Introduction

Unique Learning System and News-2-You maintain alignment with state standards through instructional targets. These targets are the bridge between the general content standards adopted by a state and relevant curriculum content for students with significant disabilities. The n2y Instructional Targets have been aligned with the Common Core Standards in English Language Arts and Mathematics. Forty-five states and the District of Columbia have adopted the Common Core Standards.

For students with significant cognitive disabilities, access and participation in the state's adopted content standards are generally addressed through extended standards, which may be reduced in the depth and breadth of the adapted standards. An area of this alignment document provides a means for a district to input these extended standards. Lesson plans and materials within Unique and News-2-You ensure the most rigorous alignment possible.

The chart below describes the sections of this alignment document. Each instructional target is addressed in one or more of the unit lessons. Additionally, differentiated task descriptors are provided to define how students with diverse abilities will have access to essential content of the standards.

Standard		Grade Band
Common Core Standards		**Your State's Extended Standards**
The complete wording of the Common Core Standards is listed in section.		Each district may input their extended standards in this section.
n2y Instructional Targets	**n2y Grade Band Lessons and Activities**	**n2y Supporting Activities**
Instructional Targets reflect the essential content of grade level standards. In ELA and Math, these targets are aligned to the Common Core Standards.	**Unique**	**Unique**
	Lessons that address instructional targets are listed in this column. Lessons from Unique units maintain a consistent format so that instructional targets are taught each month.	Unique's supporting tools and guides supplement the unit lessons. Pertinent supports are listed in this column.
		News-2-You
		Supporting activities and lessons, which provide practice for Instructional Targets, are listed in this column.
n2y Differentiated Tasks Differentiated tasks descriptors ensure that students with a wide variety of learning abilities and needs are able to access, participate and make progress in the standards based activities. Differentiated task descriptors are written in student performance terminology.		
Level 3	*Level 2*	*Level 1*
• Students at this level are expected to reach the highest level of independence.	• Students at this level likely will require support in all learning activities.	• Students at this level require maximum support in learning. Increasing participation is the primary goal.

Math Standards for Counting and Cardinality — Grades K–2

Common Core Standards	Your State's Extended Standards

KINDERGARTEN
Know number names and the count sequence.
1. CCSS.Math.Content.K.CC.A.1 Count to 100 by ones and by tens.
2. CCSS.Math.Content.K.CC.A.2 Count forward beginning from a given number within the known sequence (instead of having to begin at 1).
3. CCSS.Math.Content.K.CC.A.3 Write numbers from 0 to 20. Represent a number of objects with a written numeral 0-20 (with 0 representing a count of no objects).
Count to tell the number of objects.
4. CCSS.Math.Content.K.CC.B.4 Understand the relationship between numbers and quantities; connect counting to cardinality.
  a. CCSS.Math.Content.K.CC.B.4a When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object.
  b. CCSS.Math.Content.K.CC.B.4b Understand that the last number name said tells the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted.
  c. CCSS.Math.Content.K.CC.B.4c Understand that each successive number name refers to a quantity that is one larger.
5. CCSS.Math.Content.K.CC.B.5 Count to answer "how many?" questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1–20, count out that many objects.
Compare numbers.
6. CCSS.Math.Content.K.CC.C.6 Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group (e.g., by using matching and counting strategies).
7. CCSS.Math.Content.K.CC.C.7 Compare two numbers between 1 and 10 presented as written numerals.	

n2y Instructional Targets	n2y Elementary Grade Band Lessons and Activities	n2y Supporting Activities
Know number names and the count sequence. • Count by ones to 10, 20 and 100. • Count by 10s to 100. • Read and write numerals to 10 and 20. *Count to tell the number of objects.* • Demonstrate one-to-one correspondence when counting. • Count a number of objects to tell *how many*. *Compare numbers.* • Indicate whether the number of objects in one group is *more*, *less* or *equal to* the number of objects in another group.	**Unique** Lesson 19: Number Sense Lesson 20: Graphing	**Unique** ULS Instructional Tools: Math Pack/Numbers ULS Instructional Guides: Mathematics Manipulative pictures Standards Connection **News-2-You** Activities: Dot-to-Dot Activities: Patchwork Math Activities: Which is Greater? Activities: Which is Less? Activities: Patchwork Math

n2y Differentiated Tasks		
Level 3	*Level 2*	*Level 1*
• Students will count a number of objects and identify the associated numeral. • Students will count objects in two defined groups and determine which group contains more or less than the other or whether the groups are equal.	• Students will match objects to a corresponding number line (1-to-1 match) to count and identify a number of objects. • Students will pair objects from two groups to determine which group has more or less than the other or whether the groups are equal.	• Students will count to a given number through an active participation response (e.g., voice output device, eye gaze choice board). • Students will select numbers (errorless choice) to count and compare numbers within a math problem involving the concepts of *more* and *less*.

Math Standards for Operations and Algebraic Thinking — Grades K–2

Common Core Standards	Your State's Extended Standards
KINDERGARTEN **Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.** 1. CCSS.Math.Content.K.OA.A.1 Represent addition and subtraction with objects, fingers, mental images, drawings, sounds (e.g., claps), acting out situations, verbal explanations, expressions or equations. 2. CCSS.Math.Content.K.OA.A.2 Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem. 3. CCSS.Math.Content.K.OA.A.3 Decompose numbers less than or equal to 10 into pairs in more than one way, e.g., by using objects or drawings, and record each decomposition by a drawing or equation (e.g., 5 = 2 + 3 and 5 = 4 + 1). 4. CCSS.Math.Content.K.OA.A.4 For any number from 1 to 9, find the number that makes 10 when added to the given number, e.g., by using objects or drawings, and record the answer with a drawing or equation. 5. CCSS.Math.Content.K.OA.A.5 Fluently add and subtract within 5. **GRADE 1** **Represent and solve problems involving addition and subtraction.** 1. CCSS.Math.Content.1.OA.A.1 Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem. 2. CCSS.Math.Content.1.OA.A.2 Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem. **Understand and apply properties of operations and the relationship between addition and subtraction.** 3. CCSS.Math.Content.1.OA.B.3 Apply properties of operations as strategies to add and subtract. *Examples: If 8 + 3 = 11 is known, then 3 + 8 = 11 is also known. (Commutative property of addition.) To add 2 + 6 + 4, the second two numbers can be added to make a ten, so 2 + 6 + 4 = 2 + 10 = 12. (Associative property of addition.)* 4. CCSS.Math.Content.1.OA.B.4 Understand subtraction as an unknown-addend problem. *For example, subtract 10 – 8 by finding the number that makes 10 when added to 8.* **Add and subtract within 20.** 5. CCSS.Math.Content.1.OA.C.5 Relate counting to addition and subtraction (e.g., by counting on 2 to add 2). 6. CCSS.Math.Content.1.OA.C.6 Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., 8 + 6 = 8 + 2 + 4 = 10 + 4 = 14); decomposing a number leading to a ten (e.g., 13 – 4 = 13 – 3 – 1 = 10 – 1 = 9); using the relationship between addition and subtraction (e.g., knowing that 8 + 4 = 12, one knows 12 – 8 = 4); and creating equivalent but easier or known sums (e.g., adding 6 + 7 by creating the known equivalent 6 + 6 + 1 = 12 + 1 = 13). **Work with addition and subtraction equations.** 7. CCSS.Math.Content.1.OA.D.7 Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false. For example, which of the following equations are true and which are false? 6 = 6, 7 = 8 – 1, 5 + 2 = 2 + 5, 4 + 1 = 5 + 2. 8. CCSS.Math.Content.1.OA.D.8 Determine the unknown whole number in an addition or subtraction equation relating three whole numbers. For example, determine the unknown number that makes the equation true in each of the equations 8 + ? = 11, 5 = ? – 3, 6 + 6 = ?.	

GRADE 2
Represent and solve problems involving addition and subtraction.
1. CCSS.Math.Content.2.OA.A.1 Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.
Add and subtract within 20.
2. CCSS.Math.Content.2.OA.B.2 Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.
Work with equal groups of objects to gain foundations for multiplication.
3. CCSS.Math.Content.2.OA.C.3 Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends.
4. CCSS.Math.Content.2.OA.C.4 Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends.

n2y Instructional Targets	n2y Elementary Grade Band Lessons and Activities	n2y Supporting Activities
Represent and solve problems involving addition and subtraction. • Model putting together (addition, more, equal) and taking away (subtraction, less, equal) with objects and representations. • Add and subtract within ranges of 1–10 and 1–20. • Use objects, representations and numerals to solve real-life word problems. • Understand and use +, –, and = symbols when solving problems. *Work with equal groups of objects to gain foundations for multiplication.* • Share equal numbers of objects between 2 and 4 people. • Add to find a total number in an array (e.g., 3 rows, 3 columns).	Unique Lesson 19: Number Sense Lesson 25: Algebra/Patterns	Unique ULS Instructional Guides: Mathematics ULS Instructional Tools: Math Pack/Numbers Manipulative pictures Standards Connection
		News-2-You
		Activities: Word Problems

n2y Differentiated Tasks		
Level 3	*Level 2*	*Level 1*
• Students will add and subtract numbers within the context of a real-world scenario. • Students will read, write and solve a math sentence. • Students will count an equal number of objects into groups or an array. • Students will extend the sequence of a nonnumeric pattern.	• Students will model addition and subtraction of two sets of objects in the context of a real-world scenario. • Students will select pictures and numbers to model a math sentence. • Students will match a given number of objects into a group or an array. • Students will continue the sequence in a pattern of objects.	• Students will count sets of objects through an active participation response (e.g., voice output device, eye gaze choice board). Students will select a number (errorless choice) to make a choice of numbers within a math sentence. • Students will select a number of objects to put into a group. • Students will select an object to represent *what's next* in a pattern.

Math Standards for Numbers and Operations in Base Ten	Grades K–2
Common Core Standards	Your State's Extended Standards

KINDERGARTEN
Work with numbers 11–19 to gain foundations for place value.
1. CCSS.Math.Content.K.NBT.A.1 Compose and decompose numbers from 11 to 19 into ten ones and some further ones, e.g., by using objects or drawings and record each composition or decomposition by a drawing or equation (such as 18 = 10 + 8); understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight or nine ones.
 	
GRADE 1
Extend the counting sequence.
1. CCSS.Math.Content.1.NBT.A.1 Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral.
Understand place value.
2. CCSS.Math.Content.1.NBT.B.2 Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases:
  a. CCSS.Math.Content.1.NBT.B.2a 10 can be thought of as a bundle of ten ones—called a "ten."
  b. CCSS.Math.Content.1.NBT.B.2b The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones.
  c. CCSS.Math.Content.1.NBT.B.2c The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight or nine tens (and 0 ones).
3. CCSS.Math.Content.1.NBT.B.3 Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols >, =, and <.
Use place value understanding and properties of operations to add and subtract.
4. CCSS.Math.Content.1.NBT.C.4 Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten.
5. CCSS.Math.Content.1.NBT.C.5 Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.
6. CCSS.Math.Content.1.NBT.C.6 Subtract multiples of 10 in the range 10-90 from multiples of 10 in the range 10-90 (positive or zero differences), using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.
 	
GRADE 2
Understand place value.
1. CCSS.Math.Content.2.NBT.A.1 Understand that the three digits of a three-digit number represent amounts of hundreds, tens and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. Understand the following as special cases:
  a. CCSS.Math.Content.2.NBT.A.1a 100 can be thought of as a bundle of ten tens—called a "hundred."
  b. CCSS.Math.Content.2.NBT.A.1b The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight or nine hundreds (and 0 tens and 0 ones).
2. CCSS.Math.Content.2.NBT.A.2 Count within 1000; skip-count by 5s, 10s and 100s.	

3. CCSS.Math.Content.2.NBT.A.3 Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.
4. CCSS.Math.Content.2.NBT.A.4 Compare two three-digit numbers based on meanings of the hundreds, tens and ones digits, using >, =, and < symbols to record the results of comparisons.

Use place value understanding and properties of operations to add and subtract.

5. CCSS.Math.Content.2.NBT.B.5 Fluently add and subtract within 100 using strategies based on place value, properties of operations or the relationship between addition and subtraction.
6. CCSS.Math.Content.2.NBT.B.6 Add up to four two-digit numbers using strategies based on place value and properties of operations.
7. CCSS.Math.Content.2.NBT.B.7 Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.
8. CCSS.Math.Content.2.NBT.B.8 Mentally add 10 or 100 to a given number 100–900, and mentally subtract 10 or 100 from a given number 100–900.
9. CCSS.Math.Content.2.NBT.B.9 Explain why addition and subtraction strategies work, using place value and the properties of operations.

n2y Instructional Targets	n2y Elementary Grade Band Lessons and Activities	n2y Supporting Activities
Understand place value. • Model to show understanding of tens and ones (e.g., 10 is a bundle of ones; 16 = 10 + 6). • Compose (put together) or decompose (break apart) a two-digit number (e.g., 27 = 2 tens and 7 ones). • Skip count by 2s and 5s to 20 and 50; by 10s to 20, 50 and 100. • Compare two numbers to determine >, < or =. *Use place value understanding and properties of operations to add and subtract.* • Build strategies to add or subtract two-digit numbers.	**Unique** Lesson 19: Number Sense Lesson 20: Graphing Lesson 25: Algebra/Patterns	**Unique** ULS Instructional Guides: Mathematics ULS Instructional Tools: Math Pack/Numbers ULS Instructional Tools: Math Pack/Arrays Manipulative pictures Standards Connection **News-2-You** Activities: Which is Greater? Activities: Which is Less? Activities: Which Comes Next? Activities: Graphing

n2y Differentiated Tasks		
Level 3	*Level 2*	*Level 1*
• Students will model and identify the number of 10s and 1s in a two-digit number. • Students will skip count (by 2s, 5s or 10s) to a given number (20, 50, 100). • Students will compare numbers to 20 to determine *more*, *less* or *equal*.	• Students will model a two-digit number by counting a group of 10s and remaining 1s. • Students will use a model to count by 10s to 50. • Students will compare numbers to 10 with a model to determine *more*, *less* or *equal*.	• Students will count a group of 10s and remaining 1s through an active participation response (e.g., voice output device, eye gaze choice board). • Students will count objects and form groups of 10s through an active participation response (e.g., voice output device, eye gaze choice board). • Students will compare two sets of objects to determine *more*, *less* or *equal*.

Math Standards for Measurement and Data	Grades K–2
Common Core Standards	Your State's Extended Standards

KINDERGARTEN
Describe and compare measurable attributes.
1. CCSS.Math.Content.K.MD.A.1 Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.
2. *CCSS.Math.Content.K.MD.A.2* Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference. *For example, directly compare the heights of two children and describe one child as taller/shorter.*

Classify objects and count the number of objects in each category.
3. CCSS.Math.Content.K.MD.B.3 Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.

GRADE 1
Measure lengths indirectly and by iterating length units.
1. CCSS.Math.Content.1.MD.A.1 Order three objects by length; compare the lengths of two objects indirectly by using a third object.
2. *CCSS.Math.Content.1.MD.A.2* Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. *Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps.*

Tell and write time.
3. CCSS.Math.Content.1.MD.B.3 Tell and write time in hours and half-hours using analog and digital clocks.

Represent and interpret data.
4. CCSS.Math.Content.1.MD.C.4 Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.

GRADE 2
Measure and estimate lengths in standard units.
1. CCSS.Math.Content.2.MD.A.1 Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.
2. CCSS.Math.Content.2.MD.A.2 Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen.
3. CCSS.Math.Content.2.MD.A.3 Estimate lengths using units of inches, feet, centimeters, and meters.
4. CCSS.Math.Content.2.MD.A.4 Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.

Relate addition and subtraction to length.
5. CCSS.Math.Content.2.MD.B.5 Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.
6. CCSS.Math.Content.2.MD.B.6 Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, ..., and represent whole-number sums and differences within 100 on a number line diagram.

Work with time and money.

7. CCSS.Math.Content.2.MD.C.7 Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.
8. *CCSS.Math.Content.2.MD.C.8* Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately. *Example: If you have 2 dimes and 3 pennies, how many cents do you have?*
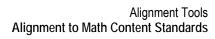
Represent and interpret data.

9. CCSS.Math.Content.2.MD.D.9 Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. Show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units.
10. CCSS.Math.Content.2.MD.D.10 Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put together, take-apart, and compare problems using information presented in a bar graph.

n2y Instructional Targets	n2y Elementary Grade Band Lessons and Activities	n2y Supporting Activities
Measure and estimate lengths in standard units. • Compare two lengths and use appropriate vocabulary to describe (short, long, etc.). • Use nonstandard units to estimate and measure the length of an object. • Use standard measurements to measure the length of an object (inches, feet, etc.). *Work with time and money.* • Use time concept vocabulary to describe personal activities and schedules (first and then; today, tomorrow, yesterday and days of the week, etc.). • Tell time to the hour and half hour. • Identify and count coins and dollars to solve word problems. *Represent and interpret data.* • Gather and sort data in response to questions. • Display data in picture graphs. • Answer questions about information in a graph.	Unique Lesson 21: Measure It! (Craft) Lesson 26: Direction Following (Recipe) Lesson 23: Telling Time Core Tasks 1.1: Daily Schedules Core 1.2: Monthly Calendars Core Task 4.1: Calendar (Circle Time) Lesson 22: Money Applications Lesson 20: Graphing	Unique ULS Instructional Guides: Mathematics Unique ULS Instructional Tools: Math Pack/Time News-2-You Activities: Time to the Hour Activities: Time to the Half Hour Unique ULS Instructional Tools: Math Pack/Money Standards Connection News-2-You Activities: Graphing

n2y Differentiated Tasks		
Level 3	*Level 2*	*Level 1*
• Students will use standard units to measure and compare the length of objects. • Students will select and use appropriate measurement tools for a purpose. • Within a real-world scenario, students will tell time to the hour or half hour on digital or analog clocks. • Students will identify days of the week in relation to a sequence of activities. • Students will recognize and count coins and bills for an amount discussed in a real-world scenario. • Students will ask and answer questions to gather data. • Students will sort, display and count data on a graph.	• Students will use nonstandard units to measure and compare the lengths of objects. • Students will use measurement tools for a specific task. • Within a real-world scenario, students will match time to the hour on digital or analog clocks. • Students will identify today, tomorrow, and yesterday in relation to daily activities. • Students will use coins or bills to match a price within a real-world scenario. • Using picture supports, students will ask and answer questions to gather data. • Students will sort picture data on a graph.	• Students will compare the length of two objects and indicate which is longer or shorter. • Students will select a measurement tool for an activity. • Specific to a task, students will select a time to the hour. • Students will select the day of the week as part of a daily schedule. • Students will indicate a choice to purchase one of two items and exchange money for that purchase. • Students will ask a question to gather data, through an active participation response (e.g., voice output device, eye gaze choice board). • Students will select a picture to display on a data graph.

