, and represent data from survey questions	
		Create questions related to survey data	
		Interpret results of a survey and represent findings	

Unit 2: Adding and Subtracting within 100			14-18 Days of Instruction -- 4 Weeks
	Add and Subtract		
	Lesson 1	Add and subtract within 100 in a way that makes sense to them without composing or decomposing a ten	
		Solve problems within 100	
	Lesson 2	Describe their methods using place value understanding	
		Find the unknown addend in equations within 100	
	Lesson 3	Describe their methods using place value understanding	
		Solve story problems involving addition and subtraction within 100 without composing or decomposing a ten	
	Lesson 4 - Optional	Add and subtract within 100	
	Decompose to Subtract		
	Lesson 5	Subtract a one-digit number from a two-digit number in a way that makes sense to them	
	Lesson 6	Describe how methods of subtraction are the same and different when subtracting a one-digit number from a two-digit number	
	Lesson 7	Subtract a two-digit number from a two-digit number in a way that makes sense to them	
	Lesson 8	Describe how methods of subtraction are the same and different when subtracting a one-digit number from a two-digit number	
	Lesson 9	Add and subtract within 100 using strategies based on place value, including composing and decomposing a ten, and the properties of operations	
	Lesson 10 - Optional	Add and subtract within 100	
	Represent and Solve Story Problems		
	Lesson 11	Represent and solve story problems within 50 in a way that makes sense to them	

	Lesson 12	Make sense of diagrams that represent story problems	
		Solve one-step story problems within 100	
	Lesson 13	Make sense of equations that represent story problems	
		Represent and solve one-step story problems within 100	
	Lesson 14	Use diagrams or equations to represent and solve one- and two-step story problems within 100	
	Lesson 15 - Optional	Add and subtract within 100	
		Interpret diagrams	
		Solve one-step story problems	
Unit 3: Measure Length			16-20 Days of Instruction -- 4 Weeks
	Metric Measurement		
	Lesson 1	Measure by iterating same-size length units	
	Lesson 2	Measure length in centimeters	
	Lesson 3	Create and use a ruler with centimeter units	
		Measure to determine how much longer one object is than another	
	Lesson 4	Estimate lengths in centimeters	
		Use standard rulers to measure length in centimeters	
	Lesson 5	Use standard rulers and meter sticks to measure length in centimeters and meters	
	Lesson 6	Solve addition and subtraction story problems about length	
	Lesson 7 - Optional	Estimate and measure objects and find the difference between their estimate and the actual measurement	
		Tell and solve story problems	
	Customary Measurement		
	Lesson 8	Define an inch as a unit of measure	

		Use a ruler to measure length in inches	
	Lesson 9	Compare measurements in feet and inches and describe the relationship between different measurements and the size of length units	
		Use rulers to measure length in feet and inches	
	Lesson 10	Determine the measurement of an object with a measuring tool when the endpoint does not line up with 0	
	Lesson 11	Solve one-step story problems about length within 100	
	Lesson 12	Solve two-step story problems about length within 100	
	Lesson 13 - Optional	Determine the unknown number that makes an equation true	
		Estimate and measure objects	
	Line Plots		
	Lesson 14	Interpret a line plot	
		Understand that a line plot is used to represent and interpret numerical data	
	Lesson 15	Represent numerical data in a line plot	
	Lesson 16	Interpret data presented in a line plot	
		Represent numerical data in a line plot using an appropriate scale	
	Lesson 17 - Optional	Add and subtract within 100	
		Estimate and measure length of objects	
	Lesson 18 - Optional	Use addition and subtraction to mark the inch marks on a yardstick	
		Use a yardstick to measure objects and compare measurements	

