

**Florida Department of Education
Adult General Education
Curriculum Framework**

ADULT BASIC EDUCATION – MATHEMATICS	
Program Title	Adult Basic Education (ABE)
Program Number	9900000
Course Title	ABE Mathematics
Course Number	School Districts: 9900001 Florida College System: ABX0100-ABX0199
CIP Number	1532010100
Grade Equivalent	0.0 – 8.9
Grade Level	30, 31
Program Length	Varies (See Program Length Section)

PURPOSE

Adult General Education Program: The Florida Department of Education administers the Adult General Education Program under the authority of [s. Florida Statute 1004.93, F.S.](#), and the [Workforce Investment and Opportunity Act \(WIOA\) \(2014\)](#). The AGE Program has multiple purposes. Primarily, it provides instruction in reading and language and mathematics to students seeking to obtain a high school diploma or its recognized equivalent. Another purpose is to support parents to become full partners in the educational development of their children and to improve the economic opportunities of their family. Finally, the AGE Program helps learners transition to postsecondary education and training and obtain employment.

Adult Basic Education Program: The purpose of the ABE Program is to provide standards that describe what students should know and be able to do in Reasoning through Language Arts (RLA) and Mathematics. The ABE RLA and Mathematics Standards serve several purposes:

- Ensure continuity with the K-12 Florida Benchmarks for Excellent Student Thinking (B.E.S.T.) Standards with the Adult Basic Education Program
- Provide a common language for the ABE educational functioning levels among those of the other programs within AGE: AHS, Adult ESOL, and GED® Preparation
- Provide basic skills instruction (Grade Equivalents 0.0 – 8.9) and critical thinking skills to prepare students for the GED® Preparation Program (Grade Equivalents 9.0 – 12.9) and for postsecondary education and employment
- Assist local adult education agencies with ABE curriculum development
- Provide guidance for ABE practitioners
- Ensure quality instruction through professional development

STUDENTS

Students eligible to enroll in the ABE Mathematics course are those who:

- Are age 16 years or older
- Are not enrolled in the K12 system
- Score within the Educational Functioning Levels (EFL) 1 – 4 and the Grade Equivalents 0.0 – 8.9 of the ABE Mathematics course as measured by FDOE-approved assessments.

Note: Students may enroll in the ABE Mathematics and ABE RLA courses separately or in both courses simultaneously.

EDUCATIONAL FUNCTIONING LEVELS

The Workforce Investment and Opportunity Act defines the term Educational Functioning Level as “the ABE, ASE and ESL literacy levels, as provided in the NRS Guidelines, that describe a set of skills and competencies that students demonstrate in the skill areas of the National Reporting System.” ([Code of Federal Regulations Title 34 Subtitle B Chapter IV Part 462](#)). The ABE Mathematics course is organized into four EFLs.

Table 1 shows the four EFLs of the ABE Mathematics course, as provided in the NRS Guidelines. It also shows the corresponding Grade Equivalent levels.

Table 1: NRS EFLs for the ABE Mathematics Course showing the relation of levels to the Grade Equivalent for each EFL

NRS Educational Functioning Levels	Course Title and Levels	Grade Equivalent
ABE Level 1	ABE Mathematics Level 1	0.0 – 1.9
ABE Level 2	ABE Mathematics Level 2	2.0 – 3.9
ABE Level 3	ABE Mathematics Level 3	4.0 – 5.9
ABE Level 4	ABE Mathematics Level 4	6.0 – 8.9

PROGRAM LENGTH

Table 2 illustrates the recommended maximum number of instructional hours for each level. It is understood, however, that each student learns at their individual pace and there will be students who successfully complete the program or attain their educational goals in fewer (or more) than the recommended maximum hours noted.

Table 2: Recommended Maximum Number of Hours by Educational Functioning Level

Course Title and Number	NRS Educational Functioning Levels	Recommended Maximum Hours
Adult Basic Education – Mathematics School Districts: 9900001 Florida College System: ABX0100- ABX0199	ABE Mathematics Level 1	450
	ABE Mathematics Level 2	450
	ABE Mathematics Level 3	300
	ABE Mathematics Level 4	300

CURRICULUM AND INSTRUCTION

The ABE Mathematics curriculum framework provides ABE instructors with the Anchor Standards in Mathematics that the adult learner needs. With “framework” being the operative word, it is the basis for designing curriculum and to assisting programs and teachers with selecting or creating instructional materials, techniques, and ongoing assessment.

The Florida DOE provides the ABE Mathematics curriculum framework to local programs across the state in order that local program personnel can design a curriculum that will serve the unique needs of their students and instructors. A fully developed curriculum at the local program will include the following elements, at a minimum. Program staff may contact the Florida DOE Bureau of Adult Education for additional information on developing an in-house curriculum.

- A description of educational outcomes that students will be expected to achieve upon completion of the course
- A set of core instructional materials (print and digital) aligned to the educational outcomes that students will be expected to have achieved upon completion of the course
- A series of needs assessment tools that helps teachers prioritize which standards are most relevant to the learning needs and educational goals of their students

- Pacing guides and matrices that display the scope and sequence of the curriculum
- A list of recommended websites, films, dictionaries available for teachers to select from
- A description of learning activities that may be used on a regular basis for reinforcement

Note: Instructors are not required to progress through the standards sequentially. The unique needs of each cohort of students can drive instruction and instructors may modify the sequence of teaching the standards.

ASSESSMENT

The Florida DOE has approved the following tests for the ABE Mathematics course:

- CASAS GOALS Math 900 Series
- TABE 11&12 Math

References for Assessment and Reporting: For complete information regarding assessment procedures and policies, see the [Florida DOE Assessment Technical Assessment Paper](#). For guidelines on the procedures for reporting data related to student test results, see the Florida DOE Division of Career and Adult Education (DCAE) [Office of Research and Evaluation](#).

Pre-testing: Federal and state policies require local adult education agencies to pre-test all new students within the first 12 hours of enrollment activity. The Florida DOE defines a new student as one who is not found as having been enrolled at the local agency at any point during the current program year and/or the previous program year. All new ABE Mathematics students are required to pre-test in the math skill area. The agency shall report the pre-test results to the Florida DOE per the guidelines of the DCAE Office of Research and Evaluation.

Post-testing: After a student participates in instruction for the number of hours recommended by the test publisher, the local agency shall post-test the student per the guidelines of the Florida DOE Assessment Technical Assistance Paper. The agency shall report the post-test results to the Florida DOE per the guidelines of the DCAE Office of Research and Evaluation.