Math Standards for Geometry	Grades K–2
Common Core Standards	Your State's Extended Standards

Common Core Standards

KINDERGARTEN

Identify and describe shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders and spheres).

1. CCSS.Math.Content.K.G.A.1 Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as *above*, *below*, *beside*, *in front of*, *behind* and *next to*.
2. CCSS.Math.Content.K.G.A.2 Correctly name shapes regardless of their orientations or overall size.
3. CCSS.Math.Content.K.G.A.3 Identify shapes as two-dimensional (lying in a plane, "flat") or three-dimensional ("solid").

Analyze, compare, create, and compose shapes.

4. CCSS.Math.Content.K.G.B.4 Analyze and compare two- and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts (e.g., number of sides and vertices/"corners") and other attributes (e.g., having sides of equal length).
5. CCSS.Math.Content.K.G.B.5 Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes.
6. CCSS.Math.Content.K.G.B.6 Compose simple shapes to form larger shapes. *For example, "Can you join these two triangles with full sides touching to make a rectangle?"*

GRADE 1

Reason with shapes and their attributes.

1. CCSS.Math.Content.1.G.A.1 Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size); build and draw shapes to possess defining attributes.
2. CCSS.Math.Content.1.G.A.2 Compose two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles and quarter-circles) or three-dimensional shapes (cubes, right rectangular prisms, right circular cones, and right circular cylinders) to create a composite shape, and compose new shapes from the composite shape.
3. CCSS.Math.Content.1.G.A.3 Partition circles and rectangles into two and four equal shares, describe the shares using the words *halves*, *fourths*, and *quarters*, and use the phrases *half of*, *fourth of*, and *quarter of*. Describe the whole as two of, or four of the shares. Understand for these examples that decomposing into more equal shares creates smaller shares.

GRADE 2

Reason with shapes and their attributes.

1. CCSS.Math.Content.2.G.A.1 Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.
2. CCSS.Math.Content.2.G.A.2 Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.
3. CCSS.Math.Content.2.G.A.3 Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words *halves*, *thirds*, *half of*, *a third of*, etc., and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape.

n2y Instructional Targets	n2y Elementary Grade Band Lessons and Activities	n2y Supporting Activities
Identify and describe shapes. • Recognize two- and three-dimensional shapes in the environment. • Describe positions of objects and shapes in the environment with positional vocabulary (*in, on, under, beside,* etc.). *Reason with shapes and their attributes.* • Identify shapes as two-dimensional (flat) or three-dimensional (solid). • Identify basic two-dimensional shapes by name (square, circle, triangle, rectangle, etc.) and describe attributes (number of sides, corners, etc.). • Identify basic three-dimensional shapes by name (cubes, rectangular prisms, cones, cylinders and spheres) and describe attributes (number of edges, faces, etc.). • Compare two- or three-dimensional shapes and describe their similarities and differences. • Draw or build two- or three-dimensional shapes. • Compose a large shape from smaller shapes. • Partition circles and rectangles into two, three or four parts (halves, thirds, fourths).	Unique Lesson 24: Geometry/Spatial Sense	Unique ULS Instructional Guides: Mathematics ULS Instructional Tools: Math Pack/Shapes Standards Connection News-2-You Activities: Read and Do Activities: Matching

n2y Differentiated Tasks		
Level 3	*Level 2*	*Level 1*
• Students will independently identify shapes within the environment. • Students will independently describe the position of an object in the environment. • Students will independently sort two-dimensional and three-dimensional shapes. • Students will independently identify and describe two-dimensional shapes. • Students will independently identify and describe three-dimensional shapes. • Independently describe the similarities and differences between two or more shapes. • Given attributes, independently draw or build a two- or three-dimensional shape. • Independently build a large shape from smaller shapes. • Independently partition a shape into two, three or four equal parts.	• Students will match an object in the environment with a shape. • Students will identify the position of an object in the environment with support. • Students will sort two-dimensional and three-dimensional shapes with support. • Students will match like two-dimensional shapes. • Students will match like three-dimensional shapes. • Identify the similarities and differences between two shapes with support. • Given a model, draw or build a two- or three-dimensional shape. • Match small shapes to build a larger shape. • Partition a shape into two, three or four equal parts with support.	• Students will select a named shape in the environment from a field of choices. • Students will select the position of an object in the environment from a field of choices. • Students will select a two-dimensional or three-dimensional shape (may be errorless). • Students will select named two-dimensional shapes. • Students will select named three-dimensional shapes. • Compare two shapes by selecting a shared attribute from a single option or errorless choice. • Make a selection to participate in drawing or building a two- or three-dimensional shape. • Make a selection to build a large shape. • Participate in partitioning a shape.

Math Standards for Operations and Algebraic Thinking	Grades 3–5
Common Core Standards	Your State's Extended Standards

Common Core Standards:

GRADE 3

Represent and solve problems involving multiplication and division.

1. CCSS.Math.Content.3.OA.A.1 Interpret products of whole numbers, e.g., interpret 5 × 7 as the total number of objects in 5 groups of 7 objects each. *For example, describe a context in which a total number of objects can be expressed as 5 × 7.*
2. CCSS.Math.Content.3.OA.A.2 Interpret whole-number quotients of whole numbers, e.g., interpret 56 ÷ 8 as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as number of shares when 56 objects are partitioned into equal shares of 8 objects each. *For example, describe a context in which a number of shares or a number of groups can be expressed as 56 ÷ 8.*
3. CCSS.Math.Content.3.OA.A.3 Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.
4. CCSS.Math.Content.3.OA.A.4 Determine the unknown whole number in a multiplication or division equation relating three whole numbers. *For example, determine the unknown number that makes the equation true in each of the equations 8 × ? = 48, 5 = _ ÷ 3, 6 × 6 = ?*

Understand properties of multiplication and the relationship between multiplication and division.

5. CCSS.Math.Content.3.OA.B.5 Apply properties of operations as strategies to multiply and divide. *Examples: If 6 × 4 = 24 is known, then 4 × 6 = 24 is also known. (Commutative property of multiplication.) 3 × 5 × 2 can be found by 3 × 5 = 15, then 15 × 2 = 30 or by 5 × 2 = 10, then 3 × 10 = 30. (Associative property of multiplication.) Knowing that 8 × 5 = 40 and 8 × 2 = 16, one can find 8 × 7 as 8 × (5 + 2) = (8 × 5) + (8 × 2) = 40 + 16 = 56. (Distributive property)*
6. CCSS.Math.Content.3.OA.B.6 Understand division as an unknown-factor problem. *For example, find 32 ÷ 8 by finding the number that makes 32 when multiplied by 8.*

Multiply and divide within 100.

7. CCSS.Math.Content.3.OA.C.7 Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that 8 × 5 = 40, one knows 40 ÷ 5 = 8) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.

Solve problems involving the four operations, and identify and explain patterns in arithmetic.

8. CCSS.Math.Content.3.OA.D.8 Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.
9. CCSS.Math.Content.3.OA.D.9 Identify arithmetic patterns (including patterns in the addition table or multiplication table) and explain them using properties of operations. *For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.*

GRADE 4

Use the four operations with whole numbers to solve problems.

1. CCSS.Math.Content.4.OA.A.1 Interpret a multiplication equation as a comparison, e.g., interpret 35 = 5 × 7 as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations.
2. CCSS.Math.Content.4.OA.A.2 Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.
3. CCSS.Math.Content.4.OA.A.3 Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.

Gain familiarity with factors and multiples.

4. CCSS.Math.Content.4.OA.B.4 Find all factor pairs for a whole number in the range 1–100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1–100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1–100 is prime or composite.

Generate and analyze patterns.

5. CCSS.Math.Content.4.OA.C.5 Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. *For example, given the rule "Add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way.*

GRADE 5

Write and interpret numerical expressions.

1. CCSS.Math.Content.5.OA.A.1 Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.
2. CCSS.Math.Content.5.OA.A.2 Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. *For example, express the calculation "add 8 and 7, then multiply by 2" as 2 × (8 + 7). Recognize that 3 × (18932 + 921) is three times as large as 18932 + 921, without having to calculate the indicated sum or product.*

Analyze patterns and relationships.

1. CCSS.Math.Content.5.OA.B.3 Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane. *For example, given the rule "Add 3" and the starting number 0, and given the rule "Add 6" and the starting number 0, generate terms in the resulting sequences, and observe that the terms in one sequence are twice the corresponding terms in the other sequence. Explain informally why this is so.*

n2y Instructional Targets	n2y Intermediate Grade Band Lessons and Activities	n2y Supporting Activities
Represent and solve problems involving multiplication and division.	Unique	Unique
• Model products of whole numbers (e.g., 3 x 2 as 3 groups with 2 objects in each group).	Lesson 16: Number Sense Lesson 24: Algebra/Patterns	ULS Instructional Guides: Mathematics ULS Instructional Tools: Math Pack/Numbers ULS Instructional Tools: Math Pack/Arrays Manipulative pictures Standards Connection
• Model whole number quotients (e.g., 16 / 8 as 16 objects placed in 8 groups with 2 in each group).		
• Use multiplication and division of whole numbers to solve real-world story problems.		News-2-You
Use the four operations with whole numbers to solve problems.		Current Events Newspaper: Sudoku Activities: Which Comes Next? Activities: Word Problems Joey's Locker: Tac-Tac-Toe
• Solve problems (=, -, x or /) in which a symbol or letter represents an unknown (e.g., 4 + a = 10).		
• Solve multi-step story problems containing whole numbers.		
Gain familiarity with factors and multiples.		
• Model multiplication and division by making groups of equal sizes.		
Write and interpret numerical expressions.		
• Write and solve a number problem based on a real-world situation.		
• Identify which operation comes first when a calculation requires more than one operation.		
Generate and analyze patterns.		
• Extend the sequence of a non-numeric pattern.		
• Continue a sequence of numbers with a given rule (e.g., "add 2" relates to counting by 2s; "add 5" relates to counting by 5s).		

n2y Differentiated Tasks		
Level 3	*Level 2*	*Level 1*
• Students will calculate addition and subtraction problems in the context of a real-world scenario. • Students will read, write and solve a math sentence. • Students will solve multi-step problems, using a combination of operations in the context of a real-world scenario. • Students will model multiplication and division with objects and numbers, showing equal groups in the context of a real-world scenario. • Students will extend a sequence of numbers to show a pattern (2s, 5s, 10s, etc.).	• Students will model addition and subtraction of two sets of objects in the context of a real-world scenario. • Students will select pictures and numbers to model a math sentence. • Students will solve a two-step problem, using operations and models in the context of a real-world scenario. • Students will count equal numbers of objects in selected groups or an array. • Students will extend a sequence of objects to show a pattern.	• Students will count a set of objects through an active participation response (e.g., voice output device, eye gaze choice board). • Students will select a number (errorless choice) to make a choice of numbers within a math problem. • Students will select numbers and count within a two-step problem in the context of a real-world scenario. • Students will count a set of objects in a group through an active participation response (e.g., voice output device, eye gaze choice board). • Students will select an object to show what appears next in a pattern.

Math Standards for Numbers and Operations in Base Ten | Grades 3–5

Common Core Standards	Your State's Extended Standards

GRADE 3
Use place value understanding and properties of operations to perform multi-digit arithmetic.
1. CCSS.Math.Content.3.NBT.A.1 Use place value understanding to round whole numbers to the nearest 10 or 100.
2. CCSS.Math.Content.3.NBT.A.2 Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.
3. CCSS.Math.Content.3.NBT.A.3 Multiply one-digit whole numbers by multiples of 10 in the range 10–90 (e.g., 9 × 80, 5 × 60) using strategies based on place value and properties of operations.
 	
GRADE 4
Generalize place value understanding for multi-digit whole numbers.
1. CCSS.Math.Content.4.NBT.A.1 Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. *For example, recognize that 700 ÷ 70 = 10 by applying concepts of place value and division.*
2. CCSS.Math.Content.4.NBT.A.2 Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.
3. CCSS.Math.Content.4.NBT.A.3 Use place value understanding to round multi-digit whole numbers to any place.
Use place value understanding and properties of operations to perform multi-digit arithmetic.
4. CCSS.Math.Content.4.NBT.B.4 Fluently add and subtract multi-digit whole numbers using the standard algorithm.
5. CCSS.Math.Content.4.NBT.B.5 Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.
6. CCSS.Math.Content.4.NBT.B.6 Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays and/or area models.
 	
GRADE 5
Understand the place value system.
1. CCSS.Math.Content.5.NBT.A.1 Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.
2. CCSS.Math.Content.5.NBT.A.2 Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.
3. CCSS.Math.Content.5.NBT.A.3 Read, write, and compare decimals to thousandths.
  a. CCSS.Math.Content.5.NBT.A.3a Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., 347.392 = 3 × 100 + 4 × 10 + 7 × 1 + 3 × (1/10) + 9 × (1/100) + 2 × (1/1000).
  b. CCSS.Math.Content.5.NBT.A.3b Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.
4. CCSS.Math.Content.5.NBT.A.4 Use place value understanding to round decimals to any place.	

Perform operations with multi-digit whole numbers and with decimals to hundredths.
5. CCSS.Math.Content.5.NBT.B.5 Fluently multiply multi-digit whole numbers using the standard algorithm.
6. CCSS.Math.Content.5.NBT.B.6 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/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.
7. CCSS.Math.Content.5.NBT.B.7 Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

n2y Instructional Targets	n2y Intermediate Grade Band Lessons and Activities	n2y Supporting Activities
Building Blocks to Counting and Cardinality	**Unique**	**Unique**
• Read and write numerals. • Count a number of objects. *Understand the place value system.* • Use number lines or visual representations to illustrate whole numbers, including ones, tens and hundreds. • Use visual representations to illustrate or compare decimals to the tenths' or hundredths' place. • Compare multi-digit numbers by use of symbols: >, < or =. *Use place value understanding and properties of operations to perform multi-digit arithmetic.* • Solve addition and subtraction problems up to 30, 50 and 100. • Illustrate concepts of multiplication (equal shares) and division (equal groups) with multi-digit numbers. • Solve single-digit and multi-digit multiplication and division problems.	Lesson 16: Number Sense Lesson 18: Money Lesson 24: Algebra/Patterns	ULS Instructional Guides: Mathematics ULS Instructional Tools: Math Pack/Numbers ULS Instructional Tools: Math Pack/Arrays Manipulative pictures Standards Connection
		News-2-You
		Current Events Newspaper: Sudoku Activities: Dot-to-Dot Activities: Which is Greater? Activities: Which is Less? Activities: Which Comes Next?

n2y Differentiated Tasks		
Level 3	*Level 2*	*Level 1*
• Students will count and read numbers to 100. • Students will compare numbers to 100 to determine *more*, *less* or *equal*. • Students will solve addition and subtraction problems to 50 and 100. • Students will model and solve simple multiplication and division problems in the context of a real-world scenario. • Students will read money numbers containing a decimal to indicate dollars and cents.	• Students will count and read one-digit and two-digit numbers. • Students will compare numbers to 20 with a model to determine *more*, *less* or *equal*. • Students will solve addition and subtraction problems to 20. • Students will model groups to multiply or divide. • Students will match a decimal money amount to the same figure in cents.	• Students will count to a given number through an active participation response (e.g., voice output device, eye gaze choice board). • Students will compare two sets of objects to determine *more*, *less* or *equal*. • Students will count sets of objects within addition or subtraction problems through an active participation response (e.g., voice output device, eye gaze choice board). • Students will count a set of objects in a group through an active participation response (e.g., voice output device, eye gaze choice board). • Students will select a money amount containing a decimal to demonstrate making a purchase.

Math Standards for Numbers and Operations with Fractions — Grades 3–5

Common Core Standards	Your State's Extended Standards

GRADE 3
Develop understanding of fractions as numbers.
1. CCSS.Math.Content.3.NF.A.1 Understand a fraction 1/*b* as the quantity formed by 1 part when a whole is partitioned into *b* equal parts; understand a fraction *a*/*b* as the quantity formed by *a* parts of size 1/*b*.
2. CCSS.Math.Content.3.NF.A.2 Understand a fraction as a number on the number line; represent fractions on a number line diagram.
  a. CCSS.Math.Content.3.NF.A.2a Represent a fraction 1/*b* on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into *b* equal parts. Recognize that each part has size 1/*b* and that the endpoint of the part based at 0 locates the number 1/*b* on the number line.
  b. CCSS.Math.Content.3.NF.A.2b Represent a fraction *a*/*b* on a number line diagram by marking off *a* lengths 1/*b* from 0. Recognize that the resulting interval has size *a*/*b* and that its endpoint locates the number *a*/*b* on the number line.
3. CCSS.Math.Content.3.NF.A.3 Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.
  a. CCSS.Math.Content.3.NF.A.3a Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line.
  b. CCSS.Math.Content.3.NF.A.3b Recognize and generate simple equivalent fractions, e.g., 1/2 = 2/4, 4/6 = 2/3). Explain why the fractions are equivalent, e.g., by using a visual fraction model.
  c. CCSS.Math.Content.3.NF.A.3c Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. *Examples: Express 3 in the form 3 = 3/1; recognize that 6/1 = 6; locate 4/4 and 1 at the same point of a number line diagram.*
  d. CCSS.Math.Content.3.NF.A.3d Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model.
 	
