

# Kindergarten Math Curriculum Overview

2022-2023

<p><b><u>Unit A</u></b> <i>Working Through Five</i></p>	<p>In Unit A, teachers establish a math workshop environment for the year. Routines center around structuring small groups and utilizing work places. Throughout the unit, students learn the structure of our number system with emphasis on the following skills:</p> <ul style="list-style-type: none"><li>• understanding the number word sequence and answering "How many?"</li><li>• one-to-one correspondence</li><li>• cardinality</li><li>• recognize the quantity without counting (subitizing)</li></ul> <p>The five-frame, ten-frame, and finger patterns are key models featured in this unit to help students subitize quantities from 0 to 10.</p> <p><b>Profile of a Graduate Capacities:</b> Analyzing</p>
<p><b><u>Unit B</u></b> <i>Five and Ten, Do It Again!</i></p>	<p>In this unit, the question of "how many" begins to shift to "which is more and which is less". Student activities should focus on promoting flexible ways of interpreting or representing and recognizing quantities, not memorizing combinations. Students visually represent numbers by using five frames, ten frames, number racks, finger patterns and tallies to:</p> <ul style="list-style-type: none"><li>• find and recognize combinations of numbers that make 5</li><li>• recognize and compare quantities within 10</li><li>• compose and decompose numbers less than 5</li><li>• compare numbers</li></ul> <p><b>Profile of a Graduate Capacities:</b> Analyzing</p>
<p><b><u>Unit C</u></b> <i>How Much? How Many?</i></p>	<p>This unit introduces interval counting through the use of the number line and length measurement. Students are introduced to the number line model through hands-on activities that help them interpret the structure of the number line and the difference between discrete and interval counting. Students investigate the number line model in order to:</p> <ul style="list-style-type: none"><li>• order and compare numbers less than 20</li><li>• solve addition and subtraction problems within 10</li><li>• count on from a given number</li><li>• compare objects to see which is longer, shorter or the same length</li><li>• add with pennies and nickels</li></ul> <p>As students enter first grade, interval counting becomes crucial as the number line becomes the primary model for solving addition and subtraction problems.</p> <p><b>Profile of a Graduate Capacities:</b> Analyzing</p>

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<p><u>Unit D</u> <i>Shaping Up</i></p>	<p>Students begin to examine, identify, compare, and sort two-dimensional and three-dimensional shapes. They explore largely through play, how to describe the world around them using geometry terms. Attributes are realized through careful analysis as students notice how some are helpful in defining the geometry of a shape, while others are not. They will construct and deconstruct a variety of shapes in order to build both realistic and imagined objects.</p> <p><b>Profile of a Graduate Capacities:</b> Analyzing, Product Creation</p>
<p><u>Unit E</u> <i>Ten and Then Some</i></p>	<p>In this unit, students will use a variety of materials to represent mathematical situations. Students will read, write, and compare numerals with one-to-one correspondence and cardinality. They will also relate comparing numbers to comparing the weight of two objects.</p> <p>Students will decompose or break numbers into their component parts based on place value in order to:</p> <ul style="list-style-type: none"><li>• recognize numbers 11-20 as "ten and some more"</li><li>• compare numbers to 20 using greater than and less than</li></ul> <p><b>Profile of a Graduate Capacities:</b> Analyzing, Product Creation</p>
<p><u>Unit F</u> <i>Problems All Around Us</i></p>	<p>Throughout the next 3-4 weeks, students strengthen their understanding of the connections between quantity, number related combinations, and written notation to 20. They spend more time developing fluency with addition and subtraction to 5 and continue to develop strategies for adding and subtracting to 10. A deeper understanding of subtraction is developed seeing subtraction as both taking away and comparing. Students learn to identify and solve problems by applying known facts or using materials to model and then solve problems.</p> <p><b>Profile of a Graduate Capacities:</b> Analyzing</p>

<p><b><u>Unit A</u></b> <i>Numbers All Around Us</i></p>	<p>To begin the year, students will establish their rights and responsibilities within the math workshop and Number Corner environment. Students use Work Places as regular opportunities to socially engage in mathematical learning while sharing strategies with fellow students. Small guided math groups are facilitated during this time to help students consolidate or extend their learning.</p> <p>Unit A is designed to help students develop a sense of numbers and their relationships to one another through looking at several key counting and number concepts.</p> <ul style="list-style-type: none"> <li>• Organizing and counting objects moving to counting forward and backward</li> <li>• Grouping and counting in 2s, 5s, and 10s</li> <li>• Subitizing is developed through the use of models such as number racks, ten frames, tally marks, graphs, and number lines</li> </ul> <p>Subitizing is a key step in developing strategies to add and subtract. Students will begin to develop part-part- whole reasoning which is useful in problem contexts involving combining and separating numbers. Throughout the unit, students analyze mathematical problems and situations by deconstructing questions or problems to identify relevant information and appropriate strategies for solving the problem. By the end of the unit, students understand how to use, visualize and create models such as number racks and ten frames to solve a novel problem that they have analyzed in order to find a solution pathway.</p> <p><b>Profile of a Graduate Capacities:</b> Analyzing</p>
<p><b><u>Unit B</u></b> <i>Equal: To Be or Not to Be?</i></p>	<p>In this unit students will continue modeling with mathematical tools to build confidence using efficient and effective strategies to add and subtract single-digit numbers. While students have been using the equals sign before, this is the first time they learn that two expressions are of equal value (rather than just the symbol that means "the answer"). Students identify, select, and implement efficient strategies when problem solving in order to:</p> <ul style="list-style-type: none"> <li>• develop their part-part-whole reasoning in order to see the part as distinct from the whole</li> <li>• subitize within combinations of 5 and 10</li> <li>• justify the most applicable and/or efficient tool/strategy for solving a given problem</li> <li>• find missing addends and subtrahends (the number being subtracted)</li> <li>• develop mastery with number facts up to 10 and use of strategies to model number families to 20</li> </ul> <p><b>Profile of a Graduate Capacities:</b> Analyzing</p>