Unit 4: Addition and Subtraction on the Numberline			14-17 Days of Instruction -- 4 Weeks
	The Structure of the Number Line		
	Lesson 1	Locate whole numbers on a number line	
		Make sense of the structure of a number line	
	Lesson 2	Describe the structure of a number line	
	Lesson 3	Represent a whole number on a number line and describe the point in terms of its length from 0	
		Use skip-counting patterns to locate numbers on a number line	
	Lesson 4	Recognize that on a number line, the numbers increase to the right and decrease to the left	
	Lesson 5	Use estimation to reason about the location of whole numbers on a number line	
	Lesson 6 - Optional	Represent numbers on a number line	
	Add and Subtract on a Number Line		
	Lesson 7	Recognize that on a number line, jumps to the right represent addition and jumps to the left represent subtraction	
	Lesson 8	Use number line diagrams to represent and write addition and subtraction equations	
	Lesson 9	On a number line, represent counting on and counting back strategies for solving subtraction equations	
	Lesson 10	On a number line, represent place value methods for solving addition and subtraction equations that do not require decomposing a ten	
	Lesson 11	On a number line, represent place value methods for solving addition and subtraction equations that may involve composing or decomposing a ten	
	Lesson 12	Write equations and represent sums and differences on a number line	
	Lesson 13	Represent addition and subtraction story problems using equations, tape diagrams, and number lines	
	Lesson 14 - Optional	Practice addition and subtraction within 100	

		Represent addition and subtraction on the number line	
	Lesson 15 - Optional	Solve addition and subtraction problems to investigate in context	
		Write addition and subtraction story problems	
Unit 5: Numbers to 1,000			13-15 Days of Instruction -- 3 Weeks
	The Value of Three Digits		
	Lesson 1	Recognize that each hundred is composed of 100 ones or 10 tens	
	Lesson 2	Read, write, and represent multiples of 100	
	Lesson 3	Compose three-digit numbers using place value understanding	
	Lesson 4	Read, write, and represent three-digit numbers using base-ten numerals	
	Lesson 5	Read, write, and represent three-digit numbers using base-ten numerals and expanded form	
	Lesson 6	Read, write, and represent three-digit numbers, including number names	
	Lesson 7 - Optional	Practice addition and subtraction within 100	
		Use place value to describe and identify a number	
	Compare and Order Numbers within 1,000		
	Lesson 8	Represent whole numbers up to 1,000 as lengths from 0 on a number line	
		Use skip-counting by tens and hundreds to locate whole numbers up to 1,000 on a number line	
	Lesson 9	Compare three-digit numbers using the relative position of numbers on a number line	
	Lesson 10	Compare three-digit numbers by reasoning about the value of the digits	
	Lesson 11	Compare three-digit numbers using place value understanding	
	Lesson 12	Order three-digit numbers using place value understanding and the relative position of numbers on a number line	
	Lesson 13 - Optional	Order, compare, and describe three-digit numbers using place value understanding	

	Lesson 14 - Optional	Count and represent three-digit numbers using place value understanding	
Unit 6: Geometry, Time, and Money			18-23 Days of Instruction -- 5 Weeks
	Attributes of Shapes		
	Lesson 1	Recognize triangles, quadrilaterals, pentagons, and hexagons based on the number of sides and vertices (corners)	
	Lesson 2	Recognize and draw triangles, quadrilaterals, pentagons, and hexagons	
	Lesson 3	Use a ruler to draw shapes with specified side lengths, and identify the attributes of these shapes	
	Lesson 4	Describe and identify three-dimensional shapes using visible attributes	
	Lesson 5 - Optional	Describe shapes using defining attributes	
		Draw and name shapes based on defining attributes	
	Halves, Thirds, and Fourths		
	Lesson 6	Compose new shapes from equal-size smaller shapes, and identify the shapes	
	Lesson 7	Partition circles and rectangles into halves, thirds, and fourths, and describe the pieces	
	Lesson 8	Partition circles and rectangles into halves, thirds, and fourths in different ways	
		Recognize halves, thirds, and fourths of rectangles and circles	
	Lesson 9	Describe two halves, three thirds, and four fourths as one whole	
		Use “half of,” “a third of,” and “a quarter of” to describe parts of a shape	
	Lesson 10 - Optional	Describe shapes using defining attributes	
		Draw and name shapes based on defining attributes	
	Time on the Clock		
	Lesson 11	Tell time from an analog clock using the words half past, quarter past, and quarter till	