Course Completion: For state and federal reporting purposes, completion of the ABE Mathematics course occurs when the student's post-test scores exceed NRS ABE level 4. The agency shall report the post-test results to the Florida DOE per the guidelines of the DCAE Office of Research and Evaluation.

ACCOMMODATIONS

Federal and state legislation requires the provision of accommodations for students with disabilities to meet individual needs and ensure equal access. Adult students with disabilities must self-identify, provide documentation, and request such services. Students with disabilities may need accommodations in areas such as instructional methods and materials, assignments and assessments, time demands and schedules, learning environment, assistive technology, and special communication systems. Documentation of the accommodations requested and provided should be maintained in a confidential file.

ADULT EDUCATION INSTRUCTOR CERTIFICATION REQUIREMENTS

As per [s. Florida Statute 1012.39 \(1\)\(b\), F.S.](#), each school district shall establish the minimal qualifications for part-time and full-time teachers in adult education programs.

INTEGRATED EDUCATION AND TRAINING (IET)

The Florida DOE Division of Career and Adult Education (DCAE) promotes the planning, development, and implementation of an integrated education and training (IET) service approach that provides concurrent and

contextualized adult education and literacy activities in combination with workforce preparation activities and workforce training for a specific occupation or occupational cluster for the purpose of educational and career advancement.

The IET service approach provides all levels of adult education students the opportunity to acquire the skills needed to:

- Transition to and complete postsecondary education and training programs
- Obtain and advance in employment leading to economic self-sufficiency
- Exercise the rights and responsibilities of citizenship

All IET programs must include the following three components:

- Adult education and literacy activities (§463.30)
- Workforce preparation activities (§463.34)
- Workforce training for a specific occupation or occupation cluster which can be any one of the training services defined in section 134(c)(3)(D), of WIOA

In order to meet the “integrated” requirement of IET, all services must include the following:

- Adult education and literacy activities run concurrently and contextually with workforce preparation activities and workforce training for a specific occupation or occupational cluster for the purpose of educational and career advancement
- Activities are of sufficient intensity and quality, and based on the most rigorous research available, particularly with respect to improving reading, writing, mathematics, and English proficiency of eligible individuals
- Occur simultaneously
- Use occupational relevant instructional materials

The integrated education and training program must have a single set of learning objectives that identifies specific adult education content, workforce preparation activities, and workforce training competencies, and the program activities function cooperatively.

ADULT BASIC EDUCATION STANDARDS BACKGROUND

In Program year 2022-2023, the Florida DOE aligned the previous version of its ABE Mathematics Standards to Florida’s K-12 Benchmarks for Excellent Student Thinking (B.E.S.T.) Standards for Mathematics in accordance with [Executive Order 19-32](#) dated January 31, 2019. This current version of the ABE Mathematics Standards is the result of that alignment. Professional curriculum writers developed the current set of standards with extensive input from a team of Florida Adult Education practitioners who thoroughly reviewed the standards. Thanks to their dedication and efforts, the current standards address the high-priority skills and content that students need to advance toward their postsecondary and career goals.

ABE MATHEMATICAL THINKING AND REASONING SKILLS STANDARDS FOR ADULT EDUCATION

Florida students are expected to engage with mathematics through the Mathematical Thinking and Reasoning (MTR) Standards. These standards are written in clear language so all stakeholders can understand them and students can use them as self-monitoring tools. The MTR Standards promote deeper learning and understanding of mathematics. The clarifications are included to guide teachers in the integration of the MTR Standards within mathematics instruction.¹

¹ This language comes directly from the Florida K-12 B.E.S.T. Standards

Mathematical Thinking and Reasoning Standards Levels 1 through 4**MA.ABE.MTR.1.1**

Actively participate in effortful learning both individually and collectively. Mathematicians who participate in effortful learning both individually and with others: Analyze the problem in a way that makes sense given the task. Ask questions that will help with solving the task. Build perseverance by modifying methods as needed while solving a challenging task. Stay engaged and maintain a positive mindset when working to solve tasks. Help and support each other when attempting a new method or approach.

Clarifications: Teachers who encourage students to participate actively in effortful learning both individually and with others: Cultivate a community of growth mindset learners. Foster perseverance in students by choosing tasks that are challenging. Develop students' ability to analyze and problem solve. Recognize students' effort when solving challenging problems.

MA.ABE.MTR.2.1

Demonstrate understanding by representing problems in multiple ways. Mathematicians who demonstrate understanding by representing problems in multiple ways: Build understanding through modeling and using manipulatives. Represent solutions to problems in multiple ways using objects, drawings, tables, graphs and equations. Progress from modeling problems with objects and drawings to using algorithms and equations. Express connections between concepts and representations. Choose a representation based on the given context or purpose.

Clarifications: Teachers who encourage students to demonstrate understanding by representing problems in multiple ways: Help students make connections between concepts and representations. Provide opportunities for students to use manipulatives when investigating concepts. Guide students from concrete to pictorial to abstract representations as understanding progresses. Show students that various representations can have different purposes and can be useful in different situations.

MA.ABE.MTR.3.1

Complete tasks with mathematical fluency. Mathematicians who complete tasks with mathematical fluency: Select efficient and appropriate methods for solving problems within the given context. Maintain flexibility and accuracy while performing procedures and mental calculations. Complete tasks accurately and with confidence. Adapt procedures to apply them to a new context. Use feedback to improve efficiency when performing calculations.

Clarifications: Teachers who encourage students to complete tasks with mathematical fluency: Provide students with the flexibility to solve problems by selecting a procedure that allows them to solve efficiently and accurately. Offer multiple opportunities for students to practice efficient and generalizable methods. Provide opportunities for students to reflect on the method they used and determine if a more efficient method could have been used.

MA.ABE.MTR.4.1 Engage in discussions that reflect on the mathematical thinking of self and others. Mathematicians who engage in discussions that reflect on the mathematical thinking of self and others: Communicate mathematical ideas, vocabulary and methods effectively. Analyze the mathematical thinking of others. Compare the efficiency of a method to those expressed by others. Recognize errors and suggest how to correctly solve the task. Justify results by explaining methods and processes. Construct possible arguments based on evidence.

Clarifications: Teachers who encourage students to engage in discussions that reflect on the mathematical thinking of self and others: Establish a culture in which students ask questions of the teacher and their peers, and error is an opportunity for learning. Create opportunities for students to discuss their thinking with peers. Select, sequence and present student work to advance and deepen understanding of correct and increasingly efficient methods. Develop students' ability to justify methods and compare their responses to the responses of their peers.