# Grade 1 Math Curriculum Overview

2022-2023

<p><b>Unit C</b> <i>Leap Frogging</i></p>	<p>This unit begins with a place value introduction using estimation jars and counting collections. Students develop an understanding of our number system and build two-digit numbers. Students learn:</p> <ul style="list-style-type: none"><li>• that ten ones makes one ten</li><li>• there are ten digits in our number system that make up all numbers</li><li>• to identify the number of tens and ones in a number</li></ul> <p>Then the unit shifts into placing two-digit numbers on the number line, helping students visualize number relationships in order to count and calculate.</p> <ul style="list-style-type: none"><li>• Closed and open number lines are used both as models of our number system, as well as models for beginning operations with addition and subtraction.</li><li>• Numbers lines with both large scales (skip-count by 10s or 50s) and small scales (skip count by 1s or 5s) ranging to 120 are introduced.</li><li>• Students learn that addition and subtraction problems can be solved in different ways.</li></ul> <p><b>Profile of a Graduate Capacities:</b> Analyzing, Product Creation</p>
<p><b>Unit D</b> <i>One of These Shapes Is Not Like the Others</i></p>	<p>Students build upon their kindergarten understanding to examine, identify, compare, and sort two-dimensional and three-dimensional shapes. They explore largely through play, how to describe the world around them using geometry terms. Attributes are realized through careful analysis as students notice how some are helpful in defining the geometry of a shape, while others are not. They will construct and deconstruct a variety of shapes in order to build both realistic and imagined objects. They will also develop a basic understanding of fractions as they learn that shapes can be divided into equal parts.</p> <p><b>Profile of a Graduate Capacities:</b> Collective Intelligence, Product Creation</p>
<p><b>Unit E</b> <i>Reviewing Strategies &amp; Word Problems</i></p>	<p>In this unit, first graders will continue to:</p> <ul style="list-style-type: none"><li>• develop fluency with addition and subtraction within 10</li><li>• develop strategies to solve addition facts to 20</li><li>• use tools to model, solve, and create story problems of all types (start unknown, change unknown and result unknown)</li></ul> <p>Through careful analysis, students will begin to recognize patterns within problem types and become skilled at solving and writing story problems.</p> <p><b>Profile of a Graduate Capacities:</b> Analyzing, Product Creation</p>
<p><b>Unit F</b> <i>To 100 and Beyond</i></p>	<p>The focus of this unit is on place value, deepening understanding of numbers to 120. Students will estimate, count, compare, add, and subtract two-digit numbers using models including the number line and sticks &amp; bundles. Computation strategies, such as making "jumps" of 2s, 5s, and 10s on pathways develops students' problem solving ability. The use of coins is incorporated to further explore place value at the end of the unit.</p> <p><b>Profile of a Graduate Capacities:</b> Analyzing</p>

<p><b><u>Unit A</u></b> <i>Figure the Facts</i></p>	<p>To begin the year, students will establish their rights and responsibilities within the math workshop and Number Corner environment. Students use Work Places as regular opportunities to socially engage in mathematical learning while sharing strategies with fellow students. Small guided math groups are facilitated during this time to help students consolidate or extend their learning.</p> <p>In this first unit, students develop confidence and fluency with number relationships, operations, and facts in the range of 0 to 20. This operational sense depends heavily on a solid number foundation developed in earlier grades. The goal of this unit is to help students develop solid understandings of addition and subtraction and some of the ways in which these two operations complement each other, which will lead to the development of confidence and fluency with the number facts as they appear in real-world contexts. Fact retrieval is based on models, the use of strategies, and intuition, as opposed to rote memorization and recall. They can create a variety of combinations of 20 and justify their solutions using models, pictures and words.</p> <p><b>Profile of a Graduate Capacities:</b> Analyzing, Product Creation</p>
<p><b><u>Unit B</u></b> <i>Place Value and Adding/Subtracting within 100</i></p>	<p>Throughout Unit B, students build upon their operational sense with number relationships to 20 developed in Unit A as they explore base ten concepts and models within 1,000. Students focus on the first three place value units: ones, tens, and hundreds.</p> <p>Students will decompose or break numbers into their component parts based on place value in order to:</p> <ul style="list-style-type: none"> <li>• use models for grouping including tallying with bundled objects, discrete counters, base ten area pieces, and the number line (open and close)</li> <li>• employ splitting strategies</li> <li>• solve word problems involving addition and subtraction within 100 with unknowns in all positions</li> <li>• recognize subtraction as finding the difference between 2 points on a number line.</li> </ul> <p><b>Profile of a Graduate Capacities:</b> Analyzing, Product Creation</p>
<p><b><u>Unit C</u></b> <i>Sizing It Up</i></p>	<p>The focus of this unit shifts from earlier work with addition, subtraction and place value concepts to those concerning measurement. Students will discover the need for a standard unit of measurement as their attempts to measure without one become widely varied and confusing. Students learn to measure inches, feet, yards, centimeters and meters and recognize connections and relationships between units of measure. The effect the size of the unit has on the corresponding measurement is recognized. This understanding lends itself to informal pictorial experience with ratios and proportional reasoning, laying groundwork for the multiplicative thinking required in third grade. With this understanding comes greater ability to justify a most appropriate tool and/or unit to use when measuring objects of various sizes. Because of this, students will also become more adept at making unit conversions.</p> <p><b>Profile of a Graduate Capacities:</b> Analyzing</p>