	Lesson 12	Tell time on analog clocks	
		Understand that the numbers on an analog clock represent 5-minute intervals	
	Lesson 13	Label times using a.m. and p.m	
		Read and write time to the nearest 5-minute interval on analog and digital clocks	
	Lesson 14 - Optional	Practice addition and subtraction within 100	
		Recognize and describe shapes seen in picture books	
	The Value of Money		
	Lesson 15	Identify pennies, nickels, and dimes and know their values	
		Use skip counting and counting on by 5 and 10 to find the value of a set of coins	
	Lesson 16	Find the value of a set of coins including all combinations	
		Identify and know the value of quarters	
	Lesson 17	Find combinations of coins that have a value of 100 cents	
		Understand that a dollar has the same value as 100 cents	
	Lesson 18	Solve addition and subtraction story problems in the context of money	
	Lesson 19	Use addition and subtraction to solve one- and two-step story problems	
	Lesson 20 - Optional	Describe shapes using defining attributes	
		Find and compare the value of coin collections	
		Recognize and describe shapes seen in picture books	
	Lesson 21 - Optional	Identify and compose new shapes from smaller shapes	
		Solve addition problems in the context of money	

Unit 7: Adding and Subtracting within 1,000			16-20 Days of Instruction -- 4 Weeks
	Add and Subtract within 1,000 without Composition or Decomposition		
	Lesson 1	Add and subtract within 1,000 using number relationships	
	Lesson 2	Add and subtract multiples of 10 or 100 to/from a three-digit number	
	Lesson 3	Subtract within 1,000 using an understanding of the relationship between addition and subtraction	
	Lesson 4	Add and subtract numbers within 1,000 using strategies that do not include composing or decomposing tens or hundreds	
	Lesson 5 - Optional	Add within 1,000	
	Add within 1,000 using Place Value Strategies		
	Lesson 6	Add numbers within 1,000 using place value strategies that include composing a ten	
	Lesson 7	Add numbers within 1,000 using place value strategies that include composing a ten or hundred	
	Lesson 8	Add a two-digit number to a three-digit number using place value strategies that include composing units	
	Lesson 9	Add 2 three-digit numbers using place value strategies that include composing 2 units	
	Lesson 10	Add numbers within 1,000 using strategies based on place value and the properties of operations	
	Lesson 11 - Optional	Add numbers within 1,000	
	Subtract within 1,000 using Place Value Strategies		
	Lesson 12	Subtract numbers within 1,000 using place value strategies that include decomposing a ten	
	Lesson 13	Subtract numbers within 1,000 using place value strategies that include decomposing a ten or hundred	
	Lesson 14	Subtract a two-digit number from a three-digit number using place value strategies that include decomposing 2 units	

	Lesson 15	Subtract 2 three-digit numbers using place value strategies that include decomposing 2 units	
	Lesson 16	Subtract numbers within 1,000 using strategies based on place value and the properties of operations	
	Lesson 17 - Optional	Add within 1,000	
		Subtract within 1,000	
	Lesson 18 - Optional	Add or subtract 2 three-digit numbers using place value strategies that include composing or decomposing 2 units	
		Determine questions that can be answered by a given bar graph	
		Interpret data represented in a bar graph	
Unit 8: Equal Groups			12-15 Days of Instruction -- 3 Weeks
	Odd and Even		
	Lesson 1	Determine whether a group of objects can be arranged into 2 equal groups	
	Lesson 2	Determine if a group of objects can be arranged into groups of 2	
	Lesson 3	Determine whether representations of groups of objects show an even or odd number of objects	
	Lesson 4	Represent an even number as the sum of two equal addends	
	Lesson 5 - Optional	Recognize patterns in sums of odd and even numbers	
	Lesson 6 - Optional	Add and subtract within 1,000 using strategies based on place value and the properties of operations	
		Skip-count by 2, 5, and 10	
	Rectangular Arrays		
	Lesson 7	Describe an array as an arrangement of objects into rows with an equal number of objects in each row	
	Lesson 8	Describe an array as an arrangement of objects into columns with an equal number of objects in each column	
	Lesson 9	Represent the number of objects in an array as a sum of equal addends	