MA.ABE.MTR.5.1

Use patterns and structure to help understand and connect mathematical concepts. Mathematicians who use patterns and structure to help understand and connect mathematical concepts: Focus on relevant details within a problem. Create plans and procedures to logically order events, steps or ideas to solve problems. Decompose a complex problem into manageable parts. Relate previously learned concepts to new concepts. Look for similarities among problems. Connect solutions of problems to more complicated large-scale situations.

Clarifications: Teachers who encourage students to use patterns and structure to help understand and connect mathematical concepts: Help students recognize the patterns in the world around them and connect these patterns to mathematical concepts. Support students to develop generalizations based on the similarities found among problems. Provide opportunities for students to create plans and procedures to solve problems. Develop students' ability to construct relationships between their current understanding and more sophisticated ways of thinking.

MA.ABE.MTR.6.1

Assess the reasonableness of solutions. Mathematicians who assess the reasonableness of solutions: Estimate to discover possible solutions. Use benchmark quantities to determine if a solution makes sense. Check calculations when solving problems. Verify possible solutions by explaining the methods used. Evaluate results based on the given context.

Clarifications: Teachers who encourage students to assess the reasonableness of solutions: Have students estimate or predict solutions prior to solving. Prompt students to continually ask, "Does this solution make sense? How do you know?" Reinforce that students check their work as they progress within and after a task. Strengthen students' ability to verify solutions through justifications.

MA.ABE.MTR.7.1

Apply mathematics to real-world contexts. Mathematicians who apply mathematics to real-world contexts: Connect mathematical concepts to everyday experiences. Use models and methods to understand, represent and solve problems. Perform investigations to gather data or determine if a method is appropriate. Redesign models and methods to improve accuracy or efficiency.

Clarifications: Teachers who encourage students to apply mathematics to real-world contexts: Provide opportunities for students to create models, both concrete and abstract, and perform investigations. Challenge students to question the accuracy of their models and methods. Support students as they validate conclusions by comparing them to the given situation. Indicate how various concepts can be applied to other disciplines.

CODING SCHEME

Table 3 illustrates the coding scheme used to indicate the Strands, Standards and Benchmarks in the ABE Math Framework. The ABE Mathematics Standards are separated into seven Strands: Each Standard has one or more Benchmarks. The instructor may present topic-centered and/or project-based lessons that integrate standards from several strands. Each level-specific standard corresponds to the same-numbered K-12 B.E.S.T. standard. In other words, each standard identifying broad college and career readiness skills has a corresponding level-specific standard illustrating specific level-appropriate expectations called a benchmark skill.

Table 3: The Coding Scheme of ABE Mathematics Curriculum Framework

ABE Mathematics Curriculum Framework Coding Scheme

Strands:

NSO = Number Sense and Operations FR = Fractions AR = Algebraic Reasoning F = Function M = Measurement GR = Geometric Reasoning DP = Data and Probability				
Subject	NRS Level	Strand	Standard	Benchmark
Math	L3	NSO	1a	1
Examples: MA.L3.NSO.1a Understand the place value of multi-digit numbers. MA.L3.NSO.1a.1 Express how the value of a digit in a multi-digit whole number changes if the digit moves one place to the left or right. MA.L3.NSO.1a.2 Read and write multi-digit whole numbers from 0 to 1,000,000 using standard form, expanded form, and word form. MA.L3.NSO.1a.3 Plot, order, and compare multi-digit whole numbers up to 1,000,000. MA.L3.NSO.1a.4 Round whole numbers from 0 to 10,000 to the nearest 10,100 or 1,000. MA.L3.NSO.1a.5 Plot, order, and compare decimals up to the hundredths.				

ABE MATHEMATICAL STRANDS AND NRS LEVELS

Table 4 provides an overview of the seven strands (also known as domains) that comprise Florida’s ABE mathematic standards across four NRS levels. The mathematics standards are presented in two broad instructional groupings:

1. **Basic** = NRS levels 1 and 2 (Grade Equivalent 0.0 – 3.9)
2. **Intermediate** = NRS levels 3 and 4 (Grade Equivalent 4.0 – 8.9)

Table 4 presents the instructional levels of the ABE Mathematics course. Each instructional level has a limited number of standards. This allows mathematical instruction at each NRS level to have a narrow and deep focus that allows the student to develop an understanding of the following areas:

- Mathematical Foundations
- Mathematical Concepts
- Mathematical Procedural skills
- Mathematical Fluency.

The shaded areas indicate that the domain does not have a standard or primary focus for instruction at that particular instructional level. While the standards by design guide instruction, teachers may introduce, practice, reinforce, and develop fluency at lower and/or higher instructional levels.

Table 4: ABE Mathematics Strands/Domains across NRS Levels

ABE Mathematics Strands, NRS Levels, and Grade Equivalents				
Strands	Basic		Intermediate	
	NRS Level 1 GE 0 – 1.9	NRS Level 2 GE 2.0 – 3.9	NRS Level 3 GE 4.0 – 5.9	NRS Level 4 GE 6.0 – 8.9
Number Sense and Operations	✓	✓	✓	✓

Fractions		✓	✓	
Algebraic Reasoning	✓	✓	✓	✓
Function*				✓*
Measurement	✓	✓	✓	
Geometric Reasoning	✓	✓	✓	✓
Data and Probability	✓	✓	✓	✓

* In the Function domain, the suggested instruction should begin at the mid-point of the NRS level.

MATHEMATICS (MA)

Mathematics Standards NRS Level 1 (Basic)

Beginning ABE Literacy, GE 0.0 – 1.9

NRS level 1 emphasizes understanding place value. Mathematics instruction begins with basic literacy skills. The primary focus of level 1 is counting, cardinality, number sense, and base-ten operations. Students at this level are developing their understanding of whole number relationships, developing an understanding of measurement of physical objects, money and time, two-digit place value, and understanding the relationship between addition and subtraction.

This level begins building a basic foundation for algebra by introducing the concept of an equation, a variable, and the meaning of the equal sign, all within the context of addition and subtraction within 20.

Lastly, instruction provides some attention to categorizing, composing and decomposing two- and three- dimensional geometric figures as a basis for understanding the properties of congruence, similarity, and symmetry.