GRADE 4
Extend understanding of fraction equivalence and ordering.
1. CCSS.Math.Content.4.NF.A.1 Explain why a fraction *a*/*b* is equivalent to a fraction (*n* × *a*)/(*n* × *b*) by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.
2. CCSS.Math.Content.4.NF.A.2 Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as 1/2. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model.
Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.
3. CCSS.Math.Content.4.NF.B.3 Understand a fraction *a*/*b* with *a* > 1 as a sum of fractions 1/*b*.
  a. CCSS.Math.Content.4.NF.B.3a Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.
  b. CCSS.Math.Content.4.NF.B.3b Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model. *Examples: 3/8 = 1/8 + 1/8 + 1/8 ; 3/8 = 1/8 + 2/8 ; 2 1/8 = 1 + 1 + 1/8 = 8/8 + 8/8 + 1/8.*
  c. CCSS.Math.Content.4.NF.B.3c Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction.	

d. CCSS.Math.Content.4.NF.B.3d Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem.

4. CCSS.Math.Content.4.NF.B.4 Apply and extend previous understandings of multiplication to multiply a fraction by a whole number.

   a. CCSS.Math.Content.4.NF.B.4a Understand a fraction a/b as a multiple of $1/b$. *For example, use a visual fraction model to represent 5/4 as the product 5 × (1/4), recording the conclusion by the equation 5/4 = 5 × (1/4).*

   b. CCSS.Math.Content.4.NF.B.4b Understand a multiple of a/b as a multiple of $1/b$, and use this understanding to multiply a fraction by a whole number. *For example, use a visual fraction model to express 3 × (2/5) as 6 × (1/5), recognizing this product as 6/5. (In general, n × (a/b) = (n × a)/b.)*

   c. CCSS.Math.Content.4.NF.B.4c Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem. *For example, if each person at a party will eat 3/8 of a pound of roast beef, and there will be 5 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie?*

Understand decimal notation for fractions, and compare decimal fractions.

5. CCSS.Math.Content.4.NF.C.5 Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100. *For example, express 3/10 as 30/100, and add 3/10 + 4/100 = 34/100.*

6. CCSS.Math.Content.4.NF.C.6 Use decimal notation for fractions with denominators 10 or 100. *For example, rewrite 0.62 as 62/100; describe a length as 0.62 meters; locate 0.62 on a number line diagram.*

7. CCSS.Math.Content.4.NF.C.7 Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual model.

GRADE 5

Use equivalent fractions as a strategy to add and subtract fractions.

1. CCSS.Math.Content.5.NF.A.1 Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. *For example, 2/3 + 5/4 = 8/12 + 15/12 = 23/12. (In general, a/b + c/d = (ad + bc)/bd.)*

2. CCSS.Math.Content.5.NF.A.2 Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. *For example, recognize an incorrect result 2/5 + 1/2 = 3/7, by observing that 3/7 < 1/2.*

Apply and extend previous understandings of multiplication and division.

3. CCSS.Math.Content.5.NF.B.3 Interpret a fraction as division of the numerator by the denominator ($a/b = a ÷ b$). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. *For example, interpret 3/4 as the result of dividing 3 by 4, noting that 3/4 multiplied by 4 equals 3, and that when 3 wholes are shared equally among 4 people each person has a share of size 3/4. If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie?*

4. CCSS.Math.Content.5.NF.B.4 Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.

   a. CCSS.Math.Content.5.NF.B.4a Interpret the product $(a/b) × q$ as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations $a × q ÷ b$. *For example, use a visual fraction model to show (2/3) × 4 = 8/3, and create a story context for this equation. Do the same with (2/3) × (4/5) = 8/15. (In general, (a/b) × (c/d) = ac/bd.)*

b. CCSS.Math.Content.5.NF.B.4b Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.

5. CCSS.Math.Content.5.NF.B.5 Interpret multiplication as scaling (resizing), by:
   a. CCSS.Math.Content.5.NF.B.5a Comparing 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.
   b. CCSS.Math.Content.5.NF.B.5b Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence a/b = $(n×a)/(n×b)$ to the effect of multiplying a/b by 1.

6. CCSS.Math.Content.5.NF.B.6 Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.

7. CCSS.Math.Content.5.NF.B.7 Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.
   a. CCSS.Math.Content.5.NF.B.7a Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. *For example, create a story context for (1/3) ÷ 4, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that (1/3) ÷ 4 = 1/12 because (1/12) × 4 = 1/3.*
   b. CCSS.Math.Content.5.NF.B.7b Interpret division of a whole number by a unit fraction, and compute such quotients. *For example, create a story context for 4 ÷ (1/5), and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that 4 ÷ (1/5) = 20 because 20 × (1/5) = 4.*
   c. CCSS.Math.Content.5.NF.B.7c Solve real-world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem. *For example, how much chocolate will each person get if 3 people share 1/2 lb of chocolate equally? How many 1/3-cup servings are in 2 cups of raisins?*

n2y Instructional Targets	n2y Intermediate Grade Band Lessons and Activities	n2y Supporting Activities
Develop understanding of fractions as numbers. • Use concrete models to illustrate fractional parts (equal parts showing a whole and one half, one third and one fourth of a whole). • Match symbolic representations (1/2, 1/3, 1/4, etc.) to fractional parts. *Use equivalent fractions as a strategy to add and subtract fractions.* • Add fractions with like denominators to solve real-world problems, using a visual or an object model.	Unique Lesson 20: It's a Fraction	Unique ULS Instructional Guides: Mathematics ULS Instructional Tools: Math Pack/Numbers (fractions) Standards Connection

n2y Differentiated Tasks		
Level 3	Level 2	Level 1
• Students will identify fractional representations with a fractional model. • Students will apply use of fractional representation of ¼, ½ and ⅓ in the context of real-word problems and scenarios.	• Students will model a whole that is divided into two, three or four equal parts. • Students will recognize appropriate use of ½ and ¼ in the context of real-world problems and scenarios.	• Students will select matching parts that fit together to make a whole. • Students will select fractional units as part of a real-world problem or scenario.

Math Standards for Measurement and Data — Grades 3–5

Common Core Standards	Your State's Extended Standards

GRADE 3
Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.
1. CCSS.Math.Content.3.MD.A.1 Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.
2. CCSS.Math.Content.3.MD.A.2 Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.
Represent and interpret data.
3. CCSS.Math.Content.3.MD.B.3 Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs. *For example, draw a bar graph in which each square in the bar graph might represent 5 pets.*
4. CCSS.Math.Content.3.MD.B.4 Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units— whole numbers, halves, or quarters.
Geometric measurement: understand concepts of area and relate area to multiplication and to addition.
5. CCSS.Math.Content.3.MD.C.5 Recognize area as an attribute of plane figures and understand concepts of area measurement.
   a. CCSS.Math.Content.3.MD.C.5a A square with side length 1 unit, called "a unit square," is said to have "one square unit" of area, and can be used to measure area.
   b. CCSS.Math.Content.3.MD.C.5b A plane figure which can be covered without gaps or overlaps by *n* unit squares is said to have an area of *n* square units.
6. CCSS.Math.Content.3.MD.C.6 Measure areas by counting unit squares (square cm, square m, square in, square ft, and improvised units).
7. CCSS.Math.Content.3.MD.C.7 Relate area to the operations of multiplication and addition.
   a. CCSS.Math.Content.3.MD.C.7a Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths.
   b. CCSS.Math.Content.3.MD.C.7b Multiply side lengths to find areas of rectangles with whole-number side lengths in the context of solving real-world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning.
   c. CCSS.Math.Content.3.MD.C.7c Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths *a* and *b* + *c* is the sum of *a* × *b* and *a* × *c*. Use area models to represent the distributive property in mathematical reasoning.
   d. CCSS.Math.Content.3.MD.C.7d Recognize area as additive. Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real-world problems.
Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.
8. CCSS.Math.Content.3.MD.D.8 Solve real-world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.
 	
GRADE 4
Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.
1. CCSS.Math.Content.4.MD.A.1 Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table. *For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36), …*	

2. CCSS.Math.Content.4.MD.A.2 Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.

3. CCSS.Math.Content.4.MD.A.3 Apply the area and perimeter formulas for rectangles in real world and mathematical problems. *For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.*

Represent and interpret data.

4. CCSS.Math.Content.4.MD.B.4 Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Solve problems involving addition and subtraction of fractions by using information presented in line plots. *For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.*

Geometric measurement: understand concepts of angle and measure angles.

5. CCSS.Math.Content.4.MD.C.5 Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint and understand concepts of angle measurement:
   a. CCSS.Math.Content.4.MD.C.5a An angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through 1/360 of a circle is called a "one-degree angle," and can be used to measure angles.
   b. CCSS.Math.Content.4.MD.C.5b An angle that turns through n one-degree angles is said to have an angle measure of n degrees.

6. CCSS.Math.Content.4.MD.C.6 Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.

7. CCSS.Math.Content.4.MD.C.7 Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems, e.g., by using an equation with a symbol for the unknown angle measure.

GRADE 5
Convert like measurement units within a given measurement system.

1. CCSS.Math.Content.5.MD.A.1 Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real-world problems.

Represent and interpret data.

2. CCSS.Math.Content.5.MD.B.2 Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots. *For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally.*

Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.

3. CCSS.Math.Content.5.MD.C.3 Recognize volume as an attribute of solid figures and understand concepts of volume measurement.
   a. CCSS.Math.Content.5.MD.C.3a A cube with side length 1 unit, called a "unit cube," is said to have "one cubic unit" of volume, and can be used to measure volume.
   b. CCSS.Math.Content.5.MD.C.3b A solid figure which can be packed without gaps or overlaps using n unit cubes is said to have a volume of n cubic units.

4. CCSS.Math.Content.5.MD.C.4 Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.

5. CCSS.Math.Content.5.MD.C.5 Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume.

a. CCSS.Math.Content.5.MD.C.5a Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent threefold whole-number products as volumes, e.g., to represent the associative property of multiplication. b. CCSS.Math.Content.5.MD.C.5b Apply the formulas $V = l \times w \times h$ and $V = b \times h$ for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real-world and mathematical problems. c. CCSS.Math.Content.5.MD.C.5c Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems.	

n2y Instructional Targets	n2y Intermediate Grade Band Lessons and Activities	n2y Supporting Activities
Solve problems involving measurement and estimation of intervals of time, liquid volumes and masses of objects. • Use time concepts to describe personal activities and schedules (e.g., calendar dates and days). • Tell time to hour, half-hour, quarter-hour and five-minute intervals. • Use standard units to measure length (inches, feet) or weight (pounds, ounces). • Solve problems and describe differences in length or weight (more, less or same; >, < or =, etc.). *Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.* • Solve real-world problems, including use of operations that involve intervals of time. • Solve real-world problems, including use of operations that involve liquid volumes and masses of objects. • Solve real-world problems, including use of operations that involve money. *Represent and interpret data.* • Collect, organize and display data on a picture, line plot or bar graph. • Answer questions to interpret data on graphs.	**Unique** Lesson 21: Measure It! Lesson 22: Crafty Kid Lesson 19: Telling Time Lesson 18: Money Lesson 17: Survey and Chart Core Task 1.1: Daily Schedules Core Task 1.2: Monthly Calendars Core Task 4.1: Calendar (Circle Time)	**Unique** ULS Instructional Guides: Mathematics ULS Instructional Tools: Math Pack/Time ULS Instructional Tools: Math Pack/Money Standards Connection **News-2-You** Recipe Page Standards Connection Activities: Time to the Hour Activities: Time to the Half Hour Activities: Time to the Quarter Hour Activities: Time Lapse Activities: Graphing

n2y Differentiated Tasks		
Level 3	*Level 2*	*Level 1*
• Students will use inches and feet to measure and compare length in the context of a real-world activity. • Students will select and use appropriate measurement tools for measurement of liquid mass and weight in the context of a real-world activity or scenario. • Students will identify time and solve simple real-world problems involving intervals of time. • Students will identify dates, including days, months and years, on a calendar. • Students will calculate an amount of coins and bills to solve a problem within a real-world scenario. • Students will collect, organize and report data that is presented on a graph.	• Students will identify the number of inches or feet in a supported measurement of length. • With support, students will use appropriate measurement tools in a supported measurement of liquid mass and weight within a real-world task. • Students will identify time to the hour and half hour as it applies to a real-world scenario or schedule. • Students will identify the days and months on a calendar. • Students will select coins or bills to match a price within a real-world scenario. • Students will ask questions to gather data and display it on a graph.	• Students will identify the number of inches in a supported measurement of length. • Students will select a measurement tool within the context of an activity. • Students will select a time as part of a sequence of activities or a schedule. • Students will select the day of the week and month of the year as part of a daily schedule. • Students will use money to make a purchase. • Students will ask a question and select pictures as part of a data-gathering process.

Math Standards for Geometry | Grades 3–5

Common Core Standards	Your State's Extended Standards

GRADE 3

Reason with shapes and their attributes.

1. CCSS.Math.Content.3.G.A.1 Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.
2. CCSS.Math.Content.3.G.A.2 Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. *For example, partition a shape into 4 parts with equal area, and describe the area of each part as 1/4 of the area of the shape.*

GRADE 4

Draw and identify lines and angles, and classify shapes by properties of their lines and angles.

1. CCSS.Math.Content.4.G.A.1 Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.
2. CCSS.Math.Content.4.G.A.2 Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles.
3. CCSS.Math.Content.4.G.A.3 Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.

GRADE 5

Graph points on the coordinate plane to solve real-world and mathematical problems.

1. CCSS.Math.Content.5.G.A.1 Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., *x*-axis and *x*-coordinate, *y*-axis and *y*-coordinate).
2. CCSS.Math.Content.5.G.A.2 Represent real-world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.

Classify two-dimensional figures into categories based on their properties.

3. CCSS.Math.Content.5.G.B.3 Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. *For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles.*
4. CCSS.Math.Content.5.G.B.4 Classify two-dimensional figures in a hierarchy based on properties.

n2y Instructional Targets	n2y Intermediate Grade Band Lessons and Activities	n2y Supporting Activities
Reason with shapes and their attributes. Draw and identify lines and angles, and classify shapes by properties of their lines and angles. • Sort and label shapes by multiple defining attributes. • Classify figures on the basis of angles and parallel lines. • Describe attributes of two-dimensional shapes (number of sides and angles, straight and curved lines, etc.). • Partition shapes into equal parts and express these parts as fractions. *Graph points on the coordinate plane to solve real-world and mathematical problems.* • Identify and plot points on a coordinate plane. • Identify the distance between two points on a coordinate plane.	Unique Lesson 23: Geometry/Spatial Sense	Unique ULS Instructional Guides: Mathematics ULS Instructional Tools: Math Pack/Shapes Standards Connection
n2y Differentiated Tasks		
Level 3	*Level 2*	*Level 1*
• Students will sort and identify shapes by multiple attributes. • Students will identify and state the purpose of the lines, curves and angles of a shape. • Students will divide a shape into equal parts and identify the fractional representation. • Students will connect multiple points on a coordinate plane and compare distances.	• Students will sort and match shapes on the basis of multiple attributes. • Students will identify shapes with similar lines or curves as part of a real-world scenario. • Students will divide a shape into two or four equal parts. • Students will connect points on a coordinate plane that represent locations.	• Students will select a named shape (errorless choice). • Students will match shapes having similar lines and curves. • Students will select matching parts that fit together to make a whole. • Students will select a location that is indicated on a coordinate plane.

Math Standards for Expressions and Equations | Grades 6–8

Common Core Standards	Your State's Extended Standards

GRADE 6
Apply and extend previous understandings of arithmetic to algebraic expressions.
1. CCSS.Math.Content.6.EE.A.1 Write and evaluate numerical expressions involving whole-number exponents.
2. CCSS.Math.Content.6.EE.A.2 Write, read, and evaluate expressions in which letters stand for numbers.
   a. CCSS.Math.Content.6.EE.A.2a Write expressions that record operations with numbers and with letters standing for numbers. *For example, express the calculation "Subtract y from 5" as 5 – y.*
   b. CCSS.Math.Content.6.EE.A.2b Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entity. *For example, describe the expression 2 (8 + 7) as a product of two factors; view (8 + 7) as both a single entity and a sum of two terms.*
   c. CCSS.Math.Content.6.EE.A.2c Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations). *For example, use the formulas $V = s^3$ and $A = 6 s^2$ to find the volume and surface area of a cube with sides of length s = 1/2.*
3. CCSS.Math.Content.6.EE.A.3 Apply the properties of operations to generate equivalent expressions. *For example, apply the distributive property to the expression 3 (2 + x) to produce the equivalent expression 6 + 3x; apply the distributive property to the expression 24x + 18y to produce the equivalent expression 6 (4x +3y); apply properties of operations to y + y + y to produce the equivalent expression 3y.*
4. CCSS.Math.Content.6.EE.A.4 Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them). *For example, the expressions y + y + y and 3y are equivalent because they name the same number regardless of which number y stands for.*
Reason about and solve one-variable equations and inequalities.
5. CCSS.Math.Content.6.EE.B.5 Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.
6. CCSS.Math.Content.6.EE.B.6 Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.
7. CCSS.Math.Content.6.EE.B.7 Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which *p*, *q* and *x* are all nonnegative rational numbers.
8. CCSS.Math.Content.6.EE.B.8 Write an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form $x > c$ or $x < c$ have infinitely many solutions; represent solutions of such inequalities on number line diagrams.
Represent and analyze quantitative relationships between dependent and independent variables.
9. CCSS.Math.Content.6.EE.C.9 Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. *For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation d = 65t to represent the relationship between distance and time.*	

GRADE 7

Use properties of operations to generate equivalent expressions.

1. CCSS.Math.Content.7.EE.A.1 Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.
2. CCSS.Math.Content.7.EE.A.2 Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related. *For example, a + 0.05a = 1.05a means that "increase by 5%" is the same as "multiply by 1.05."*

Solve real-life and mathematical problems using numerical and algebraic expressions and equations.