	Lesson 10	Represent the number of objects in each column or in each row of an array using equal addend equations	
	Lesson 11	Create arrays using square tiles and partially-partitioned rectangles	
	Lesson 12	Partition rectangles into rows and columns of equal-size squares, and count to find the total number of squares	
	Lesson 13 - Optional	Add and subtract within 1,000 using strategies based on place value and the properties of operations	
		Skip-count by 2, 5, and 10	
Unit 9: Putting It All Together			15 Days of Instruction – 3 Weeks
	Fluency within 20 and Measurement		
	Lesson 1	Fluently add and subtract within 20	
	Lesson 2	Fluently add and subtract within 20	
	Lesson 3	Fluently add and subtract within 20	
		Measure lengths in standard units	
	Lesson 4	Fluently add and subtract within 20	
		Measure lengths in centimeters	
		Represent measurement data in a line plot	
	Numbers to 1,000		
	Lesson 5	Compose and decompose numbers within 1,000	
		Represent numbers within 1,000 in different ways	
	Lesson 6	Compose and decompose numbers within 1,000	
		Create and match expressions of numbers within 1,000	
	Lesson 7	Add and subtract within 1,000 with and without regrouping	
		Fluently add and subtract within 100	
	Lesson 8	Add and subtract within 100	

	Create and Solve Story Problems		
	Lesson 9	Analyze story problems involving addition and subtraction within 100	
	Lesson 10	Ask and answer a question based on a given situation	
		Interpret story problems using diagrams	
	Lesson 11	Write and interpret story problems using diagrams and equations	
	Lesson 12	See math in the world around them	
		Write story problems using expressions	
	Lesson 13	Represent and solve story problems	

Supports of Diversity, Equity and Inclusion
Please provide any information relative to supporting culturally responsive instruction, multi-language learners, and students with disabilities
<u>Review Site Information:</u> URL: review-ct.ilclassroom.com Username: CT@example.com Password: teacher **<u>Culturally Responsive Instruction:</u>** Illustrative Mathematics includes culturally relevant materials and culturally responsive teaching and instructional practices. Materials are inclusive of a variety of cultures and ethnicities and are free from bias in the portrayal of ethnic groups, gender, age, class, cultures, religions, and people with disabilities. We address racial, cultural, and religious bias in the following ways: • The materials contain racial/ethnic balance in the main characters and illustrations. • Minorities are represented as central figures in text and illustrations. • Minority figures reflect qualities such as leadership, intelligence, imagination, and courage. • The materials provide an opportunity for a variety of racial, ethnic, and cultural perspectives. • The vocabulary or depiction of racism is avoided (i.e., insulting overtones). • Race/culture stereotyping language is avoided. • Biographical or historical content includes minority figures and their discoveries and contributions to society. **<u>Multi-Language Learners:</u>** In a problem-based mathematics classroom, sense-making and language are interwoven. Mathematics classrooms are language-rich, and therefore language demanding learning environments for every student. The linguistic demands of doing mathematics include reading, writing, speaking, listening, conversing, and representing (Aguirre & Bunch, 2012). Students are expected to say or write mathematical explanations, state assumptions, make conjectures, construct mathematical arguments, and listen to and respond to the ideas of others. In an effort to advance the mathematics and language learning of all students, the materials purposefully engage students in sense-making and using language to negotiate meaning with their peers. To support students who are learning English in their development of language, this curriculum includes instruction devoted to fostering language development alongside mathematics learning, fostering language-rich environments where there is space for all students to participate.