Mathematics Standards NRS Level 2 (Basic)

Beginning Basic Education, GE: 2.0 – 3.9

NRS level 2 emphasizes understanding place value for whole numbers to 1000; adding and subtracting multi-digit whole numbers, including using a standard algorithm and building towards fluency and algebraic reasoning in addition and subtraction to 3 digits; understanding and exploring strategies for multiplication and division within 100 and connecting to area of rectangles. These skills are a crucial foundation for fractions and prepare students for work with rational numbers, ratios, rates, and proportions in subsequent levels.

In the areas of measurement and geometry, priorities are using standard units to measure objects, time, and perimeter of geometric figures. Students develop the foundation for area, volume, congruence and symmetry by working with rectangular arrays and areas. Additionally, students extend geometric reasoning to lines and the attributes of quadrilaterals

Mathematics Standards NRS Level 3 (Intermediate)

Low Intermediate Basic Education, GE: 4.0 – 5.9

In NRS level 3, the focus at this instructional level is providing a conceptual foundation for learning functions. The emphasis on standards for numbers and operations continues; however, attention to algebra and geometry increase considerably.

Fluency with multi-digit whole numbers, using the standard algorithm, as well as calculations with fractions and decimals, are critical at this level. This extends to working with the concept of ratio and rates, addition and subtraction of fractions and decimals with procedural fluency, and understanding why the procedures for multiplying and dividing decimals and fractions make sense.

Students at level 3 generate patterns in numbers and shapes and focus on reading, writing, and interpreting expressions and equations. In addition, developing an understanding of the coordinate plane and plotting pairs of numbers in the first quadrant, classifying and measuring angles, and developing and finding volumes of right rectangular prisms take precedence.

Measurement and data instruction adds the understanding of measures of center and spread and display of collected data with line plots. Students also interpret mean, median, mode and range.

Mathematics Standards NRS Level 4
High Intermediate Basic Education, GE: 6.0 – 8.9

Like preceding levels, NRS level 4 also emphasizes number sense and operations, but here the attention is on fluency in all four operations with rational numbers—both negative and positive. Students must understand and translate between fractions, decimals and percents. The foundation for understanding of irrational numbers is built here, including calculation with square and cube roots, solving simple quadratic equations, and representing numbers in scientific notation.

Another area of concentration is algebra and functions: formulating and reasoning about expressions and equations, creating equivalent expressions using Law of Exponents and solving linear equations and inequalities as well as systems of linear equations; grasping the concept of a function; and using functions to describe quantitative relationships.

Building on the geometric analysis in level 3, the focus turns to analyzing two- and three-dimensional figures (including circles and cylinders), using distance, angle, similarity, and congruence and understanding basic right triangle trigonometry. Extending geometric reasoning to plotting points on the coordinate plane, area and volume of geometric figures and applying the Pythagorean Theorem.

NRS level 4 is where understanding and applying ratios, rates, and proportional reasoning are developed and applied to solve problems, and a bridge between rational number operations and algebraic relationships is created. Students also develop an understanding of proportional relationships in two variables.

Having worked with measurement data in previous levels, students learn to understand summary statistics and distributions and develop statistical thinking, including representing and comparing categorical and numerical data, and creating and reasoning about linear relationships including modeling an association in bivariate data with a linear equation. Students will also develop an understanding of probability.

ABE MATHEMATICS (MA) Standards and Benchmark Skills ABE Educational Functioning Levels 1 through 4	
Number Sense and Operations MA.L1.NSO (GE: 0.0 – 1.9)	
MA.L1.NSO.1 Recite number names sequentially within	MA.L1.NSO.1.1 Recite the number names to 100 by ones and by tens. MA.L1.NSO.1.2 Starting at a given number, count forward and backwards within 120

<p>100 and extend counting sequences. Develop an understanding for the place value of two-digit numbers.</p>	<p>by ones. Skip count by 2s to 20 and by 5s to 100. MA.L1.NSO.1.3 Read numbers from 0 to 100 written in standard form, expanded form, and word form. Write numbers from 0 to 100 using standard form and expanded form MA.L1.NSO.1.4 Compose and decompose two-digit numbers in multiple ways using tens and ones. Demonstrate each composition or decomposition with objects, drawings, and expressions or equations. MA.L1.NSO.1.5 Plot, order, and compare whole numbers up to 100 using the number line and terms less than, equal to, or greater than.</p>
<p>MA.L1.NSO.2 Develop an understanding of addition and subtraction operations with one and two-digit whole numbers.</p>	<p>MA.L1.NSO.2.1 Explore addition of two whole numbers from 0 to 10 and related subtraction facts. MA.L1.NSO.2.2 Recall addition facts with sums to 10 and related subtraction facts with automaticity. MA.L1.NSO.2.3 Add two whole numbers with sums from 0 to 20 and subtract using related facts with procedural reliability. MA.L1.NSO.2.4 Identify the number that is one more, one less, ten more, and ten less than a given two-digit number. MA.L1.NSO.2.5 Explore the addition of a two-digit number and a one-digit number with sums to 100.</p>
<p>Number Sense and Operations MA.L2.NSO (GE: 2.0 – 3.9)</p>	
<p>MA.L2.NSO.1 Understand the place value of four-digit whole numbers.</p>	<p>MA.L2.NSO.1.1 Read and write numbers from 0 to 10,000 using standard form, expanded form, and word form. MA.L2.NSO.1.2 Compose and decompose four-digit numbers in multiple ways using thousands, hundreds, tens, and ones. Demonstrate each composition or decomposition using objects, drawings, and expressions or equations. MA.L2.NSO.1.3 Plot, order, and compare whole numbers up to 10,000. MA.L2.NSO.1.4 Round whole numbers from 0 to 1,000 to the nearest 10 or 100.</p>
<p>MA.L2.NSO.2 Add and subtract multi-digit whole numbers. Build an understanding of multiplication and division operations.</p>	<p>MA.L2.NSO.2.1 Recall addition facts with sums to 20 and related subtraction facts with automaticity. MA.L2.NSO.2.2 Add and subtract multi-digit whole numbers, including using a standard algorithm with procedural fluency. MA.L2.NSO.2.3 Identify the number that is ten more, ten less, one hundred more, and one hundred less than a given three-digit number. MA.L2.NSO.2.4 Explore multiplication of two whole numbers with products from 0 to 144 and related division facts. MA.L2.NSO.2.5 Explore the addition of two whole numbers with sums up to 1,000. Explore the subtraction of a whole number from a whole number, each no larger than 1,000. MA.L2.NSO.2.6 Multiply a one-digit whole number by a multiple of 10, up to 90, or a multiple of 100, up to 900, with procedural reliability. MA.L2.NSO.2.7 Multiply two whole numbers from 0 to 12 and divide using related facts with procedural reliability.</p>
<p>Number Sense and Operations MA.L3.NSO (GE: 4.0 – 5.9)</p>	