3. CCSS.Math.Content.7.EE.B.3 Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. *For example: If a woman making $25 an hour gets a 10% raise, she will make an additional 1/10 of her salary an hour, or $2.50, for a new salary of $27.50. If you want to place a towel bar 9 3/4 inches long in the center of a door that is 27 1/2 inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation.*
4. CCSS.Math.Content.7.EE.B.4 Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.
   a. CCSS.Math.Content.7.EE.B.4a Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. *For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?*
   b. CCSS.Math.Content.7.EE.B.4b Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where p, q, and r are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem. *For example: As a salesperson, you are paid $50 per week plus $3 per sale. This week you want your pay to be at least $100. Write an inequality for the number of sales you need to make, and describe the solutions.*

GRADE 8

Work with radicals and integer exponents.

1. CCSS.Math.Content.8.EE.A.1 Know and apply the properties of integer exponents to generate equivalent numerical expressions. *For example, $3^2 \times 3^{-5} = 3^{-3} = 1/3^3 = 1/27$.*
2. CCSS.Math.Content.8.EE.A.2 Use square root and cube root symbols to represent solutions to equations of the form $x^2 = p$ and $x^3 = p$, where p is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that $\sqrt{2}$ is irrational.
3. CCSS.Math.Content.8.EE.A.3 Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other. *For example, estimate the population of the United States as 3×10^8 and the population of the world as 7×10^9, and determine that the world population is more than 20 times larger.*
4. CCSS.Math.Content.8.EE.A.4 Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology.

Understand the connections between proportional relationships, lines, and linear equations.

5. CCSS.Math.Content.8.EE.B.5 Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. *For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.*
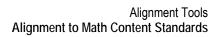
6. CCSS.Math.Content.8.EE.B.6 Use similar triangles to explain why the slope *m* is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation *y* = *mx* for a line through the origin and the equation *y* = *mx* + *b* for a line intercepting the vertical axis at *b*.

Analyze and solve linear equations and pairs of simultaneous linear equations.

7. CCSS.Math.Content.8.EE.C.7 Solve linear equations in one variable.
   a. CCSS.Math.Content.8.EE.C.7a Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form *x* = *a*, *a* = *a*, or *a* = *b* results (where *a* and *b* are different numbers).
   b. CCSS.Math.Content.8.EE.C.7b Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.
8. CCSS.Math.Content.8.EE.C.8 Analyze and solve pairs of simultaneous linear equations.
   a. CCSS.Math.Content.8.EE.C.8a Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously.
   b. CCSS.Math.Content.8.EE.C.8b Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection. *For example, 3x + 2y = 5 and 3x + 2y = 6 have no solution because 3x + 2y cannot simultaneously be 5 and 6.*
   c. CCSS.Math.Content.8.EE.C.8c Solve real-world and mathematical problems leading to two linear equations in two variables. *For example, given coordinates for two pairs of points, determine whether the line through the first pair of points intersects the line through the second pair.*

n2y Instructional Targets	n2y Middle School Grade Band Lessons and Activities	n2y Supporting Activities
Building Blocks to Expressions and Equations	Unique	Unique
• Understand and use +, - and = symbols in problems.	Lesson 19: Math Story Problems	ULS Instructional Guides: Mathematics
• Solve addition and subtraction problems.	Lesson 25: Algebra	ULS Instructional Tools: Math Pack/Numbers
• Model and solve problems involving multiplication or division.	Lesson 22: Money	ULS Instructional Tools: Math Pack/Money
Apply and extend previous understanding of arithmetic to algebraic expressions	Core Task 2.5: Snack Basket	ULS Instructional Tools: Math Pack/Arrays
	Core Task 2.1: Attendance	Standards Connection
• Use the commutative, associative and distributive properties to add, subtract and multiply whole numbers.		News-2-You
• Write and simplify expressions in which letters stand for unknown numbers within a real-world scenario.		Activities: Word Problems
Reason and solve one-variable equations and inequalities		
• Order a sequence of steps to solve an equation.		
Solve real-life and mathematical problems by using numerical and algebraic expressions and equations		
• Solve real-world problems involving addition and subtraction of decimals, using models when needed.		
• Solve real-world problems involving multiplication of decimals and whole numbers, using models when needed.		
• Write and solve equations with one variable to solve real-world word problems.		
• Write and solve inequalities with one variable to solve real-world problems.		
Work with radicals and integer exponents		
• Determine the value of a quantity that is squared or cubed.		

n2y Differentiated Tasks		
Level 3	*Level 2*	*Level 1*
• In the context of a real-world scenario, students will calculate addition and subtraction problems. • In the context of a real-world scenario, students will model multiplication and division with objects and numbers that show equal groups. • In the context of a real-world scenario, students will use the commutative, associative, or distributive properties to add, subtract or multiply whole numbers. • In the context of a real-world scenario, students will write and simplify an expression. • In the context of a real-world scenario, students will use a combination of operations to solve an equation. • In the context of a real-world scenario, students will model multiplication and division with objects and numbers that show equal groups involving decimals. • In the context of a real-world scenario, students will write and solve an equation with a variable. • In the context of a real-world scenario, students will write and solve an inequality with a variable. • Students will identify perfect squares from 0 to 100.	• In the context of a real-world scenario, students will model addition and subtraction of two sets of objects. • Students will count equal numbers of objects in selected groups or in an array. • In the context of a real-world scenario, students will model addition, subtraction or multiplication of sets of objects. • In the context of a real-world scenario, students will select numbers to write and simplify an expression. • In the context of a real-world scenario, students will use operations and models to solve an equation. • Students will count equal numbers involving decimals of objects in selected groups or an array. • Students will select pictures and numbers to model an equation with a variable. • Students will select pictures and numbers to model an inequality with a variable. • Students will create a representation of a perfect square with support.	• In the context of a real-world scenario, students will count a set of objects in an addition or a subtraction problem using an active participation response (e.g., voice output device, eye gaze choice board). • Students will count a set of objects in a group through an active participation response (e.g., voice output device, eye gaze choice board). • Students will count a set of objects in an addition, subtraction or multiplication problem through an active participation response (e.g., voice output device, eye gaze choice board). • In the context of a real-world scenario, students will select numbers to write an expression. • In the context of a real-world scenario, students will select numbers and count within an equation. • Students will count a set of objects in a group involving decimals through an active participation response (e.g., voice output device, eye gaze choice board). • Students will select a number (errorless choice) within an equation with a variable. • Students will select a number (errorless choice) within an inequality with a variable. • Students will select blocks to build a model of the perfect square through an active participation response (e.g., voice output device, eye gaze choice board).

Math Standards for the Number System	Grades 6–8
Common Core Standards	Your State's Extended Standards

GRADE 6

Apply and extend previous understandings of multiplication and division to divide fractions by fractions.

1. CCSS.Math.Content.6.NS.A.1 Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem. *For example, create a story context for (2/3) ÷ (3/4) and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that (2/3) ÷ (3/4) = 8/9 because 3/4 of 8/9 is 2/3. (In general, (a/b) ÷ (c/d) = ad/bc.) How much chocolate will each person get if 3 people share 1/2 lb of chocolate equally? How many 3/4-cup servings are in 2/3 of a cup of yogurt? How wide is a rectangular strip of land with length 3/4 mi and area 1/2 square mi?*

Compute fluently with multi-digit numbers and find common factors and multiples.

2. CCSS.Math.Content.6.NS.B.2 Fluently divide multi-digit numbers using the standard algorithm.
3. CCSS.Math.Content.6.NS.B.3 Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.
4. CCSS.Math.Content.6.NS.B.4 Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor. *For example, express 36 + 8 as 4 (9 + 2).*

Apply and extend previous understandings of numbers to the system of rational numbers.

5. CCSS.Math.Content.6.NS.C.5 Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.
6. CCSS.Math.Content.6.NS.C.6 Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.
    a. CCSS.Math.Content.6.NS.C.6a Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g., –(–3) = 3, and that 0 is its own opposite.
    b. CCSS.Math.Content.6.NS.C.6b Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.
    c. CCSS.Math.Content.6.NS.C.6c Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.
7. CCSS.Math.Content.6.NS.C.7 Understand ordering and absolute value of rational numbers.
    a. CCSS.Math.Content.6.NS.C.7a Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram. *For example, interpret –3 > –7 as a statement that –3 is located to the right of –7 on a number line oriented from left to right.*
    b. CCSS.Math.Content.6.NS.C.7b Write, interpret, and explain statements of order for rational numbers in real-world contexts. *For example, write –3 ºC > –7 ºC to express the fact that –3 ºC is warmer than –7 ºC.*
    c. CCSS.Math.Content.6.NS.C.7c Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation. *For example, for an account balance of –30 dollars, write |–30| = 30 to describe the size of the debt in dollars.*
    d. CCSS.Math.Content.6.NS.C.7d Distinguish comparisons of absolute value from statements about order. *For example, recognize that an account balance less than –30 dollars represents a debt greater than 30 dollars.*
8. CCSS.Math.Content.6.NS.C.8 Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.
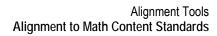
GRADE 7
Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.
1. CCSS.Math.Content.7.NS.A.1 Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.
   a. CCSS.Math.Content.7.NS.A.1a Describe situations in which opposite quantities combine to make 0. *For example, a hydrogen atom has 0 charge because its two constituents are oppositely charged.*
   b. CCSS.Math.Content.7.NS.A.1b Understand $p + q$ as the number located a distance $|q|$ from p, in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts.
   c. CCSS.Math.Content.7.NS.A.1c Understand subtraction of rational numbers as adding the additive inverse, $p - q = p + (-q)$. Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts.
   d. CCSS.Math.Content.7.NS.A.1d Apply properties of operations as strategies to add and subtract rational numbers.
2. CCSS.Math.Content.7.NS.A.2 Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.
   a. CCSS.Math.Content.7.NS.A.2a Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as $(-1)(-1) = 1$ and the rules multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.
   b. CCSS.Math.Content.7.NS.A.2b Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then $-(p/q) = (-p)/q = p/(-q)$. Interpret quotients of rational numbers by describing real-world contexts.
   c. CCSS.Math.Content.7.NS.A.2c Apply properties of operations as strategies to multiply and divide rational numbers.
   d. CCSS.Math.Content.7.NS.A.2d Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.
3. CCSS.Math.Content.7.NS.A.3 Solve real-world and mathematical problems involving the four operations with rational numbers.

GRADE 8
Know that there are numbers that are not rational, and approximate them by rational numbers.
1. CCSS.Math.Content.8.NS.A.1 Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and convert a decimal expansion which repeats eventually into a rational number.
2. CCSS.Math.Content.8.NS.A.2 Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g., π^2). *For example, by truncating the decimal expansion of $\sqrt{2}$, show that $\sqrt{2}$ is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations.*

n2y Instructional Targets	n2y Middle School Grade Band Lessons and Activities	n2y Supporting Activities
Building Blocks to The Number System • Recognize and compare numbers showing the symbols >, < or =. • Match symbolic representations (½, ⅓, ¼, etc.) to fractional parts. *Compute fluently with multi-digit numbers and find common factors and multiples.* • Add, subtract, multiply and divide multi-digit numbers with fluency. • Fluently add, subtract, multiply and divide numbers with decimals. *Apply and extend previous understanding of numbers to the system of rational numbers.* • Indicate positive and negative numbers (using a number line, temperatures, negative numbers, etc.) in a real-world scenario. • Graph positive and negative numbers (using a number line, temperatures including negative numbers, etc.) in a real-world scenario. *Apply and extend previous understandings of operations with fractions to add, subtract, multiply and divide rational numbers.* • Add and subtract fractions with like denominators (½, ⅓, ¼, & 1/10) with sums less than or equal to one. • Using a model, divide a whole number into fractional units (½, ⅓, ¼, 1/8, 1/10) and count the fractional parts of a whole (3 parts of 4, 6 parts of 10, etc.). • Add and subtract rational numbers. • Identify the additive inverse. • Multiply and divide rational numbers.	**Unique** Lesson 19: Math Story Problems Lesson 20: Measure It! Lesson 22: Money Lesson 25: Algebra	**Unique** ULS Instructional Guides: Mathematics ULS Instructional Tools: Math Pack/Numbers ULS Instructional Tools: Math Pack/Money Standards Connection **News-2-You** Recipe Page Standards Connection Activities: Which is Greater? Activities: Which is Less? Activities: Word Problems

n2y Differentiated Tasks		
Level 3	*Level 2*	*Level 1*
• Students will compare two numbers and use symbols to indicate >, < or =. • Students will apply use of fractional representations of ¼, ⅓, ½, 1/8 and 1/10 in the context of real-world problems and scenarios. • Students will use appropriate operations to solve real-world problems with multi-digit numbers. • Students will use appropriate operations to solve real-world problems with decimals. • Students will identify and label positive and negative numbers in the context of a real-world scenario. • Students will independently identify points in all four quadrants of the coordinate plane. • Students will use objects or a model to add or subtract two fractional units (e.g., ¼ cup + ¼ cup is the same as ½ cup). • Students will use appropriate operations to add and subtract positive and negative numbers in a real-world scenario (e.g., using a number line).	• Students will compare two groups of objects and determine which group's value is greater, lesser or equal. • Students will recognize appropriate use of ½, ⅓ and ¼ in the context of real-world problems and scenarios. • Students will add, subtract, multiply and divide to solve real-world problems with multi-digit numbers. • Students will add, subtract, multiply and divide to solve real-world problems involving decimals with support. • Students will select positive and negative numbers in a real-world scenario. • Students will locate points in all four quadrants of the coordinate plane, with support. • Students will model addition or subtraction of two fractional units with support. • Students will add or subtract positive and negative numbers in a real-world scenario (e.g., using a number line).	• Students will count a set of objects in an addition or subtraction problem through an active participation response (e.g., voice output device, eye gaze choice board). • Students will select fractional units as part of a real-world problem or scenario. • Students will count a set of objects in an addition, subtraction, multiplication, or division real-world problem with multi-digit numbers through an active participation response (e.g., voice output device, eye gaze choice board). • Students will count a set of objects in an addition, subtraction, multiplication, or division real-world problem with decimals through an active participation response (e.g., voice output device, eye gaze choice board). • Students will participate in labeling positive and negative numbers using an active response mode. • Students will select a point on a graph through an active participation response.

• Students will independently identify the opposite of a number and understand the sum of the numbers equals 0 (e.g., -2 and 2; -2 + 2 = 0). • Students will use appropriate operations to multiply and divide positive and negative numbers.	• Students will select the opposite of a number (e.g. -2 and 2; -2 + 2 = 0). • Students will multiply or divide positive and negative numbers in a real-world scenario (e.g., using a number line).	• Students will match fractional parts of an object to model the solution to an addition or subtraction problem through an active participation response. • Students will count a set of objects in an addition or subtraction real-world problem involving positive and negative numbers through an active participation response (e.g., voice output device, eye gaze choice board). • Students will participate in labeling the opposite of a number (e.g., -2 and 2; -2 + 2 = 0). • Students will count a set of objects in a multiplication or division real-world problem involving positive and negative numbers through an active participation response (e.g., voice output device, eye gaze choice board).

Math Standards for Life Skills for Measurement	Grades 6–8
Common Core Standards	**Your State's Extended Standards**
Life Skills for Measurement are not addressed in The Common Core Standards for this grade band. If these skills are addressed in your state's extended standards, content may be added in the column to the right.	

n2y Instructional Targets	n2y Middle School Grade Band Lessons and Activities	n2y Supporting Activities
Life Skills for Measurement • Select units and accurately use measurement tools in the context of a daily living activity. • Solve problems involving measurement. • Apply knowledge of time skills to real-world problem-solving situations and scenarios. • Apply knowledge of money skills to real-world problem-solving situations and scenarios.	**Unique** Lesson 20: Measure It! Lesson 22: Money Lesson 23: Schedules and Time Core Task 1.1: Daily Schedules Core Task 1.2: Monthly Calendars Core Task 2.2: Calendar Core Task 2.5: Snack Basket	**Unique** ULS Instructional Guides: Mathematics ULS Instructional Tools: Math Pack/Money ULS Instructional Tools: Math Pack/Time Standards Connection **New-2-You** Recipe Page Standards Connection

n2y Differentiated Tasks		
Level 3	*Level 2*	*Level 1*
• Students will independently use measurement tools in daily living skill activities. • Students will calculate the amount of money needed for a purchase and then determine the coins and bills necessary to complete that purchase. • Students will read time and apply it to a real-world activity. • Students will record personal events on a monthly calendar and use the information as it applies to daily activities.	• Students will identify and use measurement tools appropriate for a supported daily living task. • Students will match coins and bills to a given price. • Students will represent times for morning, afternoon and evening in the context of a real-world scenario. • Students will follow a schedule to complete daily activities.	• Students will select measurement tools for a daily living task. • Students will exchange money for a purchase. • Students will select a time for a personal activity of the day. • Students will actively participate in a daily schedule based on timed activities.

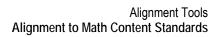| Math Standards for Geometry	Grades 6–8
Common Core Standards	Your State's Extended Standards

GRADE 6
Solve real-world and mathematical problems involving area, surface area, and volume.
1. CCSS.Math.Content.6.G.A.1 Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.
2. CCSS.Math.Content.6.G.A.2 Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas $V = l\,w\,h$ and $V = b\,h$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.
3. CCSS.Math.Content.6.G.A.3 Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.
4. CCSS.Math.Content.6.G.A.4 Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.
 	
GRADE 7
Draw, construct, and describe geometrical figures and describe the relationships between them.
1. CCSS.Math.Content.7.G.A.1 Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.
2. CCSS.Math.Content.7.G.A.2 Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.
3. CCSS.Math.Content.7.G.A.3 Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.
Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.
4. CCSS.Math.Content.7.G.B.4 Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.
5. CCSS.Math.Content.7.G.B.5 Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure.
6. CCSS.Math.Content.7.G.B.6 Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.
 	