# Grade 2 Math Curriculum Overview

2022-2023

<p><b><u>Unit D</u></b> <i>How ... is 1000?</i></p>	<p>Throughout the course of the next 4-5 weeks, students develop a deeper understanding of place value of numbers to 1,000. This will build upon concepts and models students refined for adding and subtracting within 100 as was introduced in Unit B. Students will compose and decompose numbers based on place value using multiple models and representations including sticks, cubes, paper clips and coins in order to understand:</p> <ul style="list-style-type: none"><li>• sets of 10 and 100 as single entities (unitizing);</li><li>• the position of any individual digit determines the size of the group that digit is counting;</li><li>• multi-digit numbers are formed by following the same counting pattern present in single digit counting;</li><li>• any number can be decomposed based on place value groupings in multiple ways.</li></ul> <p><b>Profile of a Graduate Capacities:</b> Analyzing, Product Creation</p>
<p><b><u>Unit E</u></b> <i>Name It, Make It, Shape It, Break It, Build It, Move It and Compare It</i></p>	<p>In this unit students reason with shapes and their attributes. Students will identify, describe, construct, draw, compare, contrast, and sort various types of triangles and quadrilaterals, as well as other shapes. They partition shapes into equal shares. In addition, they relate halves, fourths and skip counting by 5's to tell time and solve problems involving money.</p> <p><b>Profile of a Graduate Capacities:</b> Analyzing, Product Creation</p>
<p><b><u>Unit F</u></b> <i>Adding/Subtracting within 1000</i></p>	<p>This unit incorporates concepts of multi-digit addition and subtraction within story problem contexts. Students will spend time working together to solve and create story problems involving adding and subtracting 3-digit numbers within real-world applications such as a toy store and party planning. Emphasis is placed on student-invented and generated strategies, such as concrete models, drawings, and strategies based on place value through 1,000.</p> <p><b>Profile of a Graduate Capacities:</b> Analyzing, Collective Intelligence</p>

# Grade 3 Math Curriculum Overview

2022-2023

<p><b><u>Unit 1</u></b> <i>Addition and Subtraction Patterns within 1,000</i></p>	<p>This unit begins reviewing patterns in addition and subtraction facts to 20, the pattern of adding 10s, and problem solving which were taught in grade 2. The concept of rounding to the nearest ten and/or hundred is introduced which is then used as a strategy to estimate and partition three-digit numbers in order to add and subtract efficiently. Later in the unit, the students apply the addition and subtraction strategies they have learned to add and subtract multi-digit numbers efficiently on the open number line. They practice place value splitting with addition. Students are introduced to adding and subtracting numbers using expanded notation as well as the standard algorithm for each. Students gain experiences and strategies for making sense of problems and communicating effectively about the accuracy and efficiency of various solutions. In this unit, expectations for working cooperatively on learning tasks are established.</p> <p><b>Profile of a Graduate Capacities:</b> Analyzing</p>
<p><b><u>Unit 2</u></b> <i>Introduction to Multiplication &amp; Division Concepts</i></p>	<p>In Unit 2, students begin to develop a conceptual understanding of multiplication and division. Investigations begin with contexts and problems that invite students to multiply and divide and to think about equal groups. Students are introduced to loops and groups, skip counting, repeated addition and then make use of a variety of models for multiplication and division including equal groups, arrays and number lines. They learn the zero, identity and associative properties. They apply what they have learned by solving problems involving all four operations.</p> <p><b>Profile of a Graduate Capacities:</b> Analyzing</p>
<p><b><u>Unit 4F</u></b> <i>Fractions</i></p>	<p>In this unit, students begin by building, comparing, and investigating relationships between unit and common fractions using several models including parts of a whole and number line models. The number line model is further developed to understand fractions greater than a whole and representing whole numbers as fractions, i.e. <math>3 = 3/1</math>. Using models, students explore comparing fractions with like denominators or like numerators and begin building an understanding of equivalent fractions. Students then learn how to measure to the nearest <math>1/2</math> and <math>1/4</math> inch on a ruler and create line plots using measurement data.</p> <p><b>Profile of a Graduate Capacities:</b> Analyzing</p>
<p><b><u>Unit 4M</u></b> <i>For Good Measure</i></p>	<p>This unit focuses on measurement concepts and skills. Students tell time to the minute and solve elapsed time problems. Then, the class explores measuring mass/ weight and volume using metric units of measurement. Students estimate, measure, and compare the masses of different objects and work with volume. The unit builds upon the strategies to add and subtract 3-digit numbers that were introduced in Unit 3 as students solve measurement-related story problems. Perimeter problems are also solved while addition strategies are further refined.</p> <p><b>Profile of a Graduate Capacities:</b> Analyzing</p>

