

Model Curricula Alignment Template for Mathematics

Resource Name: Imagine Learning Illustrative Mathematics Grade 5

Model Unit Name	Model Unit Standards	Resource Unit(s) Number and Lessons	Standard Frequency
<i>This is the title of the unit in the model curricula</i>	<i>These are the standards addressed in the unit</i>	<i>This is the unit(s) that aligns with the model unit from the resource</i>	<i>This is the total number of lessons the standard is addressed</i>
Pacing - Illustrative Mathematics 3-5 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.			
Area/Coordinate Grid			
	5.G.A.1	Unit 7, Lesson 1: Explore the Coordinate Grid	3 Lessons
		Unit 7, Lesson 2: Points on the Coordinate Grid	
	5.G.A.2	Unit 7, Lesson 12: Represent Problems on the Coordinate Grid	2 Lessons
		Unit 7, Lesson 13: Perimeter and Area of Rectangles	
	Whole Number Multiplication		
	5.NBT.B.5	Unit 4, Lesson 4: Standard Algorithm: One-digit and Multi-digit Numbers with Composing	16 Lessons
		Unit 4, Lesson 6: Standard Algorithm: Multi-digit Numbers with Composing	
	5.MD.C.3	Unit 1, Lesson 1: What is Volume?	4 Lessons
		Unit 1, Lesson 2: Measure Volume	

	5.MD.C.4	Unit 1, Lesson 3: Volumes of Prism Drawings	3 Lessons
		Unit 1, Lesson 7: Cubic Units of Measure	
	5.MD.C.5	Unit 1, Lesson 10: Represent Volume with Expressions	11 Lessons
Unit 1, Lesson 11: All Kinds of Prisms			
Whole Number Division and Fractions as Division			
	5.NBT.6	Unit 4, Lesson 11: Different Partial Quotients	12 Lessons
		Unit 4, Lesson 12: An Algorithm Using Partial Quotients	
	5.NF.B.3	Unit 2, Lesson 3: Interpret Equations	12 Lessons
Unit 2, Lesson 5: Relate Division and Fractions			
Add and Subtract Fractions/Line Plots			
	5.NF.A.1	Unit 6, Lesson 8: Add and Subtract Fractions	10 Lessons
		Unit 6, Lesson 10: All Sorts of Denominators	
	5.NF.A.2	Unit 6, Lesson 12: Solve Problems	5 Lessons
		Unit 6, Lesson 15: Problems Solving with Line Plots	
5.MD.B.2	Unit 6, Lesson 14: Representing Fractions on a Line Plot	3 Lessons	
	Unit 6, Lesson 21: Weekend Investigation		
Understanding the Place Value System and Add and Subtract Decimals			
	5.NBT.A.1	Unit 5, Lesson 1: What is 1 Thousandth?	8 Lessons
		Unit 5, Lesson 4: Explore Place Value Relationships	
	5.NBT.A.2	Unit 6, Lesson 2: Powers of 10	4 Lessons

		Unit 6, Lesson 3: Metric Conversion and Multiplication by Powers of 10		
	5.NBT.A.3	Unit 5, Lesson 2: Thousandths on Grids and in Words	6 Lessons	
		Unit 5, Lesson 5: Compare Decimals		
	5.NBT.A.4	Unit 5, Lesson 7: Round Doubloons	3 Lessons	
		Unit 5, Lesson 10: Solve Problems with Decimals		
	5.NBT.B.7	Unit 5, Lesson 19: Use Properties to Multiply Decimals	18 Lessons	
		Unit 5, Lesson 25: Divide Decimals by Decimals		
	Making Sense of Multiplication of Fractions			
		5.NF.B.4	Unit 2, Lesson 8: Divide to Multiply Non-unit Fractions	16 Lessons
			Unit 2, Lesson 12: Decompose Area	
5.NF.B.5		Unit 6, Lesson 20: Will It Always Work?	7 Lessons	
		Unit 6, Lesson 16: Compare Products		
5.NF.B.6		Unit 2, Lesson 8: Apply Fraction Multiplication	4 Lessons	
		Unit 3, Lesson 17: Fraction Multiplication and Division Situations		
Understanding Division of a Unit Fraction and a Whole Number				
		5.NF.B.7	Unit 3, Lesson 16: Reason About Quotients	11 Lessons
	Unit 3, Lesson 15: Fraction Division Situations			
Multiply and Divide Decimals/Metric Conversions				
	5.NBT.B.7	Unit 5, Lesson 17: Multiply Decimals and Whole Numbers	18 Lessons	
		Unit 5, Lesson 19: Use Properties to Multiply Decimals		