GRADE 8
Understand congruence and similarity using physical models, transparencies, or geometry software.
1. CCSS.Math.Content.8.G.A.1 Verify experimentally the properties of rotations, reflections, and translations:
  a. CCSS.Math.Content.8.G.A.1a Lines are taken to lines, and line segments to line segments of the same length.
  b. CCSS.Math.Content.8.G.A.1b Angles are taken to angles of the same measure.
  c. CCSS.Math.Content.8.G.A.1c Parallel lines are taken to parallel lines.
2. CCSS.Math.Content.8.G.A.2 Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them.	

3. CCSS.Math.Content.8.G.A.3 Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.
4. CCSS.Math.Content.8.G.A.4 Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them.
5. *CCSS.Math.Content.8.G.A.5* Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles. *For example, arrange three copies of the same triangle so that the sum of the three angles appears to form a line, and give an argument in terms of transversals why this is so.*

Understand and apply the Pythagorean Theorem.
6. CCSS.Math.Content.8.G.B.6 Explain a proof of the Pythagorean Theorem and its converse.
7. CCSS.Math.Content.8.G.B.7 Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.
8. CCSS.Math.Content.8.G.B.8 Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.

Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres.
9. CCSS.Math.Content.8.G.C.9 Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.

n2y Instructional Targets	n2y Middle School Grade Band Lessons and Activities	n2y Supporting Activities
Building Blocks to Geometry	Unique	Unique
• Sort and label shapes by multiple defining attributes.	Lesson 20: Measure It!	ULS Instructional Guides: Mathematics
• Identify and plot points on a coordinate plane.	Lesson 24: Geometry	ULS Instructional Tools: Math Pack/Shapes Standards Connection
Solve real-world and mathematical problems involving area, surface area and volume; solve real-life and mathematical problems involving angle measure, area, surface area and volume; solve real-world and mathematical problems involving volume of cylinders, cones and spheres.		
• Use measurement units to determine the perimeter of a rectangular figure or area.		News-2-You
• Determine the area of a rectangle by positioning rows and counting unit squares that do not overlap.		Recipe Page Standards Connection
• Determine the area of a rectangle by measuring and multiplying whole number side lengths (area = length x width).		
• Solve real-world problems involving scaled drawings on a coordinate plane.		
• Solve real-world problems involving area, surface area and volume of three-dimensional objects, including cubes, rectangular prisms and cylinders.		
• Apply understanding of the area and circumference of a circle to real-world problems.		

n2y Differentiated Tasks		
Level 3	*Level 2*	*Level 1*
• Students will sort and identify shapes by multiple attributes. • Students will use standard measurement tools and units to measure sides of a rectangular object or area. • Students will arrange rows of unit squares in a rectangular area and solve for an area measurement by multiplying length by width. • Students will connect multiple points on a coordinate plane and compare distances. • Students will use a model to solve real-world problems representing two- and three-dimensional objects.	• Students will sort and match shapes on the basis of multiple attributes. • Students will identify the number of inches and feet in a supported measurement of length. • Students will arrange unit squares in a rectangular pattern and solve for area measurement by counting the units. • Students will connect the points on a coordinate plane that represent locations. • Students will arrange two-dimensional figures on a model of a real-world scenario.	• Students will select a named shape (errorless choice). • Students will compare two measured lengths to determine which is longer. • Students will count unit squares in a row through an active participation response (e.g., voice output device, eye gaze choice board). • Students will select a location that is indicated on a coordinate plane. • Students will match two-dimensional figures on a model of a real-world scenario.

Math Standards for Ratios and Proportional Relationships | Grades 6–8

Common Core Standards	Your State's Extended Standards

GRADE 6
Understand ratio concepts and use ratio reasoning to solve problems.
1. CCSS.Math.Content.6.RP.A.1 Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. *For example, "The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak." "For every vote candidate A received, candidate C received nearly three votes."*
2. CCSS.Math.Content.6.RP.A.2 Understand the concept of a unit rate a/b associated with a ratio $a:b$ with $b \neq 0$, and use rate language in the context of a ratio relationship. *For example, "This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is 3/4 cup of flour for each cup of sugar." "We paid $75 for 15 hamburgers, which is a rate of $5 per hamburger."*
3. CCSS.Math.Content.6.RP.A.3 Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.
   a. CCSS.Math.Content.6.RP.A.3a Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.
   b. CCSS.Math.Content.6.RP.A.3b Solve unit rate problems including those involving unit pricing and constant speed. *For example, if it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed?*
   c. CCSS.Math.Content.6.RP.A.3c Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent.
   d. CCSS.Math.Content.6.RP.A.3d Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.
 	
GRADE 7
Analyze proportional relationships and use them to solve real-world and mathematical problems.
1. CCSS.Math.Content.7.RP.A.1 Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. *For example, if a person walks 1/2 mile in each 1/4 hour, compute the unit rate as the complex fraction $^{1/2}/_{1/4}$ miles per hour, equivalently 2 miles per hour.*
2. CCSS.Math.Content.7.RP.A.2 Recognize and represent proportional relationships between quantities.
   a. CCSS.Math.Content.7.RP.A.2a Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.
   b. CCSS.Math.Content.7.RP.A.2b Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.
   c. CCSS.Math.Content.7.RP.A.2c Represent proportional relationships by equations. *For example, if total cost t is proportional to the number n of items purchased at a constant price p, the relationship between the total cost and the number of items can be expressed as t = pn.*
   d. CCSS.Math.Content.7.RP.A.2d Explain what a point *(x, y)* on the graph of a proportional relationship means in terms of the situation, with special attention to the points (0, 0) and (1, *r*) where *r* is the unit rate.
3. CCSS.Math.Content.7.RP.A.3 Use proportional relationships to solve multistep ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.	

n2y Instructional Targets	n2y Middle School Grade Band Lessons and Activities	n2y Supporting Activities
Understand ratio concepts and use ratio reasoning to solve problems. *Analyze proportional relationships and use them to solve real-world and mathematical problems.* • Identify and write a ratio to compare part-to-part and part-to-whole relationships. (e.g., If for every lollipop in the bag, there are two candy bars, a 1:2 ratio exists.) • Solve real-world problems involving unit rate. (e.g., If it takes one hour to make one pillow, how long will it take to make four pillows?) • Apply understanding of percentages in real-world scenarios (10% tip, 30% sale, etc.).	Unique Lesson 23: Schedules and Times Lesson 22: Money	Unique ULS Instructional Guides: Mathematics ULS Instructional Tools: Math Pack/Time ULS Instructional Tools: Math Pack/Money Standards Connection
n2y Differentiated Tasks		

Level 3	Level 2	Level 1
• Students will identify and write a ratio to describe part-to-part and part-to-whole relationships in the context of a real-world scenario. • Students will solve whole number, time and money problems involving unit rate. • Students will calculate percentages in real-world scenarios.	• Students will model part-to-part and part-to-whole relationships in the context of a real-world scenario. • Students will identify whole number, time or money amounts in the context of a unit rate scenario. • Students will locate a percentage amount from a chart.	• Students will match objects represented in part-to-part and part-to-whole relationships in the context of a real-world scenario. • Students will select a whole number, time or money amount in the context of a unit rate scenario. • Students will identify a number that represents a percentage.

Math Standards for Statistics and Probability
Grades 6–8

Common Core Standards	Your State's Extended Standards

GRADE 6
Develop understanding of statistical variability.
1. CCSS.Math.Content.6.SP.A.1 Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. *For example, "How old am I?" is not a statistical question, but "How old are the students in my school?" is a statistical question because one anticipates variability in students' ages.*
2. CCSS.Math.Content.6.SP.A.2 Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.
3. CCSS.Math.Content.6.SP.A.3 Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.
Summarize and describe distributions.
4. CCSS.Math.Content.6.SP.B.4 Display numerical data in plots on a number line, including dot plots, histograms, and box plots.
5. CCSS.Math.Content.6.SP.B.5 Summarize numerical data sets in relation to their context, such as by:
  a. CCSS.Math.Content.6.SP.B.5a Reporting the number of observations.
  b. CCSS.Math.Content.6.SP.B.5b Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.
  c. CCSS.Math.Content.6.SP.B.5c Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.
  d. CCSS.Math.Content.6.SP.B.5d Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.
 	
GRADE 7
Use random sampling to draw inferences about a population.
1. CCSS.Math.Content.7.SP.A.1 Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences.
2. CCSS.Math.Content.7.SP.A.2 Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions. *For example, estimate the mean word length in a book by randomly sampling words from the book; predict the winner of a school election based on randomly sampled survey data. Gauge how far off the estimate or prediction might be.*
Draw informal comparative inferences about two populations.
3. CCSS.Math.Content.7.SP.B.3 Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability. *For example, the mean height of players on the basketball team is 10 cm greater than the mean height of players on the soccer team, about twice the variability (mean absolute deviation) on either team; on a dot plot, the separation between the two distributions of heights is noticeable.*
4. CCSS.Math.Content.7.SP.B.4 Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations. *For example, decide whether the words in a chapter of a seventh-grade science book are generally longer than the words in a chapter of a fourth-grade science book.*	

Investigate chance processes and develop, use, and evaluate probability models.
5. CCSS.Math.Content.7.SP.C.5 Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.
6. *CCSS.Math.Content.7.SP.C.6* Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability. *For example, when rolling a number cube 600 times, predict that a 3 or 6 would be rolled roughly 200 times, but probably not exactly 200 times.*
7. CCSS.Math.Content.7.SP.C.7 Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy.
   a. *CCSS.Math.Content.7.SP.C.7a* Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events. *For example, if a student is selected at random from a class, find the probability that Jane will be selected and the probability that a girl will be selected.*
   b. *CCSS.Math.Content.7.SP.C.7b* Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process. *For example, find the approximate probability that a spinning penny will land heads up or that a tossed paper cup will land open-end down. Do the outcomes for the spinning penny appear to be equally likely based on the observed frequencies?*
8. CCSS.Math.Content.7.SP.C.8 Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.
   a. CCSS.Math.Content.7.SP.C.8a Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs.
   b. CCSS.Math.Content.7.SP.C.8b Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. For an event described in everyday language (e.g., "rolling double sixes"), identify the outcomes in the sample space which compose the event.
   c. *CCSS.Math.Content.7.SP.C.8c* Design and use a simulation to generate frequencies for compound events. *For example, use random digits as a simulation tool to approximate the answer to the question: If 40% of donors have type A blood, what is the probability that it will take at least 4 donors to find one with type A blood?*

GRADE 8
Investigate patterns of association in bivariate data.
1. CCSS.Math.Content.8.SP.A.1 Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.
2. CCSS.Math.Content.8.SP.A.2 Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line.
3. *CCSS.Math.Content.8.SP.A.3* Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept. *For example, in a linear model for a biology experiment, interpret a slope of 1.5 cm/hr as meaning that an additional hour of sunlight each day is associated with an additional 1.5 cm in mature plant height.*
4. *CCSS.Math.Content.8.SP.A.4* Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables. *For example, collect data from students in your class on whether or not they have a curfew on school nights and whether or not they have assigned chores at home. Is there evidence that those who have a curfew also tend to have chores?*
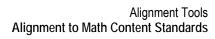
n2y Instructional Targets	n2y Middle School Grade Band Lessons and Activities	n2y Supporting Activities
Building Blocks to Statistics and Probability • Compare data and explain meaning. • Read, construct and interpret tables and graphs. *Develop understanding of statistical variability.* • Design questions and conduct a survey to gather data. *Summarize and describe distributions.* • Display, analyze and report data on a graph. *Use random sampling to draw inferences about a population.* • Use samples to gain information and make inferences about a group or population. (e.g., According to the preferences shown by 9/10s of the students in class, most teens like pizza). *Draw informal comparative inferences about two populations.* • Analyze data from two graphs to compare two groups or populations. *Investigate chance processes and develop, use and evaluate probability models.* • Determine the probability of an event's occurring as likely, unlikely, certain or impossible (probability in weather conditions based on reports, etc.).	Unique Lesson 21: Read This Chart	Unique ULS Instructional Guides: Mathematics News-2-You Activities: Graphing

n2y Differentiated Tasks		
Level 3	*Level 2*	*Level 1*
• Students will design survey questions and collect, organize and report data presented on a graph. • Students will compare data from tables and graphs to report specific information. • On the basis of gathered information, students will determine the probability that something is likely or unlikely to occur.	• Students will ask questions to gather data and display it on a graph. • Students will identify specific data from a table or graph. • Students will use data to determine that something is likely to occur.	• Students will ask a question and select pictures as part of a data-gathering process. • Students will report data that is presented in a table or graph. • Students will select an activity that is likely to occur.

Math Standards for Functions	Grades 6–8
Common Core Standards	Your State's Extended Standards

GRADE 6
Functions are not addressed in The Common Core Standards for this grade band.
If these skills are addressed in your state's extended standards, content may be added in the column to the right.

GRADE 7
Functions are not addressed in The Common Core Standards for this grade band.
If these skills are addressed in your state's extended standards, content may be added in the column to the right.

GRADE 8
Define, evaluate, and compare functions.
1. CCSS.Math.Content.8.F.A.1 Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output.
2. CCSS.Math.Content.8.F.A.2 Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). *For example, given a linear function represented by a table of values and a linear function represented by an algebraic expression, determine which function has the greater rate of change.*
3. CCSS.Math.Content.8.F.A.3 Interpret the equation $y = mx + b$ as defining a linear function, whose graph is a straight line; give examples of functions that are not linear. *For example, the function $A = s^2$ giving the area of a square as a function of its side length is not linear because its graph contains the points (1,1), (2,4) and (3,9), which are not on a straight line.*
Use functions to model relationships between quantities.
4. CCSS.Math.Content.8.F.B.4 Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.
5. CCSS.Math.Content.8.F.B.5 Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.

n2y Instructional Targets	n2y Middle School Grade Band Lessons and Activities	n2y Supporting Activities
Building Blocks to Functions	Unique	Unique
• Complete a function table containing at least 2 complete ordered pairs and one missing number of another ordered pair. • Construct a graph based on a function table. • Describe how a graph represents a relationship between two quantities.	Lesson 25b: Algebra	ULS Instructional Guides: Mathematics Instructional Tools: Math Pack/Numbers Instructional Tools: Number Journal
		News-2-You
		Activities: Graphing

n2y Differentiated Tasks		
Level 3	*Level 2*	*Level 1*
• In the context of a real-world scenario, students will complete a function table to represent the relationship between two quantities. • Students will plot points on a graph to represent a function table. • Students will describe the relationship between two quantities based on a graph (increasing (going up) or decreasing (going down)).	• In the context of a real-world scenario, students will complete a function table with support. • With support, students will plot points on a graph to represent a function. • With support, students will identify the relationship between two quantities based on a graph (increasing (going up) or decreasing (going down)).	• In the context of a real-world scenario, students will select numbers (maybe errorless choice) to fill in a function table. • Students will select plotted points on a graph (errorless choice). • Students will select the relationship between two quantities based on a graph (errorless choice).

Math Standards for Algebra–Seeing Structure in Expressions | Grade 9–12

Common Core Standards	Your State's Extended Standards

GRADES 9–12
Interpret the structure of expressions
1. CCSS.Math.Content.HSA-SSE.A.1 Interpret expressions that represent a quantity in terms of its context.
   a. CCSS.Math.Content.HSA-SSE.A.1a Interpret parts of an expression, such as terms, factors, and coefficients.
   b. CCSS.Math.Content.HSA-SSE.A.1b Interpret complicated expressions by viewing one or more of their parts as a single entity. *For example, interpret $P(1+r)^n$ as the product of P and a factor not depending on P.*
2. CCSS.Math.Content.HSA-SSE.A.2 Use the structure of an expression to identify ways to rewrite it. *For example, see $x^4 - y^4$ as $(x^2)^2 - (y^2)^2$, thus recognizing it as a difference of squares that can be factored as $(x^2 - y^2)(x^2 + y^2)$.*
Write expressions in equivalent forms to solve problems
3. CCSS.Math.Content.HSA-SSE.B.3 Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.
   a. CCSS.Math.Content.HSA-SSE.B.3a Factor a quadratic expression to reveal the zeros of the function it defines.
   b. CCSS.Math.Content.HSA-SSE.B.3b Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines.
   c. CCSS.Math.Content.HSA-SSE.B.3c Use the properties of exponents to transform expressions for exponential functions. *For example the expression 1.15^t can be rewritten as $(1.15^{1/12})^{12t} \approx 1.012^{12t}$ to reveal the approximate equivalent monthly interest rate if the annual rate is 15%.*
4. CCSS.Math.Content.HSA-SSE.B.4 Derive the formula for the sum of a finite geometric series (when the common ratio is not 1), and use the formula to solve problems. *For example, calculate mortgage payments.*	

n2y Instructional Targets	n2y High School Grade Band Lessons and Activities	n2y Supporting Activities
Building Blocks to Algebra	**Unique**	**Unique**
• Understand and use +, - and = in problems. • Solve addition and subtraction problems. • Model and solve problems involving multiplication or division. • Indicate positive and negative numbers (using a number line, temperatures including negative numbers, etc.) in a real-world scenario. • Add and subtract rational numbers. • Identify the additive inverse. • Multiply and divide rational numbers *Interpret the structure of expressions.* • Identify the different parts of an expression that represents a real-world situation and explain meaning. *Write expressions in equivalent forms to solve problems.* • Write and simplify an expression that represents a real-world situation.	Lesson 19: Math Story Problems Lesson 25: Algebra Core Task 2.5: Snack Basket Core Task 2.1: Attendance	Instructional Guide: Mathematics Instructional Tools: Math Pack/Numbers Instructional Tools: Math Pack/Arrays Standards Connection
		News-2-You
		Activities: Word Problems

n2y Differentiated Tasks		
Level 3	*Level 2*	*Level 1*
- In the context of a real-world scenario, students will calculate addition and subtraction problems. - In the context of a real-world scenario, students will model multiplication and division with objects and numbers that show equal groups. - Students will identify and label positive and negative numbers in the context of a real-world scenario. - Students will use appropriate operations to add and subtract positive and negative numbers in a real-world scenario (e.g., using a number line). - Students will independently identify the opposite of a number and understand the sum of the numbers equals 0 (e.g., -2 and 2; -2 + 2 = 0). - Students will use appropriate operations to multiply and divide positive and negative numbers. - Students will identify and explain the parts of an expression. - In the context of a real-world scenario, students write and simplify an expression.	- In the context of a real-world scenario, students will model addition and subtraction of two sets of objects. - Students will count equal numbers of objects in selected groups or an array. - Students will select positive and negative numbers in a real-world scenario with support. - Students will add or subtract positive and negative numbers in a real-world scenario (e.g., using a number line) with support. - Students will select the opposite of a number (e.g. -2 and 2; -2 + 2 = 0) with support. - Students will multiply or divide positive and negative numbers in a real-world scenario (e.g., using a number line) with support. - Students will identify the parts of an expression with support. - In the context of a real-world scenario, students will select numbers to write and simplify an expression with support.	- Students will count a set of objects in an addition or subtraction problem using an active participation response (e.g., voice output device, eye gaze choice board). - Students will count a set of objects in a group using an active participation response (e.g., voice output device, eye gaze choice board). - Students will participate in labeling positive and negative numbers using an active response mode. - Students will count a set of objects in an addition or subtraction real-world problem involving positive and negative numbers through an active participation response (e.g., voice output device, eye gaze choice board). - Students will make a selection (may be errorless) to identify the opposite of a number (e.g., -2 and 2; -2 + 2 = 0). - Students will count a set of objects in a multiplication or division real-world problem involving positive and negative numbers through an active participation response (e.g., voice output device, eye gaze choice board). - Students will select a part (errorless choice) of an expression. - In the context of a real-world scenario, students will select numbers to write an expression (may be errorless choice).