<p>MA.L3.NSO.1a Understand the place value of multi-digit numbers.</p>	<p>MA.L3.NSO.1a.1 Express how the value of a digit in a multi-digit whole number changes if the digit moves one place to the left or right.</p> <p>MA.L3.NSO.1a.2 Read and write multi-digit whole numbers from 0 to 1,000,000 using standard form, expanded form, and word form.</p> <p>MA.L3.NSO.1a.3 Plot, order, and compare multi-digit whole numbers up to 1,000,000.</p> <p>MA.L3.NSO.1a.4 Round whole numbers from 0 to 10,000 to the nearest 10,100 or 1,000.</p> <p>MA.L3.NSO.1a.5 Plot, order, and compare decimals up to the hundredths.</p>
<p>MA.L3.NSO.1b Understand the place value of multi-digit numbers with decimals to the thousandths place.</p>	<p>MA.L3.NSO.1b.1 Express how the value of a digit in a multi-digit number with decimals to the thousandths changes if the digit moves one or more places to the left or right.</p> <p>MA.L3.NSO.1b.2 Read and write multi-digit numbers with decimals to the thousandths using standard form, word form, and expanded form.</p> <p>MA.L3.NSO.1b.3 Compose and decompose multi-digit numbers with decimals to the thousandths in multiple ways using the values of the digits in each place. Demonstrate the compositions or decompositions using objects, drawings, and expressions or equations.</p>
<p>MA.L3.NSO.1c Rewrite numbers in equivalent forms.</p>	<p>MA.L3.NSO.1c.1 Know and apply the Laws of Exponents to evaluate numerical expressions and generate equivalent numerical expressions, limited to whole-number exponents.</p>
<p>MA.L3.NSO.2a Build understanding of operations with multi-digit numbers including decimals.</p>	<p>MA.L3.NSO.2a.1 Recall multiplication facts with factors up to 12 and related division facts with automaticity.</p> <p>MA.L3.NSO.2a.2 Multiply two whole numbers, up to three digits by up to two digits, with procedural reliability.</p> <p>MA.L3.NSO.2a.3 Multiply two whole numbers, each up to two digits, including using a standard algorithm with procedural fluency.</p> <p>MA.L3.NSO.2a.4 Divide a whole number up to four digits by a one-digit whole number with procedural reliability. Represent remainders as fractional parts of the divisor.</p> <p>MA.L3.NSO.2a.5 Explore the multiplication and division of multi-digit whole numbers using estimation, rounding, and place value.</p> <p>MA.L3.NSO.2a.6 Identify the number that is one-tenth more, one-tenth less, one-hundredth more, and one-hundredth less than a given number.</p> <p>MA.L3.NSO.2a.7 Explore the addition and subtraction of multi-digit numbers with decimals to the hundredths.</p>
<p>MA.L3.NSO.2b Add, subtract, multiply and divide multi-digit numbers.</p>	<p>MA.L3.NSO.2b.1 Multiply multi-digit whole numbers, including using a standard algorithm with procedural fluency.</p> <p>MA.L3.NSO.2b.2 Divide multi-digit whole numbers, up to five digits by two digits, including using a standard algorithm with procedural fluency. Represent remainders as fractions</p> <p>MA.L3.NSO.2b.3 Add and subtract multi-digit numbers with decimals to the thousandths, including using a standard algorithm with procedural fluency</p> <p>MA.L3.NSO.2b.4 Explore the multiplication and division of multi-digit numbers with decimals to the hundredths using estimation, rounding, and place value.</p> <p>MA.L3.NSO.2b.5 Multiply and divide a multi-digit number with decimals to the tenths by one tenth and one-hundredth with procedural reliability</p>

<p>MA.L3.NSO.3 Apply properties of operations to rewrite numbers in equivalent forms.</p>	<p>MA.L3.NSO.3.1 Given a mathematical or real-world context, find the greatest common factor and least common multiple of two whole numbers.</p> <p>MA.L3.NSO.3.2 Rewrite the sum of two composite whole numbers having a common factor as a common factor multiplied by the sum of two whole numbers.</p> <p>MA.L3.NSO.3.3 Express composite whole numbers as a product of prime factors with natural number exponents.</p>
<p>Number Sense and Operations MA.L4.NSO (GE: 6.0 – 8.9)</p>	
<p>MA.L4.NSO.1a Extend knowledge of numbers to negative numbers and develop an understanding of absolute value.</p>	<p>MA.L4.NSO.1a.1 Extend previous understanding of numbers to define rational numbers. Plot, order, and compare rational numbers.</p> <p>MA.L4.NSO.1a.2 Given a mathematical or real-world context, represent quantities that have opposite directions using rational numbers. Compare them on a number line and explain the meaning of zero within its context.</p> <p>MA.L4.NSO.1a.3 Given a mathematical or real-world context, interpret the absolute value of a number as the distance from zero on a number line. Find the absolute value of rational numbers.</p> <p>MA.L4.NSO.1a.4 Solve mathematical and real-world problems involving absolute value, including the comparison of absolute value.</p>
<p>MA.L4.NSO.1b Rewrite rational numbers in different but equivalent forms including fractions, mixed numbers, repeating decimals and percentages to solve mathematical and real-world problems.</p>	<p>MA.L4.NSO.1b.1 Rewrite rational numbers in different but equivalent forms including fractions, mixed numbers, repeating decimals, and percentages to solve mathematical and real-world problems</p>
<p>MA.L4.NSO.1c Solve problems involving rational numbers, including numbers in scientific notation, and extend the understanding of rational numbers to irrational numbers.</p>	<p>MA.L4.NSO.1c.1 Extend previous understanding of rational numbers to define irrational numbers within the real number system. Locate an approximate value of a numerical expression involving irrational numbers on a number line.</p> <p>MA.L4.NSO.1c.2 Plot, order, and compare rational and irrational numbers, represented in various forms.</p> <p>MA.L4.NSO.1c.3 Extend previous understanding of the Laws of Exponents to include integer exponents. Apply the Laws of Exponents to evaluate numerical expressions and generate equivalent numerical expressions, limited to integer exponents and rational number bases, with procedural fluency with variables on both sides.</p> <p>MA.L4.NSO.1c.4 Add, subtract, multiply, and divide numbers expressed in scientific notation with procedural fluency.</p> <p>MA.L4.NSO.1c.5 Solve real-world problems involving operations with numbers expressed in scientific notation.</p> <p>MA.L4.NSO.1c.6 Solve multi-step mathematical and real-world problems involving the order of operations with rational numbers, including exponents and radicals.</p>
<p>MA.L4.NSO.2 Add, subtract, multiply and divide rational numbers.</p>	<p>MA.L4.NSO.2.1 Solve mathematical problems using multi-step order of operations with rational numbers including grouping symbols, whole-number exponents, and absolute value.</p> <p>MA.L4.NSO.2.2 Add, subtract, multiply, and divide rational numbers with procedural fluency.</p> <p>MA.L4.NSO.2.3 Solve real-world problems involving any of the four operations with</p>