# Grade 3 Math Curriculum Overview

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<p><b><u>Unit 5</u></b> <i>Extending Multiplication &amp; Division Concepts</i></p>	<p>Unit 5 returns to the study of multiplication, especially as it relates to division. Students focus on multiplication strategies and multiplying by multiples of 10. During this unit, students will practice strategies for multiplying single digit numbers by 0 -5 which should be learned "from memory" by the end of grade 3. They will also be introduced to strategies for multiplying by 6 - 9. Story problems play a major role in the unit helping students to connect their everyday experiences with division to more formal mathematical concepts. They will encounter different interpretations of division such as the area model and will have multiple opportunities to build understanding of different models and meanings. The connection between multiplication and division is also drawn through work that revolves around fact families. Toward the end of the unit, area is also introduced.</p> <p><b>Profile of a Graduate Capacities:</b> Analyzing</p>
<p><b><u>Unit 6</u></b> <i>Quadruple the Fun</i></p>	<p>In Unit 6, students analyze polygons in various contexts including in relationship to fractions. They develop increasingly precise ways to describe, classify, and make generalizations about two-dimensional shapes, particularly quadrilaterals. Models such as tangrams, toothpicks, colored tiles, linear units, and geoboards help build an understanding that shared attributes can define a larger category. In addition, quadrilaterals are partitioned into parts with equal areas and the area of each equal part is expressed as a unit fraction of the whole.</p> <p><b>Profile of a Graduate Capacities:</b> Design</p>



# Grade 4 Math Curriculum Overview

2022-2023

<p><b><u>Unit 1</u></b> <i>Multiplicative Thinking</i></p>	<p>This unit focuses on developing concepts related to multiplication and division through models (open number line, tile arrays, area model and the ratio table), strategies for multiplication facts and multiplicative comparisons. Students continue to transition from additive to multiplicative thinking, a process begun in third grade, by studying multiplicative comparisons presented in story problems involving both multiplication and division. The first lessons set the tone for the year with community building and introduce expectations for problem strings and math forums. This unit also establishes expectations for working cooperatively on learning tasks.</p> <p><b>Profile of a Graduate Capacities:</b> Collective Intelligence, Product Creation</p>
<p><b><u>Unit 2</u></b> <i>Multiplication, Division and Strategies Oh My!</i></p>	<p>This unit focuses on an applied and visual approach to multi-digit multiplication and early division with remainders. Students deepen their understandings of multiplication and division continuing on the journey to multiplicative reasoning developed in unit 1. They apply number sense to developing useful models such as the ratio table and the array or area model and mental strategies such as doubling and halving for multiplying and dividing with an increasing degree of efficiency. They also continue to develop proficiency with basic multiplication and division facts. As they are solving various problems, students justify their reasoning using clear models and mathematical language as they create products.</p> <p><b>Profile of a Graduate Capacities:</b> Analyzing</p>
<p><b><u>Unit 3</u></b> <i>Full of Wholes</i></p>	<p>In this unit, students use concrete manipulatives and visual models to explore unit fractions, common fractions, mixed numbers, improper fractions, equivalent fractions, and decimals as well as addition and subtraction of fractions. Students begin to understand how two fractions with unlike numerators and unlike denominators can be equal and they develop methods for generating and recognizing equivalent fractions. The connection between unit fractions and common fractions leads toward multiplying fractions by whole numbers. Fraction works extends into decimals by considering the equivalence of tenths and hundredths. Students must understand that comparisons of fractions or decimals are valid only when the two fractions or decimals refer to the same whole.</p> <p><b>Profile of a Graduate Capacities:</b> Analyzing, Product Creation</p>
<p><b><u>Unit 4</u></b> <i>It All Adds Up to This</i></p>	<p>Unit 4 focuses on place value to 1,000,000 and multi-digit addition and subtraction strategies. Students will investigate place value of numbers to a million including rounding numbers to any given place. In this unit, a strand of numeric exploration and investigation that was launched in Grade 1 and developed throughout Grades 2 and 3 comes to a logical conclusion as students are introduced to the standard, or traditional, algorithms for multi-digit addition and subtraction.</p> <p><b>Profile of a Graduate Capacities:</b> Analyzing</p>

# Grade 4 Math Curriculum Overview

2022-2023

<p><b><u>Unit 5</u></b> <i>Measurement and Geometry</i></p>	<p>The unit begins developing an understanding of units of measurement for length, capacity and mass in both the customary and metric systems. Students also explore converting units of measurement within the same system primarily using ratio tables. They also solve elapsed time problems and expanded their knowledge of time to the second level. Determining measurements such as perimeter, area, and angle measurement are introduced. After exploring measurement units, students are given opportunities to compare, analyze, classify, and measure polygons and angles. They develop understanding of numerous properties of shapes, including symmetry, congruence, parallel and perpendicular sides. The purpose of this unit is to deepen their thinking from visualization and analysis stages to that of informal deduction, or "if-then" reasoning.</p> <p><b>Profile of a Graduate Capacities:</b> Analyzing, Product Creation</p>
<p><b><u>Unit 6</u></b> <i>Refining Multiplication and Division Strategies</i></p>	<p>The instruction in Unit 6 picks up where Unit 2 left off, further developing the skills and concepts associated with multi-digit multiplication and division. Students discover that the models they have been using and strategies they have developed for multi-digit multiplication work equally well for division. They learn to divide numbers into the thousands by 1-digit divisors, using strategies based on the relationship between multiplication and division, as well as on place value, and the properties of operations.</p> <p><b>Profile of a Graduate Capacities:</b> Analyzing</p>