Math Standards for Algebra: Creating Equations | Grade 9–12

Common Core Standards	Your State's Extended Standards
GRADES 9–12 Create equations that describe numbers or relationships 1. CCSS.Math.Content.HSA-CED.A.1 Create equations and inequalities in one variable and use them to solve problems. *Include equations arising from linear and quadratic functions, and simple rational and exponential functions.* 2. CCSS.Math.Content.HSA-CED.A.2 Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales. 3. CCSS.Math.Content.HSA-CED.A.3 Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context. *For example, represent inequalities describing nutritional and cost constraints on combinations of different foods.* 4. CCSS.Math.Content.HSA-CED.A.4 Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. *For example, rearrange Ohm's law V = IR to highlight resistance R.*	

n2y Instructional Targets	n2y High School Grade Band Lessons and Activities	n2y Supporting Activities
Building Blocks to Algebra • Graph positive and negative numbers (using a number line, temperatures including negative numbers, etc.) in a real-world scenario. *Create equations that describe numbers or relationships.* • Represent a real-world situation with an algebraic expression. *Graph equations on coordinate axes* • Graph coordinate points of an equation.	Unique Lesson 25: Algebra	Unique ULS Instructional Guides: Mathematics ULS Instructional Tools: Math Pack/Numbers ULS Instructional Tools: Math Pack/Arrays Standards Connection
		News-2-You
		Activities: Word Problems

n2y Differentiated Tasks		
Level 3	*Level 2*	*Level 1*
• Students will independently identify points in all four quadrants of the coordinate plane. • Students will write and solve an equation with a variable. • Students will plot points on a graph to represent an equation.	• Students will locate points in all four quadrants of the coordinate plane with support. • Students will select pictures and numbers to model an equation with a variable with support. • Students will plot points on a graph using coordinate points of an equation with support.	• Students will select points in a quadrant of the coordinate plane (errorless choice). • Students will select a number (errorless choice) within an equation with a variable. • Students will select plotted points on a graph of an equation (errorless choice).

Math Standards for Algebra: Reasoning with Equations and Inequalities · Grade 9–12

Common Core Standards	Your State's Extended Standards

GRADES 9–12
Understand solving equations as a process of reasoning and explain the reasoning
1. CCSS.Math.Content.HSA-REI.A.1 Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.
2. CCSS.Math.Content.HSA-REI.A.2 Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.
Solve equations and inequalities in one variable
3. CCSS.Math.Content.HSA-REI.B.3 Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.
4. CCSS.Math.Content.HSA-REI.B.4 Solve quadratic equations in one variable.
   a. CCSS.Math.Content.HSA-REI.B.4a Use the method of completing the square to transform any quadratic equation in x into an equation of the form $(x - p)^2 = q$ that has the same solutions. Derive the quadratic formula from this form.
   b. CCSS.Math.Content.HSA-REI.B.4b Solve quadratic equations by inspection (e.g., for $x^2 = 49$), taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them as $a \pm bi$ for real numbers a and b.
Solve systems of equations
5. CCSS.Math.Content.HSA-REI.C.5 Prove that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions.
6. CCSS.Math.Content.HSA-REI.C.6 Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.
7. CCSS.Math.Content.HSA-REI.C.7 Solve a simple system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically. *For example, find the points of intersection between the line $y = -3x$ and the circle $x^2 + y^2 = 3$.*
8. CCSS.Math.Content.HSA-REI.C.8 (+) Represent a system of linear equations as a single matrix equation in a vector variable.
9. CCSS.Math.Content.HSA-REI.C.9 (+) Find the inverse of a matrix if it exists and use it to solve systems of linear equations (using technology for matrices of dimension 3 × 3 or greater).
Represent and solve equations and inequalities graphically
10. CCSS.Math.Content.HSA-REI.D.10 Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line).
11. CCSS.Math.Content.HSA-REI.D.11 Explain why the x-coordinates of the points where the graphs of the equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation $f(x) = g(x)$; find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where $f(x)$ and/or $g(x)$ are linear, polynomial, rational, absolute value, exponential, and logarithmic functions.
12. CCSS.Math.Content.HSA-REI.D.12 Graph the solutions to a linear inequality in two variables as a half-plane excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes.	

n2y Instructional Targets	n2y High School Grade Band Lessons and Activities	n2y Supporting Activities
Building Blocks to Algebra • Recognize and compare numbers showing the symbols >, <, or =. *Understand solving equations as a process of reasoning and explain the reasoning.* • Order a sequence of steps to solve an equation. *Solve equations and inequalities in one variable.* • Use equations to solve real-world problems when a part is unknown. • Use inequalities (e.g., < and >) to solve real-world problems in which a part is unknown. *Represent and solve equations and inequalities graphically.* • Interpret the meaning of a point on the graph of a line.	Unique Lesson 19: Math Story Problems Lesson 25: Algebra	Unique ULS Instructional Guides: Mathematics Instructional Tools: Math Pack/Numbers Instructional Tools: Math Pack/Arrays Instructional Tools: Number Journal Standards Connection News-2-You Activities: Which is Greater? Activities: Which is Less? Activities: Word Problems

n2y Differentiated Tasks		
Level 3	*Level 2*	*Level 1*
• Students will compare two numbers and use symbols to indicate >, < or =. • In the context of a real-world scenario students will use a combination of operations to solve an equation. • Students will solve a real-world problem using equations involving one variable. • Students will solve a real-world problem using inequalities involving one variable. • Students will identify and explain the point on a graph of a line.	• Students will compare two groups of objects and determine which group is bigger, smaller or equal in amount. • In the context of a real-world scenario, students will use operations and models to solve an equation. • Students will solve real-world problems using equations involving one variable and models with support. • Students will solve a real-world problem using inequalities involving one variable and models with support. • Students will identify the point on a graph of a line with support.	• Students will count a set of objects in an addition or subtraction problem using an active participation response (e.g., voice output device, eye gaze choice board). • In the context of a real-world scenario, students will select numbers (may be errorless) and count within an equation through an active participation response. • Students will select numbers (errorless choice) and count to solve a real-world problem involving one variable. • Students will select numbers (errorless choice) to count and compare sets of objects to determine more or less with support. • Students will select a point (errorless choice) on a graph of a line.

Math Standards for Geometry–Congruence

Common Core Standards	Your State's Extended Standards
GRADES 9–12 **Experiment with transformations in the plane** 1. CCSS.Math.Content.HSG-CO.A.1 Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc. 2. CCSS.Math.Content.HSG-CO.A.2 Represent transformations in the plane using, e.g., transparencies and geometry software; describe transformations as functions that take points in the plane as inputs and give other points as outputs. Compare transformations that preserve distance and angle to those that do not (e.g., translation versus horizontal stretch). 3. CCSS.Math.Content.HSG-CO.A.3 Given a rectangle, parallelogram, trapezoid, or regular polygon, describe the rotations and reflections that carry it onto itself. 4. CCSS.Math.Content.HSG-CO.A.4 Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments. 5. CCSS.Math.Content.HSG-CO.A.5 Given a geometric figure and a rotation, reflection, or translation, draw the transformed figure using, e.g., graph paper, tracing paper, or geometry software. Specify a sequence of transformations that will carry a given figure onto another. **Understand congruence in terms of rigid motions** 6. CCSS.Math.Content.HSG-CO.B.6 Use geometric descriptions of rigid motions to transform figures and to predict the effect of a given rigid motion on a given figure; given two figures, use the definition of congruence in terms of rigid motions to decide if they are congruent. 7. CCSS.Math.Content.HSG-CO.B.7 Use the definition of congruence in terms of rigid motions to show that two triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent. 8. CCSS.Math.Content.HSG-CO.B.8 Explain how the criteria for triangle congruence (ASA, SAS, and SSS) follow from the definition of congruence in terms of rigid motions. **Prove geometric theorems** 9. CCSS.Math.Content.HSG-CO.C.9 Prove theorems about lines and angles. *Theorems include: vertical angles are congruent; when a transversal crosses parallel lines, alternate interior angles are congruent and corresponding angles are congruent; points on a perpendicular bisector of a line segment are exactly those equidistant from the segment's endpoints.* 10. CCSS.Math.Content.HSG-CO.C.10 Prove theorems about triangles. *Theorems include: measures of interior angles of a triangle sum to 180°; base angles of isosceles triangles are congruent; the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length; the medians of a triangle meet at a point.* 11. CCSS.Math.Content.HSG-CO.C.11 Prove theorems about parallelograms. *Theorems include: opposite sides are congruent, opposite angles are congruent, the diagonals of a parallelogram bisect each other, and conversely, rectangles are parallelograms with congruent diagonals.* **Make geometric constructions** 12. CCSS.Math.Content.HSG-CO.D.12 Make formal geometric constructions with a variety of tools and methods (compass and straightedge, string, reflective devices, paper folding, dynamic geometric software, etc.). *Copying a segment; copying an angle; bisecting a segment; bisecting an angle; constructing perpendicular lines, including the perpendicular bisector of a line segment; and constructing a line parallel to a given line through a point not on the line.* 13. CCSS.Math.Content.HSG-CO.D.13 Construct an equilateral triangle, a square, and a regular hexagon inscribed in a circle.	

n2y Instructional Targets	n2y High School Grade Band Lessons and Activities	n2y Supporting Activities
Experiment with transformations in the plane. • Identify points, lines, line segments and angles (right, acute, obtuse) within the context of real-world situations. • Establish congruency by applying a turn (rotation), a flip (reflection), or a slide (translation) to match items of similar size and shape.	Unique Lesson 24: Geometry	Unique ULS Instructional Guides: Mathematics ULS Instructional Tools: Math Pack/Shapes Standards Connection
n2y Differentiated Tasks		
Level 3	*Level 2*	*Level 1*
• Students will use lines and angles within shapes to solve a real-world problem.	• Students will match like shapes in the context of a real-world problem.	• In the context of a real-world problem, students will select objects of the same shape.

Math Standards for Geometry: Similarity, Right Triangles and Trigonometry — Grade 9–12

Common Core Standards	Your State's Extended Standards

GRADES 9–12
Understand similarity in terms of similarity transformations
1. CCSS.Math.Content.HSG-SRT.A.1 Verify experimentally the properties of dilations given by a center and a scale factor.
   a. CCSS.Math.Content.HSG-SRT.A.1a A dilation takes a line not passing through the center of the dilation to a parallel line, and leaves a line passing through the center unchanged.
   b. CCSS.Math.Content.HSG-SRT.A.1b The dilation of a line segment is longer or shorter in the ratio given by the scale factor.
2. CCSS.Math.Content.HSG-SRT.A.2 Given two figures, use the definition of similarity in terms of similarity transformations to decide if they are similar; explain using similarity transformations the meaning of similarity for triangles as the equality of all corresponding pairs of angles and the proportionality of all corresponding pairs of sides.
3. CCSS.Math.Content.HSG-SRT.A.3 Use the properties of similarity transformations to establish the AA criterion for two triangles to be similar.
Prove theorems involving similarity
4. CCSS.Math.Content.HSG-SRT.B.4 Prove theorems about triangles. *Theorems include: a line parallel to one side of a triangle divides the other two proportionally, and conversely; the Pythagorean Theorem proved using triangle similarity.*
5. *CCSS.Math.Content.HSG-SRT.B.5* Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.
Define trigonometric ratios and solve problems involving right triangles
6. CCSS.Math.Content.HSG-SRT.C.6 Understand that by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of trigonometric ratios for acute angles.
7. CCSS.Math.Content.HSG-SRT.C.7 Explain and use the relationship between the sine and cosine of complementary angles.
8. CCSS.Math.Content.HSG-SRT.C.8 Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.
Apply trigonometry to general triangles
9. CCSS.Math.Content.HSG-SRT.D.9 (+) Derive the formula $A = 1/2\ ab\ \sin(C)$ for the area of a triangle by drawing an auxiliary line from a vertex perpendicular to the opposite side.
10. CCSS.Math.Content.HSG-SRT.D.10 (+) Prove the Laws of Sines and Cosines and use them to solve problems.
11. CCSS.Math.Content.HSG-SRT.D.11 (+) Understand and apply the Law of Sines and the Law of Cosines to find unknown measurements in right and non-right triangles (e.g., surveying problems, resultant forces).	

n2y Instructional Targets	n2y High School Grade Band Lessons and Activities	n2y Supporting Activities
Understand similarity in terms of similarity transformations. • Identify shapes by similar attributes (e.g., similar angles). • Identify parts of a right triangle (right angle, legs) in real-world objects and areas.	Unique Lesson 24: Geometry	Unique ULS Instructional Guides: Mathematics ULS Instructional Tools: Math Pack/Shapes Standards Connection

n2y Differentiated Tasks		
Level 3	Level 2	Level 1
• Students will identify properties of shapes to solve a real-world problem.	• Students will identify shapes in the context of a real-world problem.	• Students will select shapes in the context of a real-world problem.

Math Standards for Geometry: Circles — Grade 9–12

Common Core Standards	Your State's Extended Standards
GRADES 9–12 **Understand and apply theorems about circles** 1. CCSS.Math.Content.HSG-C.A.1 Prove that all circles are similar. 2. CCSS.Math.Content.HSG-C.A.2 Identify and describe relationships among inscribed angles, radii, and chords. *Include the relationship between central, inscribed, and circumscribed angles; inscribed angles on a diameter are right angles; the radius of a circle is perpendicular to the tangent where the radius intersects the circle.* 3. *CCSS.Math.Content.HSG-C.A.3* Construct the inscribed and circumscribed circles of a triangle, and prove properties of angles for a quadrilateral inscribed in a circle. 4. CCSS.Math.Content.HSG-C.A.4 (+) Construct a tangent line from a point outside a given circle to the circle. **Find arc lengths and areas of sectors of circles** 5. CCSS.Math.Content.HSG-C.B.5 Derive using similarity the fact that the length of the arc intercepted by an angle is proportional to the radius, and define the radian measure of the angle as the constant of proportionality; derive the formula for the area of a sector.	

n2y Instructional Targets	n2y High School Grade Band Lessons and Activities	n2y Supporting Activities
Understand and apply theorems about circles. • Identify parts of a circle (radius, circumference, diameter) in real objects and areas.	Unique Lesson 24: Geometry	Unique ULS Instructional Guides: Mathematics ULS Instructional Tools: Math Pack/Shapes Standards Connection

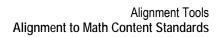| n2y Differentiated Tasks		
Level 3	*Level 2*	*Level 1*
• Students will use circles and circle measurements to solve a real-world problem.	• Students will match like circles in the context of a real-world problem.	• Students will select real-world objects with circle shapes.

Math Standards for Geometry: Geometric Measurement and Dimension | Grade 9–12

Common Core Standards	Your State's Extended Standards
GRADES 9–12 **Explain volume formulas and use them to solve problems** 1. CCSS.Math.Content.HSG-GMD.A.1 Give an informal argument for the formulas for the circumference of a circle, area of a circle, volume of a cylinder, pyramid, and cone. *Use dissection arguments, Cavalieri's principle, and informal limit arguments.* 2. CCSS.Math.Content.HSG-GMD.A.2 (+) Give an informal argument using Cavalieri's principle for the formulas for the volume of a sphere and other solid figures. 3. CCSS.Math.Content.HSG-GMD.A.3 Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems. **Visualize relationships between two-dimensional and three-dimensional objects** 4. CCSS.Math.Content.HSG-GMD.B.4 Identify the shapes of two-dimensional cross-sections of three-dimensional objects, and identify three-dimensional objects generated by rotations of two-dimensional objects.	

n2y Instructional Targets	n2y High School Grade Band Lessons and Activities	n2y Supporting Activities
Visualize relationships between two-dimensional and three-dimensional objects. • Identify and compare three-dimensional objects that have volume.	**Unique** Lesson 24: Geometry	**Unique** ULS Instructional Guides: Mathematics ULS Instructional Tools: Math Pack/Shapes Standards Connection
		News-2-You
		Recipe Page Standards Connection

n2y Differentiated Tasks		
Level 3	*Level 2*	*Level 1*
• Students will use standard measurement tools and units to measure the volume of an object. • Students will apply use of volume measurements in real-world scenarios.	• Students will select a volume measurement tool appropriate to a real-world task. • Students will match objects having the same volume measurements.	• Students will compare two measured volumes to determine which is larger. • Students will match objects of the same size and shape.