	rational numbers.
MA.L4.NSO.3 Apply properties of operations to rewrite numbers in equivalent forms.	MA.L4.NSO.3.1 Evaluate positive rational numbers and integers with natural number exponents. MA.L4.NSO.3.2 Rewrite positive rational numbers in different but equivalent forms including fractions, terminating decimals, and percentages.
Fractions MA.L1.FR (GE: 0.0 – 1.9)	
<i>Not a focus standard at this level</i>	
Fractions MA.L2.FR (GE: 2.0 – 3.9)	
MA.L2.FR.1 Understand fractions as numbers and represent fractions.	MA.L2.FR.1.1 Partition circles and rectangles into two, three, or four equal-sized parts. Name the parts using appropriate language, and describe the whole as two halves, three thirds, or four fourths. MA.L2.FR.1.2 Partition rectangles into two, three, or four equal-sized parts in two different ways showing that equal-sized parts of the same whole may have different shapes. MA.L2.FR.1.3 Represent and interpret unit fractions in the form $1/n$ as the quantity formed by one part when a whole is partitioned into n equal parts. MA.L2.FR.1.4 Represent and interpret fractions, including fractions greater than one, in the form of m/n as the result of adding the unit fraction $1/n$ to itself m times. MA.L2.FR.1.5 Read and write fractions, including fractions greater than one, using standard form, numeral-word form, and word form.
MA.L2.FR.2 Order and compare fractions and identify equivalent fractions.	MA.L2.FR.2.1 Plot, order, and compare fractional numbers with the same numerator or the same denominator. MA.L2.FR.2.2 Identify equivalent fractions and explain why they are equivalent.
Fractions MA.L3.FR (GE: 4.0 – 5.9)	
MA.L3.FR.1a Develop an understanding of the relationship between different fractions and the relationship between fractions and decimals.	MA.L3.FR.1a.1 Model and express a fraction, including mixed numbers and fractions greater than one, with the denominator 10 as an equivalent fraction with the denominator 100. MA.L3.FR.1a.2 Use decimal notation to represent fractions with denominators of 10 or 100, including mixed numbers and fractions greater than 1, and use fractional notation with denominators of 10 or 100 to represent decimals. MA.L3.FR.1a.3 Identify and generate equivalent fractions, including fractions greater than one. Describe how the numerator and denominator are affected when the equivalent fraction is created. MA.L3.FR.1a.4 Plot, order, and compare fractions, including mixed numbers and fractions greater than one, with different numerators and different denominators.
MA.L3.FR.1b Interpret a fraction as an answer to a division problem.	MA.L3.FR.1b.1 Given a mathematical or real-world problem, represent the division of two whole numbers as a fraction.

<p>MA.L3.FR.2a Build a foundation of addition, subtraction and multiplication operations with fractions.</p>	<p>MA.L3.FR.2a.1 Decompose a fraction, including mixed numbers and fractions greater than one, into a sum of fractions with the same denominator in multiple ways. Demonstrate each decomposition with objects, drawings, and equations.</p> <p>MA.L3.FR.2a.2 Add and subtract fractions with like denominators, including mixed numbers and fractions greater than one, with procedural reliability.</p> <p>MA.L3.FR.2a.3 Explore the addition of a fraction with denominator of 10 to a fraction with denominator of 100 using equivalent fractions.</p> <p>MA.L3.FR.2a.4 Extend previous understanding of multiplication to explore the multiplication of a fraction by a whole number or a whole number by a fraction.</p>
<p>MA.L3.FR.2b Perform operations with fractions.</p>	<p>MA.L3.FR.2b.1 Extend previous understanding of multiplication to multiply a fraction by a fraction, including mixed numbers and fractions greater than 1, with procedural reliability.</p> <p>MA.L3.FR.2b.2 When multiplying a given number by a fraction less than 1 or a fraction greater than 1, predict and explain the relative size of the product to the given number without calculating.</p> <p>MA.L3.FR.2b.3 Extend previous understanding of division to explore the division of a unit fraction by a whole number and a whole number by a unit fraction.</p>
<p>Fractions MA.L4.FR (GE: 6.0 – 8.9)</p>	
<p><i>Not a focus standard at this level</i></p>	
<p>Algebraic Reasoning</p>	
<p>MA.L1.AR (GE: 0.0 – 1.9)</p>	
<p>MA.L1.AR.1a Solve addition problems with sums between 0 and 20 and subtraction problems using related facts.</p>	<p>MA.L1.AR.1a.1 Apply properties of addition to find a sum of three or more whole numbers.</p> <p>MA.L1.AR.1a.2 Solve addition and subtraction real-world problems using objects, drawings, or equations to represent the problem.</p>
<p>MA.L1.AR.1b Solve addition problems with sums between 0 and 100 and related subtraction problems.</p>	<p>MA.L1.AR.1ab.1 Solve one- and two-step addition and subtraction real-world problems.</p>
<p>MA.L1.AR.2a Develop an understanding of the equal sign.</p>	<p>MA.L1.AR.2a.1 Explain why addition or subtraction equations are true using objects or drawings.</p>
<p>MA.L1.AR.2b Develop an understanding of the relationship between addition and subtraction.</p>	<p>MA.L1.AR.2b.1 Restate a subtraction problem as a missing addend problem using the relationship between addition and subtraction.</p> <p>MA.L1.AR.2b.2 Determine and explain if equations involving addition or subtraction are true or false.</p> <p>MA.L1.AR.2b.3 Determine the unknown whole number in an addition or subtraction equation, relating three whole numbers, with the unknown in any position.</p>
<p>Algebraic Reasoning MA.L2.AR (GE: 2.0 – 3.9)</p>	
<p>MA.L2.AR.1a Solve addition problems with sums</p>	<p>MA.L2.AR.1a.1 Solve one- and two-step addition and subtraction real-world problems, limited to sums up to 100 and related differences.</p>