This interwoven approach is grounded in four design principles that promote mathematical language use and development:

Principle 1. Support sense-making: Scaffold tasks and amplify language so students can make their own meaning. Students need multiple opportunities to talk about their mathematical thinking, negotiate meaning with others, and collaboratively solve problems with targeted guidance from the teacher. Teachers can make language more accessible by amplifying rather than simplifying speech or text. Simplifying includes avoiding the use of challenging words or phrases. Amplifying means anticipating where students might need support in understanding concepts or mathematical terms and providing multiple ways to access them.

Principle 2. Optimize output: Strengthen opportunities for students to describe their mathematical thinking to others, orally, visually, and in writing. All students benefit from repeated, strategically optimized, and supported opportunities to articulate mathematical ideas into linguistic expression, to communicate their ideas to others. Opportunities for students to produce output should be strategically optimized for both (a) important concepts of the unit or course, and (b) important disciplinary language functions (for example, explaining reasoning, critiquing the reasoning of others, making generalizations, and comparing approaches and representations).

Principle 3. Cultivate conversation: Strengthen opportunities for constructive mathematical conversations. Conversations are back-and-forth interactions with multiple turns that build up ideas about math. Conversations act as scaffolds for students developing mathematical language because they provide opportunities to simultaneously make meaning, communicate that meaning, and refine the way content understandings are communicated. During effective discussions, students pose and answer questions, clarify what is being asked and what is happening in a problem, build common understandings, and share experiences relevant to the topic. Meaningful conversations depend on the teacher using activities and routines as opportunities to build a classroom culture that motivates and values efforts to communicate.

Principle 4. Maximize meta-awareness: Strengthen the meta-connections and distinctions between mathematical ideas, reasoning, and language. Meta-awareness, consciously thinking about one's own thought processes or language use, develops when students consider how to improve their communication and reasoning about mathematical concepts. When students are using language in ways that are purposeful and meaningful for themselves, in their efforts to understand—and be understood by—each other, they are motivated to attend to ways in which language can be both clarified and clarifying. Students learning English benefit from being aware of how language choices are related to the purpose of the task and the intended audience, especially if oral or written work is required. Both metacognitive and metalinguistic awareness are powerful tools to help students self-regulate their academic learning and language acquisition.

These design principles and related mathematical language routines, described below, ensure language development is an integral part of planning and delivering instruction. Moreover, they work together to guide teachers to amplify the most important language that students are expected to know and use in each unit.

Mathematical Language Routines

Mathematical Language Routines (MLRs) are instructional routines that provide structured but adaptable formats for amplifying, assessing, and developing students' language. The MLRs included in this curriculum were selected because they simultaneously support students' learning of mathematical practices, content, and language. They are particularly well-suited to meet the needs of linguistically and culturally diverse students who are learning mathematics while simultaneously acquiring English. These routines are flexible and can be adapted to support students at all stages of language development in using and improving their English and disciplinary language use.

These routines are included in the Curriculum Guide and noted below:

- MLR 1: Stronger and Clearer Each Time
- MLR 2: Collect and Display
- MLR 3: Clarify, Critique, Correct
- MLR 4: Information Gap
- MLR 5: Co-Craft Questions
- MLR 6: Three Reads
- MLR 7: Compare and Connect
- MLR 8: Discussion Supports

MLRs are included in select activities in each unit to provide all students with explicit opportunities to develop mathematical and academic language proficiency. These “embedded” MLRs are described in the teacher notes for the lessons in which they appear.