# Grade 5 Math Curriculum Overview

2022-2023

<p><b><u>Unit A</u></b> <i>Expressions, Equations and Volume</i></p>	<p>In this unit, students use the study of volume to review and extend a host of skills and concepts related to multiplication. Students investigate a scenario in which they find different ways to arrange 24 cubes into a rectangular prism. This prompts a deeper look at the associative and commutative properties of multiplication as students use expressions with parentheses to represent different rectangular prisms. Students develop major multi-digit multiplications strategies to solve real world and mathematical problems in elegant and efficient ways. The link between multiplication and division is revisited through the lens of the area model.</p> <p><b>Profile of a Graduate Capacities:</b> Analyzing</p>
<p><b><u>Unit B</u></b> <i>Strategies for Multiplying and Dividing</i></p>	<p>In this unit, students continue their study of multiplication and division strategies. The teacher formally introduces the standard multiplication algorithm after reviewing the area model and partial products. Students investigate a number of strategies that capitalize on their estimation and mental math skills that help them to continue to develop strong number sense. These include strategies that leverage the relationships between multiplication and division such as the fact that 5 is half of 10 and the process of doubling and halving. The connection is made between multiplication and division using the area model and ratio tables to help students develop a degree of comfort with division problems. Students are introduced to the partial quotients strategy for division problems. Throughout the unit, students continue to solve volume problems using their new multiplication and division strategies.</p> <p><b>Profile of a Graduate Capacities:</b> Analyzing</p>
<p><b><u>Unit C</u></b> <i>Adding and Subtracting Fractions</i></p>	<p>In this unit, students add and subtract fractions with unlike denominators, using a variety of strategies to find common denominators. Money, clocks and double number lines serve to help students develop intuitions about finding common denominators in order to compare, add, and subtract fractions. Students are introduced to the use of ratio tables to rewrite fractions with common denominators. They extend these strategies and models to solving a variety of story problems, and make generalizations about finding common denominators. When using the double number line strategy, they multiply fractions by whole numbers in order to find distances on the number line. They create line plots involving fractional lengths and solve problems using the data displayed in the line plots. In addition, students learn to simplify fractions.</p> <p><b>Profile of a Graduate Capacities:</b> Analyzing</p>
<p><b><u>Unit D</u></b> <i>Place Value and Decimals</i></p>	<p>In this unit, students study skills and concepts related to the place value of decimals to the thousandth place, from reading, writing and comparing decimals to rounding and examining the relationship of decimal patterns including multiplying and dividing numbers by 10. Students use their place value understandings of whole numbers and decimals to add and subtract decimals to the hundredths as well as multiply and divide decimals using ratio tables and other models. Place value patterns are used to convert units of measurement in the metric system.</p> <p><b>Profile of a Graduate Capacities:</b> Analyzing</p>

# Grade 5 Math Curriculum Overview

2022-2023

<p><b><u>Unit E</u></b> <i>Multiplying and Dividing Fractions</i></p>	<p>In Unit 5, students extend their understandings of multiplication and division to working with fractions. The unit begins with a review and extension of skills and concepts first introduced in Grade 4 to solidify their understandings of whole-number-by-fraction multiplication. Then, students use rectangular arrays to model and solve fraction-by-fraction multiplication problems. Students generalize their understanding of the model to be able to multiply fractions without a model and to consider how the size of the factors when multiplying with fractions impacts the size of the product relative to the factors. Students are also introduced to division of whole numbers by unit fractions, and unit fractions by whole numbers. There is a strong emphasis throughout the unit on sense-making and understanding, as students tackle material that is conceptually challenging.</p> <p><b>Profile of a Graduate Capacities:</b> Analyzing</p>
<p><b><u>Unit F</u></b> <i>Geometry and Coordinate Graphing</i></p>	<p>In this unit, students encounter several new geometric concepts. Coordinate graphing in the first quadrant is formally introduced. Students learn how to identify and plot coordinates using the x- axis and y-axis. They also begin to look at patterns represented by graphing on a coordinate grid. In addition, the use of hierarchies to classify two-dimensional shapes by their properties is presented. Specifically students study triangles and quadrilaterals. When classifying 2-D shapes, students understand that while the properties that belong to a category of two-dimensional figures also belong to all the subcategories, the reverse is not true.</p> <p><b>Profile of a Graduate Capacities:</b> Analyzing, Product Creation</p>