between 0 and 100 and related subtraction problems.	
MA.L2.AR.1b Solve multiplication and division problems.	<p>MA.L2.AR.1b.1 Apply the distributive property to multiply a one-digit number and two-digit number. Apply properties of multiplication to find a product of one-digit whole numbers.</p> <p>MA.3.AR.1.b.2 Solve one- and two-step real-world problems involving any of four operations with whole numbers.</p>
MA.L2.AR.2a Demonstrate an understanding of equality and addition and subtraction.	<p>MA.L2.AR.2a.1 Determine and explain whether equations involving addition and subtraction are true or false.</p> <p>MA.L2.AR.2a.2 Determine the unknown whole number in an addition or subtraction equation, relating three or four whole numbers, with the unknown in any position.</p>
MA.L2.AR.2b Develop an understanding of equality and multiplication and division.	<p>MA.L2.AR.2b.1 Restate a division problem as a missing factor problem using the relationship between multiplication and division.</p> <p>MA.L2.AR.2b.2 Determine and explain whether an equation involving multiplication or division is true or false.</p> <p>MA.L2.AR.2b.3 Determine the unknown whole number in a multiplication or division equation, relating three whole numbers, with the unknown in any position.</p>
MA.L2.AR.3 Develop an understanding of multiplication.	<p>MA.L2.AR.3.1 Represent an even number using two equal groups or two equal addends. Represent an odd number using two equal groups with one left over or two equal addends plus 1.</p> <p>MA.L2.AR.3.2 Use repeated addition to find the total number of objects in a collection of equal groups. Represent the total number of objects using rectangular arrays and equations.</p>
Algebraic Reasoning	
MA.L3.AR (GE: 4.0 – 5.9)	
MA.L3.AR.1 Represent and solve problems involving the four operations with whole numbers and fractions.	<p>MA.L3.AR.1.1 Solve real-world problems involving addition and subtraction of fractions with like denominators, including mixed numbers and fractions greater than one.</p> <p>MA.L3.AR.1.2 Solve real-world problems involving multiplication of a fraction by a whole number or a whole number by a fraction.</p> <p>MA.L3.AR.1.3 Solve multi-step real-world problems involving any combination of the four operations with whole numbers, including problems in which remainders must be interpreted within the context.</p> <p>MA.L3.AR.1.4 Solve real-world problems involving the addition, subtraction, or multiplication of fractions, including mixed numbers and fractions greater than 1.</p> <p>MA.L3.AR.1.5 Solve real-world problems involving division of a unit fraction by a whole number and a whole number by a unit fraction.</p>
MA.L3.AR.2 Demonstrate an understanding of equality, operations with whole numbers, the order of operations and equivalent numerical expressions.	<p>MA.L3.AR.2.1 Determine and explain whether an equation involving any of the four operations with whole numbers is true or false.</p> <p>MA.L3.AR.2.2 Given a mathematical or real-world context, write an equation involving multiplication or division to determine the unknown whole number with the unknown in any position.</p> <p>MA.L3.AR.2.3 Translate written real-world and mathematical descriptions into numerical expressions and numerical expressions into written mathematical descriptions.</p> <p>MA.L3.AR.2.4 Evaluate multi-step numerical expressions using order of operations.</p>

	<p>MA.L3.AR.2.5 Determine and explain whether an equation involving any of the four operations is true or false.</p> <p>MA.L3.AR.2.6 Given a mathematical or real-world context, write an equation involving any of the four operations to determine the unknown whole number with the unknown in any position.</p>
<p>MA.L3.AR.3a Recognize numerical patterns, including patterns that follow a given rule.</p>	<p>MA.L3.AR.3a.1 Determine factor pairs for a whole number from 0 to 144. Determine whether a whole number from 0 to 144 is prime, composite, or neither.</p> <p>MA.L3.AR.3a.2 Generate, describe, and extend a numerical pattern that follows a given rule.</p>
<p>MA.L3.AR.3b Analyze patterns and relationships between inputs and outputs.</p>	<p>MA.L3.AR.3b.1 Given a numerical pattern, identify and write a rule that can describe the pattern as an expression.</p> <p>MA.L3.AR.3b.2 Given a rule for a numerical pattern, use a two-column table to record the inputs and outputs.</p>
<p>Algebraic Reasoning MA.L4.AR (GE: 6.0 – 8.9)</p>	
<p>MA.L4.AR.1a Apply previous understanding of arithmetic expressions to algebraic expressions.</p>	<p>MA.L4.AR.1a.1 Given a mathematical or real-world context, translate written descriptions into algebraic expressions and translate algebraic expressions into written descriptions.</p> <p>MA.L4.AR.1a.2 Translate a real-world written description into an algebraic inequality in the form of $x > a$, $x < a$, $x \geq a$ or $x \leq a$. Represent the inequality on a number line.</p> <p>MA.L4.AR.1a.3 Evaluate algebraic expressions using substitution and order of operations.</p> <p>MA.L4.AR.1a.4 Apply the properties of operations to generate equivalent algebraic expressions with integer coefficients.</p>
<p>MA.L4.AR.1b Rewrite algebraic expressions in equivalent forms.</p>	<p>MA.L4.AR.1b.1 Apply properties of operations to add and subtract linear expressions with rational coefficients.</p> <p>MA.L4.AR.1b.2 Determine whether two linear expressions are equivalent.</p>
<p>MA.L4.AR.1c Generate equivalent algebraic expressions.</p>	<p>MA.L4.AR.1c.1 Apply the Laws of Exponents to generate equivalent algebraic expressions, limited to integer exponents and monomial bases.</p> <p>MA.L4.AR.1c.2 Apply properties of operations to multiply two linear expressions with rational coefficients.</p> <p>MA.L4.AR.1c.3 Rewrite the sum of two algebraic expressions having a common monomial factor as a common factor multiplied by the sum of two algebraic expressions.</p>
<p>MA.L4.AR.2a Develop an understanding for solving equations and inequalities. Write and solve one-step equations in one variable.</p>	<p>MA.L4.AR.2a.1 Given an equation or inequality and a specified set of integer values, determine which values make the equation or inequality true or false.</p> <p>MA.L4.AR.2a.2 Write and solve one-step equations in one variable within a mathematical or real-world context using addition and subtraction, where all terms and solutions are integers.</p> <p>MA.L4.AR.2a.3 Write and solve one-step equations in one variable within a mathematical or real-world context using multiplication and division, where all terms and solutions are integers.</p> <p>MA.L4.AR.2a.4 Determine the unknown decimal or fraction in an equation involving any of the four operations, relating three numbers, with the unknown in any position.</p>