Math Standards for Geometry–Modeling with Geometry — Grade 9–12

Common Core Standards	Your State's Extended Standards
GRADES 9–12 **Apply geometric concepts in modeling situations** 1. CCSS.Math.Content.HSG-MG.A.1 Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder). 2. CCSS.Math.Content.HSG-MG.A.2 Apply concepts of density based on area and volume in modeling situations (e.g., persons per square mile, BTUs per cubic foot). 3. CCSS.Math.Content.HSG-MG.A.3 Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios).	

n2y Instructional Targets	n2y High School Grade Band Lessons and Activities	n2y Unique Supporting Activities
Apply geometric concepts in modeling situations. • Identify the shape in real-world two and three-dimensional objects.	Unique Lesson 24: Geometry	Unique ULS Instructional Guides: Mathematics ULS Instructional Tools: Math Pack/Shapes Standards Connection

n2y Differentiated Tasks		
Level 3	*Level 2*	*Level 1*
• Students will use a model representing two-and three-dimensional objects to solve real-world problems.	• Students will arrange two-dimensional figures on a model of a real-world scenario.	• Students will match two-dimensional figures on a model of a real-world scenario.

Math Standards for Statistics and Probability: Interpreting Categorical and Quantitative Data | Grade 9–12

Common Core Standards	Your State's Extended Standards

GRADES 9–12
Summarize, represent, and interpret data on a single count or measurement variable
1. CCSS.Math.Content.HSS-ID.A.1 Represent data with plots on the real number line (dot plots, histograms, and box plots).
2. CCSS.Math.Content.HSS-ID.A.2 Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets.
3. CCSS.Math.Content.HSS-ID.A.3 Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers).
4. CCSS.Math.Content.HSS-ID.A.4 Use the mean and standard deviation of a data set to fit it to a normal distribution and to estimate population percentages. Recognize that there are data sets for which such a procedure is not appropriate. Use calculators, spreadsheets, and tables to estimate areas under the normal curve.
Summarize, represent, and interpret data on two categorical and quantitative variables
5. CCSS.Math.Content.HSS-ID.B.5 Summarize categorical data for two categories in two-way frequency tables. Interpret relative frequencies in the context of the data (including joint, marginal, and conditional relative frequencies). Recognize possible associations and trends in the data.
6. CCSS.Math.Content.HSS-ID.B.6 Represent data on two quantitative variables on a scatter plot, and describe how the variables are related.
  a. CCSS.Math.Content.HSS-ID.B.6a Fit a function to the data; use functions fitted to data to solve problems in the context of the data. *Use given functions or choose a function suggested by the context. Emphasize linear, quadratic, and exponential models.*
  b. CCSS.Math.Content.HSS-ID.B.6b Informally assess the fit of a function by plotting and analyzing residuals.
  c. CCSS.Math.Content.HSS-ID.B.6c Fit a linear function for a scatter plot that suggests a linear association.
Interpret linear models
7. CCSS.Math.Content.HSS-ID.C.7 Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.
8. CCSS.Math.Content.HSS-ID.C.8 Compute (using technology) and interpret the correlation coefficient of a linear fit.
9. CCSS.Math.Content.HSS-ID.C.9 Distinguish between correlation and causation.	

n2y Instructional Targets	n2y High School Grade Band Lessons and Activities	n2y Supporting Activities
Summarize, represent, and interpret data on a single count or measurement variable. • Create a bar graph to represent data. • Interpret data from a bar graph. • Compute the mean (average) and median of a data set. *Summarize, represent and interpret data on two categorical and quantitative variables.* • Compare data on a graph to show the relationship between two sets of data. *Interpret linear models.* • Describe a rate of change based on a line on a graph.	**Unique** Lesson 21: Read This Chart	**Unique** ULS Instructional Guides: Mathematics **News-2-You** Activities: Graphing

n2y Differentiated Tasks		
Level 3	*Level 2*	*Level 1*
• Students will design survey questions and collect, organize and report data presented on a graph. • Students will compare data from tables and graphs to report specific information. • Students will calculate an average (mean) from data.	• Students will ask questions to gather data and display the data on a graph. • Students will identify specific data from a table or graph. • Students will identify a middle point (average) in a set of data.	• Students will ask a question and select pictures as part of a data-gathering process. • Students will report data that is presented in a table or graph. • Students will communicate data information that describes an average.

Math Standards for Statistics and Probability: Making Inferences and Justifying Conclusions — Grade 9–12

Common Core Standards	Your State's Extended Standards
GRADES 9–12 Understand and evaluate random processes underlying statistical experiments 1. CCSS.Math.Content.HSS-IC.A.1 Understand statistics as a process for making inferences about population parameters based on a random sample from that population. 2. CCSS.Math.Content.HSS-IC.A.2 Decide if a specified model is consistent with results from a given data-generating process, e.g., using simulation. *For example, a model says a spinning coin falls heads up with probability 0.5. Would a result of 5 tails in a row cause you to question the model?* Make inferences and justify conclusions from sample surveys, experiments, and observational studies 3. CCSS.Math.Content.HSS-IC.B.3 Recognize the purposes of and differences among sample surveys, experiments, and observational studies; explain how randomization relates to each. 4. CCSS.Math.Content.HSS-IC.B.4 Use data from a sample survey to estimate a population mean or proportion; develop a margin of error through the use of simulation models for random sampling. 5. CCSS.Math.Content.HSS-IC.B.5 Use data from a randomized experiment to compare two treatments; use simulations to decide if differences between parameters are significant. 6. CCSS.Math.Content.HSS-IC.B.6 Evaluate reports based on data.	

n2y Instructional Targets	n2y High School Grade Band Lessons and Activities	n2y Supporting Activities
Understand and evaluate random processes underlying statistical experiments. • Determine the likelihood of an outcome by using a data-generating device (spinner, coin, dice). • Evaluate reports based on data.	**Unique** Lesson 21: Read This Chart	**Unique** ULS Instructional Guides: Mathematics

n2y Differentiated Tasks		
Level 3	*Level 2*	*Level 1*
• On the basis of information gathered, students will determine the probability that something is likely or unlikely to occur. • Students will conduct and report outcomes on the basis of material gathered from a random sample.	• On the basis of available information, students will determine that something is likely to happen. • Students will gather data to contribute to a random sample.	• Students will select an activity that is likely to occur. • Students will ask a question in a survey.

Math Standards for Life Skills for Measurement — Grade 9–12

Common Core Standards	Your State's Extended Standards
GRADES 9–12 Life Skills for Measurement are not addressed in The Common Core Standards for this grade band. If these skills are addressed in your state's extended standards, content may be added in the column to the right.	

n2y Instructional Targets	n2y High School Grade Band Lessons and Activities	n2y Supporting Activities
Life Skills for Measurement • Select units and use measurement tools accurately in the context of a daily living activity. • Solve problems involving measurement. • Apply knowledge of time skills to real-world problem-solving situations and scenarios. • Apply knowledge of money skills to real-world problem-solving situations and scenarios.	**Unique** Lesson 20: Measure It! Lesson 22: Money Lesson 23: Schedules and Time Core Task 1.1: Daily Schedules Core Task 1.2: Monthly Calendars Core Task 2.2: Calendar Core Task 2.5: Snack Basket	**Unique** ULS Instructional Guides: Mathematics ULS Instructional Tools: Math Pack/Money ULS Instructional Tools: Math Pack/Time Standards Connection **News-2-You** Recipe Page Standards Connection

n2y Differentiated Tasks		
Level 3	*Level 2*	*Level 1*
• Students will independently use measurement tools in daily living skill activities. • Students will calculate the amount of money needed for a purchase and ascertain the coins and bills required to complete that purchase. • Students will read time and apply it to a real-world activity. • Students will record personal events on a monthly calendar and use the information as it applies to daily activities.	• Students will identify and use measurement tools appropriate for a supported daily living task. • Students will match coins and bills to a given price. • Students will represent times for morning, afternoon and evening in the context of a real-world scenario. • Students will follow a schedule to complete daily activities.	• Students will select a measurement tool for a daily living task. • Students will exchange money for a purchase. • Students will select a time for a personal activity of the day. • Students will actively participate in a daily schedule based on timed activities.

Math Standards for Life Skills for Ratio and Proportional Relationships — Grade 9–12

Common Core Standards	Your State's Extended Standards
GRADES 9–12 Life Skills for Ratio and Proportional Relationships are not addressed in The Common Core Standards for this grade band. If these skills are addressed in your state's extended standards, content may be added in the column to the right.	

n2y Instructional Targets	n2y High School Grade Band Lessons and Activities	n2y Supporting Activities
Life Skills for Ratio and Proportional Relationships • Identify and write a ratio to compare part-to-part and part-to-whole relationships. (e.g., If for every lollipop in the bag, there are two candy bars, a 1:2 ratio exists.) • Solve real-world problems involving unit rate. (e.g., If it takes one hour to make one pillow, how long will it take to make four pillows?) • Apply understanding of percentages in real-world scenarios (10% tip, 30% sale, etc.).	Unique Lesson 22: Money (Standards Connection)	Unique ULS Instructional Guides: Mathematics ULS Instructional Tools: Math Pack/Money Standards Connection

n2y Differentiated Tasks		
Level 3	*Level 2*	*Level 1*
• Students will identify and write a ratio to describe part-to-part and part-to-whole relationships in the context of a real-world scenario. • Students will solve whole number, time and money problems involving unit rate. • Students will calculate percentages in real-world scenarios.	• Students will model part-to-part and part-to-whole relationships in the context of a real-world scenario. • Students will identify whole number, time or money amounts in the context of a unit rate scenario. • Students will locate a percentage amount from a chart.	• Students will match objects represented in part-to-part and part-to-whole relationships in the context of a real-world scenario. • Students will select a whole number, time or money amount in the context of a unit rate scenario. • Students will identify a number that represents a percentage.

Math Standards for Number and Quantity: The Real Number System	Grade 9–12
Common Core Standards	Your State's Extended Standards

GRADES 9–12

Extend the properties of exponents to rational exponents.

1. CCSS.Math.Content.HSN-RN.A.1 Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents. *For example, we define $5^{1/3}$ to be the cube root of 5 because we want $(5^{1/3})^3 = 5^{(1/3)3}$ to hold, so $(5^{1/3})^3$ must equal 5.*

2. CCSS.Math.Content.HSN-RN.A.2 Rewrite expressions involving radicals and rational exponents using the properties of exponents.

Use properties of rational and irrational numbers.

3. CCSS.Math.Content.HSN-RN.B.3 Explain why the sum or product of two rational numbers is rational; that the sum of a rational number and an irrational number is irrational; and that the product of a nonzero rational number and an irrational number is irrational.

n2y Instructional Targets	n2y High School Grade Band Lessons and Activities	n2y Supporting Activities
Extend the properties of exponents to rational exponents • Determine the value of a quantity that is squared or cubed.	Lesson 19c: Math Story Problems	ULS Instructional Guides: Mathematics Instructional Tools: Math Pack/Numbers Instructional Tools: Number Journal Standards Connection

n2y Differentiated Tasks		
Level 3	*Level 2*	*Level 1*
• Students will identify perfect squares from 0 to 100.	• Students will create a representation of a perfect square with support.	• Students will select blocks to build a model of the perfect square through an active participation response (e.g., voice output device, eye gaze choice board).

Math Standards for Number and Quantity: Quantities	Grade 9–12
Common Core Standards	Your State's Extended Standards
GRADES 9–12 Reason quantitatively and use units to solve problems. 1. CCSS.Math.Content.HSN-Q.A.1 Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays. 2. CCSS.Math.Content.HSN-Q.A.2 Define appropriate quantities for the purpose of descriptive modeling. 3. CCSS.Math.Content.HSN-Q.A.3 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.	

n2y Instructional Targets	n2y High School Grade Band Lessons and Activities	n2y Supporting Activities
Reason quantitatively and use units to solve problems • Express quantities to the appropriate precision of measurement.	Lesson 20: Measure It!	Standards Connection
n2y Differentiated Tasks		

Level 3	Level 2	Level 1
• Students will independently use measurement tools in daily living skill activities.	• Students will identify and use measurement tools appropriate for a supported daily living task.	• Students will select measurement tools for a daily living task through an active participation response (e.g., voice output device, eye gaze choice board).

Math Standards for Number and Quantity: The Complex Number System | Grade 9–12

Common Core Standards:	Your State's Extended Standards
GRADES 9–12 Perform arithmetic operations with complex numbers. 1. CCSS.Math.Content.HSN-CN.A.1 Know there is a complex number i such that $i^2 = -1$, and every complex number has the form $a + bi$ with a and b real. 2. CCSS.Math.Content.HSN-CN.A.2 Use the relation $i^2 = -1$ and the commutative, associative, and distributive properties to add, subtract, and multiply complex numbers. 3. CCSS.Math.Content.HSN-CN.A.3 (+) Find the conjugate of a complex number; use conjugates to find moduli and quotients of complex numbers. Represent complex numbers and their operations on the complex plane. 4. CCSS.Math.Content.HSN-CN.B.4 (+) Represent complex numbers on the complex plane in rectangular and polar form (including real and imaginary numbers), and explain why the rectangular and polar forms of a given complex number represent the same number. 5. CCSS.Math.Content.HSN-CN.B.5 (+) Represent addition, subtraction, multiplication, and conjugation of complex numbers geometrically on the complex plane; use properties of this representation for computation. *For example,* $(-1 + \sqrt{3}\,i)^3 = 8$ *because* $(-1 + \sqrt{3}\,i)$ *has modulus* 2 *and argument* 120°. 6. CCSS.Math.Content.HSN-CN.B.6 (+) Calculate the distance between numbers in the complex plane as the modulus of the difference, and the midpoint of a segment as the average of the numbers at its endpoints. Use complex numbers in polynomial identities and equations. 7. CCSS.Math.Content.HSN-CN.C.7 Solve quadratic equations with real coefficients that have complex solutions. 8. CCSS.Math.Content.HSN-CN.C.8 (+) Extend polynomial identities to the complex numbers. *For example, rewrite* $x^2 + 4$ *as* $(x + 2i)(x - 2i)$. 9. CCSS.Math.Content.HSN-CN.C.9 (+) Know the Fundamental Theorem of Algebra; show that it is true for quadratic polynomials.	

n2y Instructional Targets	n2y High School Grade Band Lessons and Activities	n2y Supporting Activities
Perform arithmetic operations with complex numbers • Use the commutative, associative and distributive properties to add, subtract and multiply whole numbers. • Solve real-world problems involving addition and subtraction of decimals, using models when needed. • Solve real-world problems involving multiplication of decimals and whole numbers, using models when needed.	Lesson 25a: Algebra	ULS Instructional Guides: Mathematics Instructional Tools: Math Pack/Numbers Instructional Tools: Number Journal Standards Connection

n2y Differentiated Tasks		
Level 3	*Level 2*	*Level 1*
• In the context of a real-world scenario, students will use the commutative, associative, or distributive properties to add, subtract or multiply whole numbers. • In the context of a real-world scenario, students will calculate addition and subtraction problems involving decimals. • In the context of a real-world scenario, students will model multiplication and division with objects and numbers that show equal groups involving decimals.	• In the context of a real-world scenario, students will model addition, subtraction or multiplication of sets of objects. • In the context of a real-world scenario, students will model addition and subtraction of two sets of objects involving decimals. • Students will count equal numbers involving decimals of objects in selected groups or an array.	• Students will count a set of objects in an addition, subtraction or multiplication problem through an active participation response (e.g., voice output device, eye gaze choice board). • Students will count a set of objects in an addition or a subtraction problem involving decimals through an active participation response (e.g., voice output device, eye gaze choice board). • Students will count a set of objects in a group involving decimals through an active participation response (e.g., voice output device, eye gaze choice board).