<p><b>Unit A</b> <i>Area &amp; Surface Area</i></p>	<p>In this unit, students extend their reasoning about area begun in third grade to include shapes that are not composed of rectangles. Through activities designed and sequenced to allow students to make sense of problems and persevere in solving them, students build their knowledge of areas of rectangles to find the areas of polygons by decomposing and rearranging them to make figures whose areas they can determine. They learn strategies for finding areas of parallelograms and triangles, and use regularity in repeated reasoning to develop formulas for these areas, using geometric properties to justify the correctness of these formulas. They use these formulas to solve problems. They understand that any polygon can be decomposed into triangles, and use this knowledge to find areas of polygons. Students find the surface areas of polyhedra with triangular and rectangular surfaces. They study, assemble, and draw nets, a pattern that you can cut and fold to make a model of a solid shape, for polyhedra and use nets to determine surface areas.</p> <p><b>Profile of a Graduate Capacities:</b> Design</p>
<p><b>Unit B</b> <i>Introducing Ratios, Unit Rate and Percentages</i></p>	<p>In this unit, students learn that a ratio is an association between two quantities, e.g., “1 teaspoon of drink mix to 2 cups of water.” Students analyze contexts that are often expressed in terms of ratios, such as recipes, mixtures of different paint colors, constant speed (an association of time measurements with distance measurements), and uniform pricing (an association of item amounts with prices). Students develop an understanding of ratios, equivalent ratios, and unit rates. Students analyze situations involving both discrete and continuous quantities, and involving ratios of quantities with units that are the same and that are different. They learn all ratios that are equivalent to can be made by multiplying both and by the same non-zero number. Throughout the unit, students are introduced to discrete diagrams, double number line diagrams and ratio tables as tools that can assist in solving ratio problems. After developing an understanding of what a ratio is, students begin exploring “part-part-whole” ratios. They learn how to interpret ratios as rates per 1 or unit rate. Measurement conversions provide other opportunities to use rates. Students learn that “percent” means “per 100” and indicates a rate. Just as a unit rate can be interpreted in context as a rate per 1, a percentage can be interpreted in the context from which it arose as a rate per 100.</p> <p><b>Profile of a Graduate Capacities:</b> Analyzing</p>
<p><b>Unit C</b> <i>Computing with Fractions and Decimals</i></p>	<p>The unit begins with students considering division situations. They consider how the relative sizes of numerator and denominator affect the size of their quotient which is very important as they begin to solve problems dividing fractions. Equal groups and comparison situations are represented by tape diagrams and equations. Students learn to interpret, represent, and describe these situations, using terminology such as “What fraction of 6 is 2?”, “How many 3s are in 12?”, “How many fourths are in 3?”, “is one-third as long as,” “is two-thirds as much as,” and “is one-and-one-half times the size of.” After working with diagrams to represent division with fraction situations, students build on their work from the previous section by considering quotients related to products of numbers and unit fractions, to establish that dividing by a fraction is the same as multiplying by its reciprocal. Students then use their learning of the algorithm for dividing fractions to solve volume measurement problems. This builds upon</p>

	<p>work begun in Unit A.</p> <p>The unit then moves to calculating and solving problems with decimals. The algorithms for addition, subtraction, and multiplication, which students used with whole numbers in earlier grades, are extended to decimals of arbitrary length. Students review strategies learned in earlier grades for adding and subtracting and discuss efficient algorithms and their advantages. Multiplication of decimals, begins by asking students to estimate products of a whole number and a decimal, allowing students to be reminded of appropriate magnitudes for results of calculations with decimals. In this section, students extend their use of efficient algorithms for multiplication from whole numbers to decimals. They begin by writing products of decimals as products of fractions, calculating the product of the fractions, then writing the product as a decimal. They discuss the effect of multiplying by powers of 0.1, noting that multiplying by 0.1 has the same effect as dividing by 10. The multiplication algorithms are introduced and students use them, initially supported by area diagrams. Students are formally introduced to the algorithm for long division. They begin with quotients of whole numbers, first representing these quotients with base-ten diagrams, then proceeding to efficient algorithms, initially supporting their use with base-ten diagrams. Students then tackle quotients of whole numbers that result in decimals, quotients of decimals and whole numbers, and finally quotients of decimals.</p> <p><b>Profile of a Graduate Capacities:</b> Analyzing</p>
<p><b>Unit D</b> <i>Expressions, Equations &amp; Rational Numbers</i></p>	<p>Students begin the unit by working with linear equations that have single occurrences of one variable. They represent relationships with tape diagrams and with linear equations, explaining correspondences between these representations. They examine values that make a given linear equation true or false, and what it means for a number to be a solution to an equation. Balanced and unbalanced “hanger diagrams” are introduced as a way to reason about solving the linear equations of the first section. Students then write expressions with whole-number exponents and whole-number, fraction, or variable bases. They evaluate such expressions, using properties of exponents strategically. They understand that a solution to an equation in one variable is a number that makes the equation true when the number is substituted for all instances of the variable. They represent algebraic expressions and equations in order to solve problems.</p> <p>In the second part of the unit, signed numbers are introduced. Students begin by considering examples of positive and negative temperatures, plotting each temperature on a vertical number line on which 0 is the only label. Next, they consider examples of positive and negative numbers used to denote height relative to sea level. In the second lesson, they plot positive and negative numbers on horizontal number lines, including “opposites”—pairs of numbers that are the same distance from zero. They use “less than,” “greater than,” and the corresponding symbols to describe the relationship of two signed numbers. They learn that the absolute value of a number is its distance from zero, how to use absolute value notation, and that opposites have the same absolute value because they have the same distance from zero. In comparing two signed numbers, students distinguish between magnitude (the absolute value of a number) and order (relative position on the number line), distinguishing between “greater</p>