Each lesson also includes optional, suggested MLRs that can be used to support access and language development for English learners, based on the language demands students will encounter. They are described in the activity narrative, under the heading “Access for English Learners.” Teachers can use the suggested MLRs and language strategies as appropriate to provide students with access to an activity without reducing the mathematical demand of the task. When using these supports, teachers should take into account the language demands of the specific activity and the language needed to engage the content more broadly, in relation to their students' current ways of using language to communicate ideas as well as their students' English language proficiency. Using these supports can help maintain student engagement in mathematical discourse and ensure that struggle remains productive. All of the supports are designed to be used as needed, and use should fade out as students develop understanding and fluency with the English language.

In addition to the comprehensive pedagogical design of the program, Spanish translations are available for the educator components, including teacher slides, and the student components, including the student workbook (print version).

Materials are also available in Spanish as follows:

K–5	6–8	AGA
• Print: Student Workbooks • eBook/PDF: Student Workbooks, Teacher Resource Pack, Teacher Guide *(student facing text only, teacher text in English)* • Spanish Lesson Presentations **Other Materials** *(no student responses)* • Task Statements (PDF) • Cool-Down (PDF) • Practice Problems (PDF) • Unit Assessments (PDF and digital) • Section Checkpoints (PDF) • Family Support Material (PDF) • Center Materials (PDF) • Blackline Masters (PDF) • Glossary entries	**6-8 Courses Only (Not Accelerated)** • Print: Student Workbooks • eBook/PDF: Student Workbooks **Other Materials** *(no student responses)* • Task Statements (PDF) • Cool-Down (PDF) • Practice Problems (PDF) • Unit Assessments, Option B (PDF) • Blackline Masters (PDF) • Family Support Material (PDF) • Glossary entries	**Algebra 1 Only** • eBook/PDF: Student Workbooks • Print: Student Workbooks ○ *Available for BTS 2023* **Other Materials** *(no student responses)* • Task Statements (PDF) • Cool-Down (PDF) • Practice Problems (PDF) • Unit Assessments (PDF) • Modeling Prompts • Blackline Masters (PDF) • Family Support Material (PDF) • Glossary entries

Exceptional Learners:

Imagine Learning Illustrative Mathematics materials empower all students with activities that capitalize on their existing strengths and abilities to ensure that all learners can participate meaningfully in rigorous mathematical content. Lessons support a flexible approach to instruction and provide teachers with options for additional support to address the needs of a diverse group of students, positioning all learners as competent, valued contributors. When planning to support access, teachers should consider the strengths and needs of their particular students.

Each lesson is carefully designed to maximize engagement and accessibility for all students. Purposeful design elements that support access for all learners, but that are especially helpful for students with disabilities, include:

Lesson Structures are Consistent
The structure of every lesson is the same: warm-up, activities, synthesis, cool-down. By keeping the components of each lesson similar from day to day, the flow of work in class becomes predictable for students. This reduces cognitive demand and enables students to focus on the mathematics at hand rather than the mechanics of the lesson.

Concepts Develop from Concrete to Abstract
Mathematical concepts are introduced simply, concretely, and repeatedly, with complexity and abstraction developing over time. Students begin with concrete examples, and transition to diagrams and tables before relying exclusively on symbols to represent the mathematics they encounter.