	5.MD.A.1	Unit 6, Lesson 3: Metric Conversion and Multiplication by Powers of 10	5 Lessons
		Unit 6, Lesson 3: Metric Conversion and Division by Powers of 10	
2-Dimensional Geometry			
	5.G.B.3	Unit 7, Lesson 4: Sort Quadrilaterals	5 Lessons
		Unit 7, Lesson 6: Hierarchy of Quadrilaterals	
	5.G.B.4	Unit 7, Lesson 7: Rectangles and Squares	6 Lessons
Unit 7, Lesson 8: Sort Triangles			

Algebraic Connections: (Order of Operations, Expressions, Patterns, Coordinate Plane)			
	5.OA.A.1	Unit 1, Lesson 6: Expressions for Volume	4 Lessons
		Unit 2, Lesson 13: Area and Properties of Operations	
	5.OA.A.2	Unit 1, Lesson 4: Use Layers to Determine Volume	12 Lessons
		Unit 4, Lesson 3: Partial Products in Algorithms	
	5.OA.B.3	Unit 7, Lesson 9: Generate Patterns	4 Lessons
		Unit 7, Lesson 10: Interpret Relationships	
	5.G.A.1	Unit 7, Lesson 1: Explore the Coordinate Plane	3 Lessons
		Unit 7, Lesson 3: Plot More Points	
	5.G.A.2	Unit 7, Lesson 12: Represent Problems on the Coordinate Plane	2 Lessons
		Unit 7, Lesson 13: Perimeter and Area of Rectangles	

Scope and Sequence			
If a district uses this resource to implement the state model curriculum for grade 5, 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: Finding Volume			13-14 Days of Instruction -- 3 Weeks
	Unit Cubes and Volume		
	Lesson 1	Explore volume by building objects with unit cubes and comparing them.	
	Lesson 2	Find the volume of solid figures, including rectangular prisms, in unit cubes, in a way that makes sense to them.	
		Understand that volume is measured in unit cubes.	
	Lesson 3	Find the volume of a rectangular prism using its layered structure.	
	Lesson 4	Describe and represent the volume of a rectangular prism as the product of the number of cubes in one layer and the number of layers.	
		Write and interpret expressions and equations in the context of the volume of rectangular prisms.	
	Expressions for Finding Volume		
	Lesson 5	Describe rectangular prisms in terms of their side lengths.	
		Find the volume of a right rectangular prism by multiplying the side lengths and connect that to finding volume by multiplying the area of the base by the height.	
	Lesson 6	Find the volume of a right rectangular prism by multiplying the side lengths and connect that to finding volume by multiplying the area of the base by the height.	

		Write and interpret numerical expressions in the context of the volume of a rectangular prism.	
	Lesson 7	Find the volume of rectangular prisms with standard units of measure by multiplying the base times the height or multiplying the length times the width times the height.	
Volume of Solid Figures			
	Lesson 8	Explain that the volume of a figure composed of rectangular prisms is the sum of the volumes of the prisms.	
		Find the volume of a figure composed of rectangular prisms in which unit cubes are visible.	
	Lesson 9	Find the volume of a figure composed of rectangular prisms in which unit cubes are not shown.	
	Lesson 10	Write and interpret numerical expressions to represent the volume of a figure decomposed in different ways.	
	Lesson 11	Solve real-world and mathematical problems involving volume.	
	Lesson 12 - Optional	Find the volume of rectangular prisms with standard units of measure by multiplying the base times the height or multiplying the length times the width times the height.	