	<p>than” and “greater absolute value,” and “less than” and “smaller absolute value.” Students examine opposites of numbers, noticing that the opposite of a negative number is positive.</p> <p>Students graph simple inequalities in one variable on the number line, using a circle or disk to indicate when a given point is, respectively, excluded or included. Students represent situations that involve inequalities, symbolically and with the number line, understanding that there may be infinitely many solutions for an inequality. They interpret and graph solutions in contexts (MP2), understanding that some results do not make sense in some contexts, and thus the graph of a solution might be different from the graph of the related symbolic inequality.</p> <p>In this unit, students work in all four quadrants of the coordinate plane, plotting pairs of signed number coordinates in the plane. They understand that for a given data set, there are more and less strategic choices for the scale and extent of a set of axes. They understand the correspondence between the signs of a pair of coordinates and the quadrant of the corresponding point. They interpret the meanings of plotted points in given contexts and use coordinates to calculate horizontal and vertical distances between two points.</p> <p><b>Profile of a Graduate Capacities:</b> Analyzing</p>
<p><b><u>Unit E</u></b> <i>Data Sets and Distributions</i></p>	<p>Building on, and reinforcing their understanding of number, students begin to develop their ability to think statistically. First, they learn what makes a good statistical question. Students recognize that different ways to measure center yield different values. Students recognize that a measure of variability can also be useful for summarizing data because two very different sets of data can have the same mean and median yet be distinguished by their variability. Students learn to describe and summarize numerical data sets, identifying clusters, peaks, gaps, and symmetry, considering the context in which the data were collected. They work with measures of variability—understanding and using the terms “range”, “mean absolute deviation” or MAD, “quartile,” and “interquartile range” or IQR. Students will use data on dot plots, bar graphs, histograms and box plots. Although the students will be creating data displays, throughout the unit, the emphasis should be on the student reading, understanding and critically reflecting on displayed data.</p> <p><b>Profile of a Graduate Capacities:</b> Product Creation</p>

# Grade 11 World Literature Curriculum Overview

2022-2023

<p><b><u>Unit 1</u></b> <i>Humans and Their Stories</i></p>	<p>Junior year the focus on analysis continues with literature from around the world. When analyzing literature from other cultures, students will use research and reading strategies to understand ancient texts and their importance in creating foundations for the literature that came afterwards. Students will read, comprehend, and analyze stories from various countries and cultures. These texts might include any of the following titles in the list provided, with a preference to <i>The Odyssey</i> or <i>The Epic of Gilgamesh</i>.</p> <p>While reading the ancient stories from other cultures, students will also complete short journal entries about connections to their own lives that will be used later in the course during the personal essay writing assignment (college essay).</p> <p><b>Profile of a Graduate Capacities:</b> Analyzing, Alternate Perspective</p>
<p><b><u>Unit 2</u></b> <i>Cultures, Characters, and Motivation</i></p>	<p>This unit will dive into <i>Shakespeare's Macbeth</i>. This unit can show the beginning of change in cultures, including but not limited to: new people in a culture, new ideas, challenging older ideas, etc. Doing so prepares students for the second thematic part of this course. Students enrolled in Courage, Hope, and Adversity will be better prepared for the clash of cultures in the trimester two whole-class novel, <i>The Purple Hibiscus</i>. Students enrolled in Reality and Unreality will get a taste for the hidden messages found in literature through magical realism, fantasy, and science fiction, including titles like <i>Metamorphosis</i> and <i>Frankenstein</i>. Students will think deeply about the characters and their motivations in order to write persuasively using rhetorical devices.</p> <p><b>Profile of a Graduate Capacities:</b> Alternate Perspective</p>
<p><b><u>Unit 3</u></b> <i>Courage, Hope, Adversity: Purple Hibiscus</i></p>	<p>Students have experienced many ancient works of literature at this point in the course, and have experienced the human condition through the ages. This is a perfect time to reflect on who they are through the writing of a college essay /personal narrative. Students will look back on the journal writings they did in Trimester 1 and focus on audience, purpose, and message as they figure out what aspects of themselves to share with the world. The writing of a first draft happens in this unit, while the revisions occur in the next unit after students have had some time away from their writing pieces.</p> <p>As students are working on their personal narratives, they will also move to more contemporary literary works. This shift mirrors that of many cultures, at times experiencing very rapid changes, causing cultural and generational shifts. Students will look for the cultural values they noted in earlier texts and analyze the way literature supports continuity and changes to those values. Students will conduct research more independently, creating their own research questions and noting important need-to-know topics for both a class text and an independent or small group text. Student responsibility for learning will increase in this trimester as students will be expected to continue to build up their analysis tools, and apply their prior learning to new situations.</p> <p>PLEASE NOTE: This is the first unit in the thematic course offering Courage, Hope, and Adversity. Students will continue to work on skills, strategies, and concepts from the first trimester version of World Literature, but will not focus on thematic representations of human courage, the importance of hope, and overcoming adversity.</p> <p><b>Profile of a Graduate Capacities:</b> Inquiry, Analyzing, Design</p>