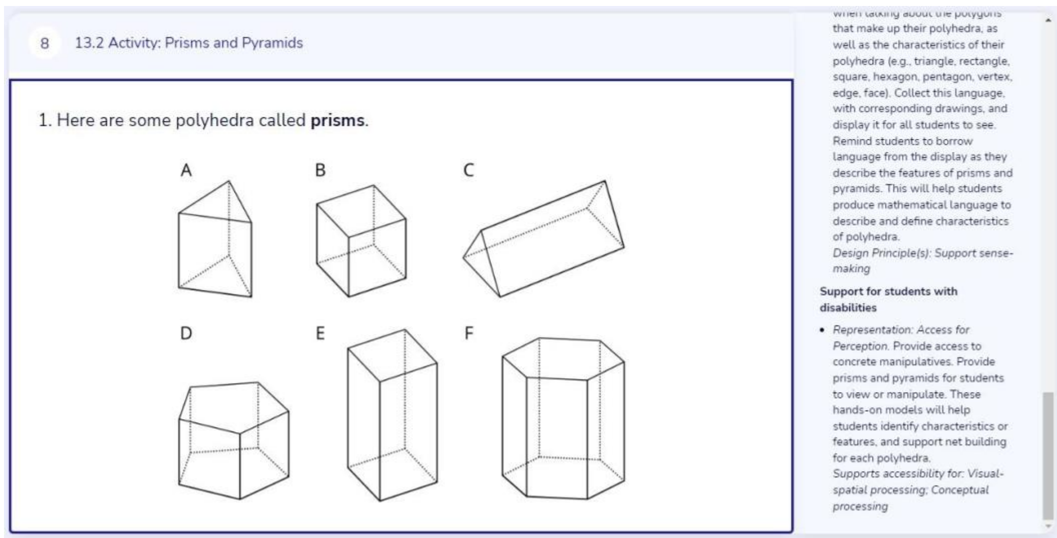
Individual to Pair, or Small Group to Whole Class Progression
Providing students with time to think through a situation or question independently before engaging with others allows students to carry the weight of learning, with support arriving just in time from the community of learners. This progression allows students to first activate what they already know, and continue to build from this base with others.

Opportunities to Apply Mathematics to Real-World Contexts
Giving students opportunities to apply the mathematics they learn clarifies and deepens their understanding of core math concepts and skills and provides motivation and support. Mathematical modeling is a powerful activity for all students, but especially students with disabilities. Each unit has a culminating activity designed to explore, integrate, and apply all the big ideas of the unit. Centering instruction on these contextual situations can provide students with disabilities an anchor on which to base their mathematical understandings.

Supplemental instructional strategies that can be used to increase access, reduce barriers and maximize learning are included in each lesson, listed in the activity narratives under "*Access for Students with Disabilities.*" Each support is aligned to the Universal Design for Learning Guidelines and based on one of the three principles of UDL, to provide alternative means of *engagement, representation,* or *action and expression*. These supports provide teachers with additional ways to adjust the learning environment so that students can access activities, engage in content, and communicate their understanding. Supports are tagged with the areas of cognitive functioning they are designed to address to help teachers identify and select appropriate supports for their students. Designed to facilitate access to Tier 1 instruction by capitalizing on student strengths to address challenges related to cognitive functions or disabilities, these strategies and supports are appropriate for any students who need additional support to access rigorous, grade-level content.

Teachers are encouraged to use what they know about their students' IEPs, strengths and challenges, and a UDL approach to ensure access.

There are embedded supports for exceptional students in most lessons. Teachers will find these in the **Teaching Notes** section. As of June 2020, Illustrative Mathematics 6-8 student facing materials meet Section 508 compliance standards, meaning that students can use assistive technology to navigate the site. Illustrative Mathematics K-5 digital materials were added during the 21-22 School Year and are 508 compliant as well. Outlined in the Curriculum Guide, there are features, supports, and strategies available.



The curriculum authors drew heavily on the UDL framework in the design of these materials. A number one design principle of the curriculum is "Access for all." This foundational principle draws from the UDL framework and shapes the instructional goals, recommended practices, lesson plans, and assessments to support a flexible approach to instruction, ensuring all students have an equitable opportunity to learn.

Imagine Learning software is browser-based so it will work with any browser-based text-to-speech tools. Fonts can be adjusted in type and size. Non-text navigation elements can be adjusted in size. Math equation editing is available on assessment items and practice problems.

Imagine Learning can provide a NIMAS-compatible version of Illustrative Mathematics content. These files may be used for the production of alternate formats as permitted under the law for students with disabilities.