Unit 2: Fractions as Quotients and Fraction Multiplication			17-19 Days of Instruction -- 4 Weeks
	Fractions as Quotients		
	Lesson 1	Interpret and represent contexts relating division and fractions in a way that makes sense to them.	
	Lesson 2	Represent the relationship between division and fractions with diagrams and expressions.	
	Lesson 3	Represent the relationship between division and fractions with equations.	
	Lesson 4	Solve problems involving division of whole numbers leading to answers in the form of fractions.	
	Lesson 5	Explain the relationship between division and fractions.	

Fractions of Whole Numbers	
Lesson 6	Explore the relationship between multiplication and division.
Lesson 7	Connect division to multiplication of a whole number by a unit fraction.
Lesson 8	Connect division to multiplication of a whole number by a non-unit fraction.
Area and Fractional Side Lengths	
Lesson 9	Find the area of a rectangle with a unit fraction side length in a way that makes sense to them.
Lesson 10	Find the area of a rectangle with one non-unit fractional side length.
	Represent the area of a rectangle with a multiplication expression.
Lesson 11	Find the area of a rectangle with one fractional side length greater than 1 in a way that makes sense to them.
	Represent the area of a rectangle with a multiplication expression.
Lesson 12	Decompose a rectangle to find its area.
Lesson 13	Represent the decomposition of a rectangle with diagrams and expressions.
Lesson 14	Solve problems involving the multiplication of a whole number by a fraction, including fractions greater than 1.
Lesson 15	Multiply whole numbers and fractions using the properties of operations.

	Lesson 16 - Optional	Use estimation and the properties of operations to reason about the product of a whole number and a fraction greater than 1.	19-22 Days of Instruction -- 4 Weeks
	Lesson 17 - Optional	Multiply fractions by whole numbers to find areas of rectangles.	
Unit 3: Multiplying and Dividing Fractions			
	Fraction Multiplication		
	Lesson 1	Represent and interpret a unit fraction of a unit fraction in ways that make sense to them.	
	Lesson 2	Represent multiplication of unit fractions with diagrams and expressions.	
	Lesson 3	Find the product of 2 unit fractions.	
	Lesson 4	Represent and solve problems involving multiplication of a unit fraction and a non-unit fraction.	
	Lesson 5	Find the product of a unit fraction and a non-unit fraction.	
	Lesson 6	Represent multiplication of two non-unit fractions with expressions.	
	Lesson 7	Generalize to find the product of any 2 fractions.	
	Lesson 8	Solve problems involving multiplication of fractions.	
	Lesson 9 - Optional	Solve real world problems involving multiplication of fractions.	
	Fraction Division		
	Lesson 10 - Optional	Reason about the size of quotients in division problems.	
	Lesson 11 - Optional	Divide a unit fraction by a whole number, in context, in a way that makes sense to them.	
	Lesson 12	Make sense of diagrams that represent division of a unit fraction by a whole number.	
	Lesson 13	Divide a whole number by a unit fraction in context, in a way that makes sense to them.	

	Lesson 14	Divide a whole number by a unit fraction.	
		Relate diagrams, situations and expressions that represent division of a whole number by a unit fraction.	
	Lesson 15	Write situations and solve problems involving dividing a unit fraction and a whole number.	
	Lesson 16	Assess the reasonableness of quotients.	
		Divide unit fractions and whole numbers.	
	Problem Solving with Fractions		
	Lesson 17	Solve problems involving multiplication and division with fractions.	
	Lesson 18	Represent situations involving fractions with both multiplication and division equations.	
	Lesson 19	Multiply and divide with fractions.	
	Lesson 20 - Optional	Represent and solve problems involving division of a whole number by a unit fraction.	
Unit 4: Wrapping Up Multiplication and Division with Multi-Digit Numbers			21-23 Days of Instruction -- 5 Weeks
	Multi-digit Multiplication Using the Standard Algorithm		
	Lesson 1	Multiply multi-digit numbers in a way that makes sense to them.	
	Lesson 2	Interpret partial products diagrams.	
		Multiply a three-digit number and a two-digit number.	
	Lesson 3	Multiply a three-digit number and a two-digit number.	
		Represent a partial products algorithm.	
	Lesson 4	Use the standard algorithm to multiply up to five-digit numbers by one-digit factors, including composing new units.	
	Lesson 5	Use the standard algorithm to multiply up to three-digit numbers and two-digit numbers, including composing new units.	