# Grade 11 World Literature Curriculum Overview

2022-2023

<p><b><u>Unit 4</u></b> <i>Courage, Hope, Adversity</i></p>	<p>At this point in the course, students are ready to be more independent in applying the skills they have learned and will branch off into book clubs to create a “practice” project that will prepare them further for the final exam. This culminating unit serves as an opportunity for students to transfer the skills and strategies from previous units in this course into their own independent book clubs. Students have experienced a variety of ways to make their thinking visible this year through posters, poetry, presentations, and writing. The "practice" project is an opportunity for students to show all of the different ways by creating a display of their learning. The reading for this unit is varied and encompasses many different cultures and issues.</p> <p>While students are in book clubs and/or reading independently, they are also conferring about the personal narratives written in the last unit. Putting away our writing for a while can help us notice what we need to do to make it better.</p> <p>PLEASE NOTE: This is the last unit in the second half of World Literature. It is the final unit of the thematic course, Courage, Hope, and Adversity.</p> <p><b>Profile of a Graduate Capacities:</b> Inquiry, Design, Collective Intelligence</p>
<p><b><u>Real &amp; Unreal</u></b> <b><u>Unit 1</u></b> <i>Real-Life Magic</i></p>	<p>Students have experienced many ancient works of literature at this point in the course, and have experienced the human condition through the ages. This is a perfect time to reflect on who they are through the writing of a college essay /personal narrative. Students will look back on the journal writings they did in Trimester 1 and focus on audience, purpose, and message as they figure out what aspects of themselves to share with the world. The writing of a first draft happens in this unit, while the revisions occur in the next unit after students have had some time away from their writing pieces.</p> <p>Students who found new appreciation for the fantastical throughout the ancient texts like <i>The Odyssey</i> and <i>The Epic of Gilgamesh</i> will now move forward in time to modern versions of the fantastical. While we will no longer discuss the gods and mythology, we will dive deep into a world like our own with elements beyond our comprehension. Students will consider a text for its superficial meaning, as well as its subversive commentary on the author's society. With the fantasy genre, students will encounter fictionalized stories that act as criticisms on society as a whole. This requires research and background knowledge, which will act as an integral part of their analysis and understanding.</p> <p>PLEASE NOTE: This is the first unit in the thematic course offering Real and Unreal. Students will continue to work on skills, strategies, and concepts from the first trimester version of World Literature, but will not focus on thematic representations of human courage, the importance of hope, and overcoming adversity.</p> <p><b>Profile of a Graduate Capacities:</b> Inquiry, Analyzing</p>

# Grade 11 World Literature Curriculum Overview

2022-2023

<p><u>Real &amp; Unreal</u> <u>Unit 2</u> <i>Intro to Sci-Fi + Book Clubs</i></p>	<p>Students will continue to navigate challenging and dense texts that depict a variety of human experiences unlike their own. In the previous unit, students studied the craft of magical realism, as well as the surrealist text <i>The Metamorphosis</i>, to understand how authors use fantastical situations to subversively critique human nature, society, or political events. As students move to their next genre study, they will be analyzing the purpose of science fiction as a genre (hint: these types of authors act similarly to authors of magical realism and surrealism). Once students are introduced to various elements of science fiction, they will engage with a self-selected text in book clubs. Throughout their book club study, they will analyze the various elements of sci-fi, surrealism, and magical realism. As they read and comprehend, they will research the element of society their author is critiquing. Ultimately, students will use their research to show how they've critically analyzed the text and its overall message.</p> <p><b>Profile of a Graduate Capacities:</b> Inquiry, Analyzing, Product Creation</p>
<p><u>Real &amp; Unreal</u> <u>Unit 3</u> <i>Sci-fi: A Critical Look at Our Future</i></p>	<p>In this unit, students will continue the process of blending fiction and nonfiction to better support their understanding of world literature. Here, students will encounter Romanticism in the form of <i>Frankenstein</i>. Not only will students study the literary value of the text, but they will also be tasked with making connections to Shelley's world to determine her ultimate purpose in writing the masterpiece.</p> <p><b>Profile of a Graduate Capacities:</b> Analyzing, Citizenship</p>

# Grade 12 Humanities Curriculum Overview

2022-2023

<p><b><u>Unit 1</u></b> <i>Real Versus Ideal</i></p>	<p>In this launch unit, students practice aesthetic and efferent reading while familiarizing themselves with the interconnected nature of Humanities. By examining primary and secondary sources from philosophers, artists, historians, and writers, the natural tendency of humans to attain the ideal begins to emerge.</p> <p>Beginning with ancient cultures, students will investigate the effect of this basic human quest throughout time and across cultures. Students will begin by examining the ideal and real as presented by philosophers of the ancient and Enlightenment eras using close reading techniques which results in insight into modern problems using these philosophies. Students will then seek connections between artworks and philosophy, developing their synthesis skills. As students gain a firm grasp on humans' search for the ideal, they take a close look at the way different societies come to idealize thinking vs. production. The unit culminates in an analyze the DHHS Program of Studies, commenting to the Board of Education about the ideal graduate desired by Madison, and the reality of that expectation in 21st century American Society.</p> <p><b>Profile of a Graduate Capacities:</b> Analyzing, Product Creation</p>
<p><b><u>Unit 2</u></b> <i>Religions</i></p>	<p>Throughout this unit, students will learn about the core tenets of various religions to evaluate the common ground many religions share. Students will first encounter Christianity and Islam, where they will understand the basis of these religions before moving on to their analysis of paired literary texts. Additionally, students will evaluate religious artworks and music to support their understanding of the main tenets of the religion. Next, students will begin to explore Buddhism and Hinduism in the same light. Finally, students will consider the similarities across these religions.</p> <p><b>Profile of a Graduate Capacities:</b> Product Creation, Alternate Perspectives</p>
<p><b><u>Unit 3</u></b> <i>Power to the People/ Individual and Collective</i></p>	<p>The final unit of our Humanities course focuses on power dynamics throughout history. As the unit progresses, students will continue to perform close reads of both primary and secondary sources, as well as various elements of literature. Students have been using a variety of texts (informational and fictional, art, music, literature, essays, and so on) to understand how fiction and reality intersect. In this unit, students will encounter various forms of power structures and will watch as the idea of the collective develops over time.</p> <p><b>Profile of a Graduate Capacities:</b> Analyzing, Citizenship</p>