Math Standards for Number and Quantity: Vector and Matrix Quantities · Grade 9–12

Common Core Standards	Your State's Extended Standards

GRADES 9–12
Represent and model with vector quantities.
1. CCSS.Math.Content.HSN-VM.A.1 (+) Recognize vector quantities as having both magnitude and direction. Represent vector quantities by directed line segments, and use appropriate symbols for vectors and their magnitudes (e.g., *v*, |*v*|, ||*v*||, *v*).
2. CCSS.Math.Content.HSN-VM.A.2 (+) Find the components of a vector by subtracting the coordinates of an initial point from the coordinates of a terminal point.
3. CCSS.Math.Content.HSN-VM.A.3 (+) Solve problems involving velocity and other quantities that can be represented by vectors.
Perform operations on vectors.
4. CCSS.Math.Content.HSN-VM.B.4 (+) Add and subtract vectors.
  a. CCSS.Math.Content.HSN-VM.B.4a Add vectors end-to-end, component-wise, and by the parallelogram rule. Understand that the magnitude of a sum of two vectors is typically not the sum of the magnitudes.
  b. CCSS.Math.Content.HSN-VM.B.4b Given two vectors in magnitude and direction form, determine the magnitude and direction of their sum.
  c. CCSS.Math.Content.HSN-VM.B.4c Understand vector subtraction $v - w$ as $v + (-w)$, where $-w$ is the additive inverse of w, with the same magnitude as w and pointing in the opposite direction. Represent vector subtraction graphically by connecting the tips in the appropriate order, and perform vector subtraction component-wise.
5. CCSS.Math.Content.HSN-VM.B.5 (+) Multiply a vector by a scalar.
  a. CCSS.Math.Content.HSN-VM.B.5a Represent scalar multiplication graphically by scaling vectors and possibly reversing their direction; perform scalar multiplication component-wise, e.g., as $c(v_x, v_y) = (cv_x, cv_y)$.
  b. CCSS.Math.Content.HSN-VM.B.5b Compute the magnitude of a scalar multiple cv using $\|\|cv\|\| = \|c\|v$. Compute the direction of cv knowing that when $\|c\|v \neq 0$, the direction of cv is either along v (for $c > 0$) or against v (for $c < 0$).
Perform operations on matrices and use matrices in applications.
6. CCSS.Math.Content.HSN-VM.C.6 (+) Use matrices to represent and manipulate data, e.g., to represent payoffs or incidence relationships in a network.
7. CCSS.Math.Content.HSN-VM.C.7 (+) Multiply matrices by scalars to produce new matrices, e.g., as when all of the payoffs in a game are doubled.
8. CCSS.Math.Content.HSN-VM.C.8 (+) Add, subtract, and multiply matrices of appropriate dimensions.
9. CCSS.Math.Content.HSN-VM.C.9 (+) Understand that, unlike multiplication of numbers, matrix multiplication for square matrices is not a commutative operation, but still satisfies the associative and distributive properties.
10. CCSS.Math.Content.HSN-VM.C.10 (+) Understand that the zero and identity matrices play a role in matrix addition and multiplication similar to the role of 0 and 1 in the real numbers. The determinant of a square matrix is nonzero if and only if the matrix has a multiplicative inverse.
11. CCSS.Math.Content.HSN-VM.C.11 (+) Multiply a vector (regarded as a matrix with one column) by a matrix of suitable dimensions to produce another vector. Work with matrices as transformations of vectors.
12. CCSS.Math.Content.HSN-VM.C.12 (+) Work with 2 × 2 matrices as transformations of the plane, and interpret the absolute value of the determinant in terms of area.	

n2y Instructional Targets	n2y High School Grade Band Lessons and Activities	n2y Supporting Activities
NOT DIRECTLY ADDRESSED IN UNIQUE LEARNING SYSTEM		

Math Standards for Algebra: Arithmetic with Polynomials and Rational Expressions | Grade 9–12

Common Core Standards	Your State's Extended Standards
GRADES 9–12 Perform arithmetic operations on polynomials 1. CCSS.Math.Content.HSA-APR.A.1 Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials. **Understand the relationship between zeros and factors of polynomials** 2. CCSS.Math.Content.HSA-APR.B.2 Know and apply the Remainder Theorem: For a polynomial $p(x)$ and a number a, the remainder on division by $x - a$ is $p(a)$, so $p(a) = 0$ if and only if $(x - a)$ is a factor of $p(x)$. 3. CCSS.Math.Content.HSA-APR.B.3 Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the function defined by the polynomial. **Use polynomial identities to solve problems** 4. CCSS.Math.Content.HSA-APR.C.4 Prove polynomial identities and use them to describe numerical relationships. *For example, the polynomial identity $(x^2 + y^2)^2 = (x^2 - y^2)^2 + (2xy)^2$ can be used to generate Pythagorean triples.* 5. CCSS.Math.Content.HSA-APR.C.5 (+) Know and apply the Binomial Theorem for the expansion of $(x + y)^n$ in powers of x and y for a positive integer n, where x and y are any numbers, with coefficients determined for example by Pascal's Triangle. **Rewrite rational expressions** 6. CCSS.Math.Content.HSA-APR.D.6 Rewrite simple rational expressions in different forms; write $a(x)/b(x)$ in the form $q(x) + r(x)/b(x)$, where $a(x)$, $b(x)$, $q(x)$, and $r(x)$ are polynomials with the degree of $r(x)$ less than the degree of $b(x)$, using inspection, long division, or, for the more complicated examples, a computer algebra system. 7. CCSS.Math.Content.HSA-APR.D.7 (+) Understand that rational expressions form a system analogous to the rational numbers, closed under addition, subtraction, multiplication, and division by a nonzero rational expression; add, subtract, multiply, and divide rational expressions.	

n2y Instructional Targets	n2y High School Grade Band Lessons and Activities	n2y Supporting Activities
Perform arithmetic operations on polynomials. • Add and subtract polynomials.	Lesson 25b: Algebra	ULS Instructional Guides: Mathematics Instructional Tools: Math Pack/Numbers Instructional Tools: Number Journal

n2y Differentiated Tasks		
Level 3	**Level 2**	**Level 1**
• Students will independently solve equations involving adding and subtracting polynomials in the context of real-world problems.	• Students will solve equations involving adding and subtracting polynomials in the context of real-world problems with support.	• Students will select numbers (errorless choice) and count to solve equations involving adding and subtracting polynomials in the context of real-world problems.

Math Standards for Functions: Interpreting Functions | Grade 9–12

Common Core Standards	Your State's Extended Standards
GRADES 9–12 Understand the concept of a function and use function notation 1. CCSS.Math.Content.HSF-IF.A.1 Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If *f* is a function and *x* is an element of its domain, then *f*(*x*) denotes the output of *f* corresponding to the input *x*. The graph of *f* is the graph of the equation *y* = *f*(*x*). 2. CCSS.Math.Content.HSF-IF.A.2 Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context. 3. CCSS.Math.Content.HSF-IF.A.3 Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers. *For example, the Fibonacci sequence is defined recursively by f(0) = f(1) = 1, f(n+1) = f(n) + f(n-1) for n ≥ 1.* Interpret functions that arise in applications in terms of the context 4. CCSS.Math.Content.HSF-IF.B.4 For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. *Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.*	

n2y Instructional Targets	n2y High School Grade Band Lessons and Activities	n2y Supporting Activities
Understand the concept of a function and use function notation • Use functions to solve real-world problems. *Interpret functions that arise in applications in terms of the context* • Describe the rate of change of a function using words and numbers.	Lesson 25b: Algebra	ULS Instructional Guides: Mathematics Instructional Tools: Math Pack/Numbers Instructional Tools: Number Journal Standards Connection

n2y Differentiated Tasks		
Level 3	*Level 2*	*Level 1*
• Students will solve a real-world problem using a function. • Students will identify and explain the rate of change of a function.	• Students will solve a real-world problem using a function and models with support. • Students will identify the rate of change of a function with support.	• Students will select numbers (errorless choice) to solve real-world problems. • Students will select a rate of change (errorless choice) of a function.

Math Standards for Functions: Building Functions — Grade 9–12

Common Core Standards	Your State's Extended Standards

GRADES 9–12
Build a function that models a relationship between two quantities
1. CCSS.Math.Content.HSF-BF.A.1 Write a function that describes a relationship between two quantities.
   a. CCSS.Math.Content.HSF-BF.A.1a Determine an explicit expression, a recursive process, or steps for calculation from a context.
   b. CCSS.Math.Content.HSF-BF.A.1b Combine standard function types using arithmetic operations. *For example, build a function that models the temperature of a cooling body by adding a constant function to a decaying exponential, and relate these functions to the model.*
   c. CCSS.Math.Content.HSF-BF.A.1c (+) Compose functions. *For example, if T(y) is the temperature in the atmosphere as a function of height, and h(t) is the height of a weather balloon as a function of time, then T(h(t)) is the temperature at the location of the weather balloon as a function of time.*
2. CCSS.Math.Content.HSF-BF.A.2 Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.
Build new functions from existing functions
3. CCSS.Math.Content.HSF-BF.B.3 Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $k\,f(x)$, $f(kx)$, and $f(x + k)$ for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology. *Include recognizing even and odd functions from their graphs and algebraic expressions for them.*
4. CCSS.Math.Content.HSF-BF.B.4 Find inverse functions.
   a. CCSS.Math.Content.HSF-BF.B.4a Solve an equation of the form f(x) = c for a simple function f that has an inverse and write an expression for the inverse. *For example, f(x) =2 x^3 or f(x) = (x+1)/(x–1) for x ≠ 1.*
   b. CCSS.Math.Content.HSF-BF.B.4b (+) Verify by composition that one function is the inverse of another.
   c. CCSS.Math.Content.HSF-BF.B.4c (+) Read values of an inverse function from a graph or a table, given that the function has an inverse.
   d. CCSS.Math.Content.HSF-BF.B.4d (+) Produce an invertible function from a non-invertible function by restricting the domain.
5. CCSS.Math.Content.HSF-BF.B.5 (+) Understand the inverse relationship between exponents and logarithms and use this relationship to solve problems involving logarithms and exponents.	

n2y Instructional Targets	n2y High School Grade Band Lessons and Activities	n2y Supporting Activities
Build functions that model a relationship between two quantities. • Create a function that represents the relationship between two quantities. • Construct a graph that represents a defined change in a function.	Lesson 25b: Algebra	ULS Instructional Guides: Mathematics Instructional Tools: Math Pack/Numbers Instructional Tools: Number Journal Standards Connection

n2y Differentiated Tasks		
Level 3	*Level 2*	*Level 1*
• In the context of a real-world scenario, students will complete a function table to represent the relationship between two quantities. • Students will plot points on a graph to represent the rate of change of a function.	• In the context of a real-world scenario, students will complete a function table with support. • With support, students will plot points on a graph using coordinate points.	• In the context of a real-world scenario, students will select numbers (errorless choice) to fill in a function table. • Students will select plotted points on a graph (errorless choice).

Math Standards for Functions: Linear, Quadratic and Exponential Models	Grade 9–12
Common Core Standards	Your State's Extended Standards

GRADES 9–12

Construct and compare linear, quadratic, and exponential models and solve problems

1. CCSS.Math.Content.HSF-LE.A.1 Distinguish between situations that can be modeled with linear functions and with exponential functions.
   a. CCSS.Math.Content.HSF-LE.A.1a Prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals.
   b. CCSS.Math.Content.HSF-LE.A.1b Recognize situations in which one quantity changes at a constant rate per unit interval relative to another.
   c. CCSS.Math.Content.HSF-LE.A.1c Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.
2. CCSS.Math.Content.HSF-LE.A.2 Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).
3. CCSS.Math.Content.HSF-LE.A.3 Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function.
4. CCSS.Math.Content.HSF-LE.A.4 For exponential models, express as a logarithm the solution to $ab^{ct} = d$ where a, c, and d are numbers and the base b is 2, 10, or e; evaluate the logarithm using technology.

Interpret expressions for functions in terms of the situation they model

5. CCSS.Math.Content.HSF-LE.B.5 Interpret the parameters in a linear or exponential function in terms of a context.

n2y Instructional Targets	n2y High School Grade Band Lessons and Activities	n2y Supporting Activities
NOT ADDRESSED IN UNIQUE LEARNING SYSTEM		

Math Standards for Functions: Trigonometric Functions — Grade 9–12

Common Core Standards	Your State's Extended Standards
GRADES 9–12 **Extend the domain of trigonometric functions using the unit circle** 1. CCSS.Math.Content.HSF-TF.A.1 Understand radian measure of an angle as the length of the arc on the unit circle subtended by the angle. 2. CCSS.Math.Content.HSF-TF.A.2 Explain how the unit circle in the coordinate plane enables the extension of trigonometric functions to all real numbers, interpreted as radian measures of angles traversed counterclockwise around the unit circle. 3. CCSS.Math.Content.HSF-TF.A.3 (+) Use special triangles to determine geometrically the values of sine, cosine, tangent for π/3, π/4 and π/6, and use the unit circle to express the values of sine, cosine, and tangent for x, π+x, and 2π–x in terms of their values for x, where x is any real number. 4. CCSS.Math.Content.HSF-TF.A.4 (+) Use the unit circle to explain symmetry (odd and even) and periodicity of trigonometric functions. **Model periodic phenomena with trigonometric functions** 5. CCSS.Math.Content.HSF-TF.B.5 Choose trigonometric functions to model periodic phenomena with specified amplitude, frequency, and midline. 6. CCSS.Math.Content.HSF-TF.B.6 (+) Understand that restricting a trigonometric function to a domain on which it is always increasing or always decreasing allows its inverse to be constructed. 7. CCSS.Math.Content.HSF-TF.B.7 (+) Use inverse functions to solve trigonometric equations that arise in modeling contexts; evaluate the solutions using technology, and interpret them in terms of the context. **Prove and apply trigonometric identities** 8. CCSS.Math.Content.HSF-TF.C.8 Prove the Pythagorean identity $\sin^2(\theta) + \cos^2(\theta) = 1$ and use it to find $\sin(\theta)$, $\cos(\theta)$, or $\tan(\theta)$ given $\sin(\theta)$, $\cos(\theta)$, or $\tan(\theta)$ and the quadrant of the angle. 9. CCSS.Math.Content.HSF-TF.C.9 (+) Prove the addition and subtraction formulas for sine, cosine, and tangent and use them to solve problems.	

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Math Standards for Geometry: Expressing Geometric Properties with Equations | Grade 9–12

Common Core Standards	Your State's Extended Standards
GRADES 9–12 Translate between the geometric description and the equation for a conic section 1. CCSS.Math.Content.HSG-GPE.A.1 Derive the equation of a circle of given center and radius using the Pythagorean Theorem; complete the square to find the center and radius of a circle given by an equation. 2. CCSS.Math.Content.HSG-GPE.A.2 Derive the equation of a parabola given a focus and directrix. 3. CCSS.Math.Content.HSG-GPE.A.3 (+) Derive the equations of ellipses and hyperbolas given the foci, using the fact that the sum or difference of distances from the foci is constant. Use coordinates to prove simple geometric theorems algebraically 4. CCSS.Math.Content.HSG-GPE.B.4 Use coordinates to prove simple geometric theorems algebraically. *For example, prove or disprove that a figure defined by four given points in the coordinate plane is a rectangle; prove or disprove that the point (1, √3) lies on the circle centered at the origin and containing the point (0, 2).* 5. *CCSS.Math.Content.HSG-GPE.B.5* Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems (e.g., find the equation of a line parallel or perpendicular to a given line that passes through a given point). 6. CCSS.Math.Content.HSG-GPE.B.6 Find the point on a directed line segment between two given points that partitions the segment in a given ratio. 7. CCSS.Math.Content.HSG-GPE.B.7 Use coordinates to compute perimeters of polygons and areas of triangles and rectangles, e.g., using the distance formula.	

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Math Standards for Statistics and Probability: Conditional Probability and the Rules of Probability — Grade 9–12

Common Core Standards	Your State's Extended Standards
GRADES 9–12 **Understand independence and conditional probability and use them to interpret data** 1. CCSS.Math.Content.HSS-CP.A.1 Describe events as subsets of a sample space (the set of outcomes) using characteristics (or categories) of the outcomes, or as unions, intersections, or complements of other events ("or," "and," "not"). 2. CCSS.Math.Content.HSS-CP.A.2 Understand that two events *A* and *B* are independent if the probability of *A* and *B* occurring together is the product of their probabilities, and use this characterization to determine if they are independent. 3. CCSS.Math.Content.HSS-CP.A.3 Understand the conditional probability of *A* given *B* as *P*(*A* and *B*)/*P*(*B*), and interpret independence of *A* and *B* as saying that the conditional probability of *A* given *B* is the same as the probability of *A*, and the conditional probability of *B* given *A* is the same as the probability of *B*. 4. *CCSS.Math.Content.HSS-CP.A.4 Construct and interpret two-way frequency tables of data when two categories are associated with each object being classified. Use the two-way table as a sample space to decide if events are independent and to approximate conditional probabilities. For example, collect data from a random sample of students in your school on their favorite subject among math, science, and English. Estimate the probability that a randomly selected student from your school will favor science given that the student is in tenth grade. Do the same for other subjects and compare the results.* 5. *CCSS.Math.Content.HSS-CP.A.5 Recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations. For example, compare the chance of having lung cancer if you are a smoker with the chance of being a smoker if you have lung cancer.* **Use the rules of probability to compute probabilities of compound events in a uniform probability model** 6. CCSS.Math.Content.HSS-CP.B.6 Find the conditional probability of *A* given *B* as the fraction of *B*'s outcomes that also belong to *A*, and interpret the answer in terms of the model. 7. CCSS.Math.Content.HSS-CP.B.7 Apply the Addition Rule, P(A or B) = P(A) + P(B) – P(A and B), and interpret the answer in terms of the model. 8. CCSS.Math.Content.HSS-CP.B.8 (+) Apply the general Multiplication Rule in a uniform probability model, P(A and B) = P(A)P(B|A) = P(B)P(A|B), and interpret the answer in terms of the model. 9. CCSS.Math.Content.HSS-CP.B.9 (+) Use permutations and combinations to compute probabilities of compound events and solve problems.	

n2y Instructional Targets	n2y High School Grade Band Lessons and Activities	n2y Supporting Activities
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Math Standards for Statistics and Probability: Using Probability to Make Decisions | Grade 9–12

Common Core Standards	Your State's Extended Standards

GRADES 9–12
Calculate expected values and use them to solve problems
1. CCSS.Math.Content.HSS-MD.A.1 (+) Define a random variable for a quantity of interest by assigning a numerical value to each event in a sample space; graph the corresponding probability distribution using the same graphical displays as for data distributions.
2. CCSS.Math.Content.HSS-MD.A.2 (+) Calculate the expected value of a random variable; interpret it as the mean of the probability distribution.
3. CCSS.Math.Content.HSS-MD.A.3 (+) Develop a probability distribution for a random variable defined for a sample space in which theoretical probabilities can be calculated; find the expected value. *For example, find the theoretical probability distribution for the number of correct answers obtained by guessing on all five questions of a multiple-choice test where each question has four choices, and find the expected grade under various grading schemes.*
4. CCSS.Math.Content.HSS-MD.A.4 (+) Develop a probability distribution for a random variable defined for a sample space in which probabilities are assigned empirically; find the expected value. *For example, find a current data distribution on the number of TV sets per household in the United States, and calculate the expected number of sets per household. How many TV sets would you expect to find in 100 randomly selected households?*
Use probability to evaluate outcomes of decisions
5. CCSS.Math.Content.HSS-MD.B.5 (+) Weigh the possible outcomes of a decision by assigning probabilities to payoff values and finding expected values.
  a. CCSS.Math.Content.HSS-MD.B.5a Find the expected payoff for a game of chance. *For example, find the expected winnings from a state lottery ticket or a game at a fast food restaurant.*
  b. CCSS.Math.Content.HSS-MD.B.5b Evaluate and compare strategies on the basis of expected values. *For example, compare a high-deductible versus a low-deductible automobile insurance policy using various, but reasonable, chances of having a minor or a major accident.*
6. CCSS.Math.Content.HSS-MD.B.6 (+) Use probabilities to make fair decisions (e.g., drawing by lots, using a random number generator).
7. CCSS.Math.Content.HSS-MD.B.7 (+) Analyze decisions and strategies using probability concepts (e.g., product testing, medical testing, pulling a hockey goalie at the end of a game).	

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