	Lesson 6	Use the standard algorithm to find products with any number of newly composed units.	
	Lesson 7	Use the standard algorithm to multiply multi-digit numbers and compose more than one new unit.	
	Lesson 8	Solve problems that involve the multiplication of multi-digit numbers.	
	Lesson 9	Solve problems that involve the multiplication of multi-digit numbers.	
	Multi-digit Division Using Partial Quotients		
	Lesson 10	Divide multi-digit whole numbers in a way that makes sense to them.	
	Lesson 11	Divide multi-digit whole numbers using place value understanding and the relationship between multiplication and division.	
	Lesson 12	Make sense of an algorithm using partial quotients.	
	Lesson 13	Divide three-digit and four-digit dividends by two-digit divisors using an algorithm using partial quotients.	
	Lesson 14	Divide four-digit dividends by two-digit divisors using an algorithm using partial quotients.	
	Lesson 15	Solve problems involving area and volume using the relationship between multiplication and division.	
	Lesson 16	Solve problems that involve the division of multi-digit numbers.	
	Lesson 17 - Optional	Make sense of partial quotients using fractions.	
	Let's Put it to Work		
	Lesson 18	Estimate products and quotients of whole numbers.	
	Lesson 19	Use multiplication to solve problems about the area of the Great Garbage Patch.	
	Lesson 20	Estimate and calculate products and quotients of whole numbers.	
	Lesson 21 - Optional	Estimate and calculate products and quotients of whole numbers.	
	Unit 5: Place Value Patterns and Decimal Operations		

	Numbers to Thousandths		26-28 Days of Instruction -- 6 Weeks
	Lesson 1	Understand the relationship between one tenth, one hundredth and one thousandth.	
	Lesson 2	Represent fractions and decimals to thousandths on hundredths grids.	
		Write fractions and decimals to thousandths to represent shaded amounts on hundredths grids.	
	Lesson 3	Relate different representations of the same number.	
		Write decimals in expanded form.	
	Lesson 4 - Optional	Explore place value relationships between tenths, hundredths, and thousandths.	
	Lesson 5	Compare decimals to the thousandths place.	
	Lesson 6	Compare two decimals based on the value of the digits in each place, using $>$, $=$, and $<$ symbols to record the results of comparisons.	
		Represent decimals on a number line.	
	Lesson 7	Examine accuracy of quantities and relate to rounding.	
	Lesson 8	Round decimals to the nearest whole, tenth, and hundredth.	
	Lesson 9	Order decimals within the thousandths place.	
	Lesson 10	Round decimals to different place values and order them.	
	Add and Subtract Decimals		
	Lesson 11	Add decimals to the hundredths in a way that makes sense to them.	
	Lesson 12	Add decimals to the hundredths place using strategies based on place value.	
	Lesson 13	Add decimals to the hundredths place using strategies based on place value.	
	Lesson 14	Subtract decimals to the hundredths in a way that makes sense to them.	

	Lesson 15	Subtract decimals to the hundredths using strategies based on place value and the relationship between addition and subtraction.	
	Lesson 16	Add and subtract decimals to the hundredths using strategies based on place value.	
	Multiply Decimals		
	Lesson 17	Multiply a whole number by tenths and hundredths in a way that makes sense to them.	
	Lesson 18	Multiply a whole number and a decimal using properties of operations and place value understanding.	
	Lesson 19	Use properties of operations to interpret and evaluate multiplication expressions with decimals and whole numbers.	
	Lesson 20	Use diagrams and place value reasoning to interpret and evaluate products of two decimal numbers.	
	Lesson 21	Calculate products of decimals using whole number products and place value understanding.	
	Divide Decimals		
	Lesson 22	Divide whole numbers by one tenth and one hundredth.	
	Lesson 23	Divide whole numbers by decimals to the hundredths using strategies based on place value.	
	Lesson 24	Divide decimals to hundredths by whole numbers	
	Lesson 25	Divide decimals greater than 1 by decimals less than 1.	
	Lesson 26 - Optional	Add and subtract decimals to the hundredths using strategies based on place value.	
		Multiply decimals with products resulting in the hundredths using place value reasoning and properties of operations.	
Unit 6: More Decimal and Fraction Operations			

	Measurement Conversions and Powers of 10		21-23 Days of Instruction -- 5 Weeks
	Lesson 1	Observe place value patterns when multiplying and dividing.	
	Lesson 2	Use whole-number exponents to denote powers of 10.	
	Lesson 3	Convert from larger units to smaller units within a given system of measurement.	
		Explain patterns in the number of zeros of the product when multiplying a number by powers of 10.	
	Lesson 4	Convert metric lengths from a smaller unit to a larger unit.	
		Recognize and explain patterns in the placement of the decimal point when a decimal is divided by a power of 10.	
	Lesson 5	Solve multi-step problems involving metric length measurement conversions.	
	Lesson 6	Solve multi-step problems involving metric liquid measurement conversions.	
	Lesson 7	Solve multi-step problems involving customary length measurement conversions.	
	Add and Subtract Fractions with Unlike Denominators		
	Lesson 8	Add and subtract fractions with unlike denominators in a way that makes sense to them.	
	Lesson 9	Use equivalent expressions to add and subtract fractions with unlike denominators.	
	Lesson 10	Recognize that when adding or subtracting fractions with unlike denominators, a common denominator can be found by multiplying the denominators.	
	Lesson 11	Subtract fractions and mixed numbers.	
	Lesson 12	Solve problems involving addition and subtraction of fractions with unlike denominators.	

	Lesson 13	Add and subtract fractions with unlike denominators.	
	Lesson 14	Create line plots and use the information to solve problems.	
	Lesson 15	Create line plots to display fractional measurement data, and use the information to solve problems.	
	The Size of Products		
	Lesson 16	Compare products in a way that makes sense to them.	
	Lesson 17	Compare the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication.	
	Lesson 18	Recognize that the product of a fraction and a whole number is less than, equal to, or greater than the whole number when the fraction is correspondingly less than, equal to, or greater than 1.	
	Lesson 19	Explain what happens to a given fraction when multiplied by a fraction greater than or less than 1.	
	Lesson 20 - Optional	Make generalizations about multiplying a whole number by a fraction greater than, less than, or equal to 1.	
	Lesson 21 - Optional	Create line plots and use the information to solve problems.	
Solve problems involving addition and subtraction of fraction with unlike denominators.			
Unit 7: Shapes on the Coordinate Plane			15 Days of Instruction -- 3 Weeks
	The Coordinate Plane		
	Lesson 1	Recognize the structure of a coordinate grid and use it to describe the location of two-dimensional shapes.	
	Lesson 2	Locate and name given points on the coordinate grid by using an ordered pair of numbers, called coordinates.	
	Lesson 3	Locate and name coordinates on a coordinate grid by reasoning about the structure of coordinate pairs.	

	The Hierarchy of Shapes	
	Lesson 4	Classify quadrilaterals based on angle measurements and side lengths.
	Lesson 5	Compare different definitions for trapezoids, and use them to identify trapezoids.
	Lesson 6	Classify parallelograms in a hierarchy based on angle measurements and side lengths.
		Explain why a square is also a rhombus.
	Lesson 7	Explain why a square is also a rectangle.
	Lesson 8	Classify triangles based on angle measurements and side lengths.
	Numerical Patterns	
	Lesson 9	Given two rules, generate two numerical patterns. Identify apparent relationships between corresponding terms in the two patterns.
	Lesson 10	Given rules, generate two numerical patterns. Identify and explain more complex relationships between corresponding terms.
	Lesson 11	Form ordered pairs consisting of corresponding terms from two patterns and graph the ordered pairs on a coordinate grid.
	Lesson 12	Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate grid, and interpret coordinate values of points in the context of the situation.
	Lesson 13	Use the coordinate grid to understand the length and width of rectangles with fixed area.
		Use the coordinate grid to understand the length and width of rectangles with fixed perimeter.
Unit 8: Putting It All Together		
	Multiply and Divide Whole Numbers	

	Lesson 1	Fluently multiply multi-digit whole numbers using the standard algorithm.	19-20 Days of Instruction -- 4 Weeks
	Lesson 2	Fluently multiply multi-digit whole numbers using the standard algorithm.	
	Lesson 3	Fluently multiply multi-digit whole numbers using the standard algorithm.	
	Lesson 4	Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors.	
	Lesson 5	Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and the relationship between multiplication and division.	
	Apply Volume Concepts		
	Lesson 6	Solve real world and mathematical problems involving volume.	
	Lesson 7	Multiply and divide multi-digit whole numbers.	
		Solve problems involving volume.	
	Lesson 8	Multiply and divide multi-digit whole numbers.	
		Solve problems involving volume.	
	Lesson 9 - Optional	Solve real world and mathematical problems involving volume.	
	Fraction and Decimal Operations		
	Lesson 10	Add fractions with unlike denominators.	
	Lesson 11	Subtract fractions and mixed numbers.	
	Lesson 12	Add, subtract, multiply, and divide decimals to hundredths.	
	Lesson 13	Multiply a fraction or whole number by a fraction.	
	Creation and Design		
	Lesson 14	Interpret a fraction as division of the numerator by the denominator.	

	Lesson 15	Fluently multiply multi-digit whole numbers using the standard algorithm.	
	Lesson 16	Find quotients of whole numbers multi-digit dividends and divisors without any remainders.	
	Lesson 17	Add and subtract fractions and mixed numbers with unlike denominators.	
	Lesson 18	Categorize shapes by their shared attributes.	

Supports of Diversity, Equity and Inclusion

Please provide any information relative to supporting culturally responsive instruction, multi-language learners, and students with disabilities

Review Site Information:

URL: review-ct.ilclassroom.com

Username: CT@example.com

Password: teacher

Culturally Responsive Instruction:

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.

Multi-Language Learners:

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:

What's in Spanish for IM?

K-5	6-8	AGA
- Printed: Student Workbooks - eBook/PDF: Student, Teacher, Teacher Resource Pack - Spanish Lesson Cards Other Materials <i>(no solutions translated)</i> - Task Statements (PDF) - Cool-Down (PDF) - Practice Problems (PDF) - Unit Assessments (PDF) - Section Checkpoint Quizzes (PDF) - Family Supports (PDF) - Center Materials (PDF) - Glossary entries	<u>6-8 Courses Only (Not Acc.)</u> - Printed: Student Workbooks - eBook/PDF: Student Other Materials <i>(no solutions translated)</i> - Task Statements (PDF) - Cool-Down (PDF) - Practice Problems (PDF) - Unit Assessments Option B, (PDF) - Glossary entries	<u>Algebra 1 Only</u> eBook/PDF: Student Workbook *Print coming for BTS 2023 Other Materials <i>(no solutions translated)</i> - Task Statements (PDF) - Cool-Down (PDF) - Practice Problems (PDF) - Unit Assessments (PDF) - Modeling prompts - 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.

8 13.2 Activity: Prisms and Pyramids

1. Here are some polyhedra called **prisms**.

A

B

C

D

E

F

Write labels about the polygons that make up their polyhedra, as well as the characteristics of their polyhedra (e.g., triangle, rectangle, square, hexagon, pentagon, vertex, edge, face). Collect this language, with corresponding drawings, and display it for all students to see. Remind students to borrow language from the display as they describe the features of prisms and pyramids. This will help students produce mathematical language to describe and define characteristics of polyhedra.

Design Principle(s): Support sense-making

Support for students with disabilities

- **Representation: Access for Perception.** Provide access to concrete manipulatives. Provide prisms and pyramids for students to view or manipulate. These hands-on models will help students identify characteristics or features, and support net building for each polyhedra.

Supports accessibility for: Visual-spatial processing; Conceptual processing

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.