<p>MA.L4.AR.2b Write and solve equations and inequalities in one variable.</p>	<p>MA.L4.AR.2b.1 Write and solve one-step inequalities in one variable within a mathematical context and represent solutions algebraically or graphically. MA.L4.AR.2b.2 Write and solve two-step equations in one variable within a mathematical or real-world context, where all terms are rational numbers.</p>
<p>MA.L4.AR.2c Solve multi-step one-variable equations and inequalities.</p>	<p>MA.L4.AR.2c.1 Solve multi-step linear equations in one variable, with rational number coefficients. Include equations with variables on both sides. MA.L4.AR.2c.2 Solve two-step linear inequalities in one variable and represent solutions algebraically and graphically. MA.L4.AR.2c.3 Given an equation in the form of $x^2 = p$ and $x^3 = q$, where p is a whole number and q is an integer, determine the real solutions.</p>
<p>MA.L4.AR.3a Understand ratio and unit rate concepts and use them to solve problems.</p>	<p>MA.L4.AR.3a.1 Given a real-world context, write and interpret ratios to show the relative sizes of two quantities using appropriate notation: a / b, a to b, or $a : b$ where $b \neq 0$. MA.L4.AR.3a.2 Given a real-world context, determine a rate for a ratio of quantities with different units. Calculate and interpret the corresponding unit rate. MA.L4.AR.3a.3 Extend previous understanding of fractions and numerical patterns to generate or complete a two- or three-column table to display equivalent part-to-part ratios and part-to-part-to-whole ratios. MA.L4.AR.3a.4 Apply ratio relationships to solve mathematical and real-world problems involving percentages using the relationship between two quantities. MA.L4.AR.3a.5 Solve mathematical and real-world problems involving ratios, rates, and unit rates, including comparisons, mixtures, ratios of lengths, and conversions within the same measurement system.</p>
<p>MA.L4.AR.3b Use percentages and proportional reasoning to solve problems</p>	<p>MA.L4.AR.3b.1 Apply previous understanding of percentages and ratios to solve multi-step real world percent problems. MA.L4.AR.3b.2 Apply previous understanding of ratios to solve real-world problems involving proportions. MA.L4.AR.3b.3 Solve mathematical and real-world problems involving the conversion of units across different measurement systems.</p>
<p>MA.L4.AR.3c Extend understanding of proportional relationships to two-variable linear equations.</p>	<p>MA.L4.AR.3c.1 Determine if a linear relationship is also a proportional relationship. MA.L4.AR.3c.2 Given a table, graph, or written description of a linear relationship, determine the slope. MA.L4.AR.3c.3 Given a table, graph, or written description of a linear relationship, write an equation in slope-intercept form. MA.L4.AR.3c.4 Given a mathematical or real-world context, graph a two-variable linear equation from a written description, a table, or an equation in slope-intercept form. MA.L4.AR.3c.5 Given a real-world context, determine and interpret the slope and y-intercept of a two-variable linear equation from a written description, a table, a graph, or an equation in slope-intercept form.</p>
<p>MA.L4.AR.4 Develop an understanding of two-variable systems of equations.</p>	<p>MA.L4.AR.4.1 Given a system of two linear equations and a specified set of possible solutions, determine which ordered pairs satisfy the system of linear equations. MA.L4.AR.4.2 Given a system of two linear equations represented graphically on the same coordinate plane, determine whether there is one solution, no solution, or infinitely many solutions. MA.L4.AR.4.3 Given a mathematical or real-world context, solve systems of two linear equations by graphing.</p>

Functions MA.L4.F (GE: 6.0 – 8.9) Note: Suggested instruction level begins at 7.0 – 8.9	
MA.L4.F.1 Define, evaluate and compare functions.	MA.L4.F.1.1 Given a set of ordered pairs, a table, a graph, or mapping diagram, determine whether the relationship is a function. Identify the domain and range of the relation. MA.L4.F.1.2 Given a function defined by a graph or an equation, determine whether the function is a linear function. Given an input-output table, determine whether it could represent a linear function. MA.L4.F.1.3 Analyze a real-world written description or graphical representation of a functional relationship between two quantities and identify where the function is increasing, decreasing, or constant.
Measurement MA.L1.M (GE: 0.0 – 1.9)	
MA.L1.M.1 Compare and measure the length of objects.	MA.L1.M.1.1 Express the length of an object, up to 20 units long, as a whole number of lengths by laying non-standard objects end to end with no gaps or overlaps. MA.L1.M.1.2 Estimate the length of an object to the nearest inch. Measure the length of an object to the nearest inch or centimeter. MA.L1.M.1.3 Compare and order the length of up to three objects using direct and indirect comparison.
Measurement MA.L2.M (GE: 2.0 – 3.9)	
MA.L2.M.1.1 Measure attributes of objects and solve problems involving measurement.	MA.L2.M.1.1 Select and use appropriate tools to measure the length of an object, the volume of liquid within a beaker, and temperature. MA.L2.M.1.2 Solve real-world problems involving any of the four operations with whole number lengths, masses, weights, temperatures, or liquid volumes.
MA.L2.M.2 Tell time and solve problems involving time and money.	MA.L2.M.2.1 Find the value of combinations of pennies, nickels, and dimes up to one dollar, and the value of combinations of one, five, and ten-dollar bills up to \$100. Use the ¢ and \$ symbols appropriately. MA.L2.M.2.2 Solve one- and two-step addition and subtraction real-world problems involving either dollar bills within \$100 or coins within 100¢ using \$ and ¢ symbols appropriately. MA.L2.M.2.3 Using analog and digital clocks tell and write time to the nearest minute using a.m. and p.m. appropriately. Express portions of an hour using the fractional terms half an hour, half-past, quarter of an hour, quarter after, and quarter til. MA.L2.M.2.4 Solve one- and two-step real-world problems involving elapsed time.
Measurement MA.L3.M (GE: 4.0 – 5.9)	
MA.L3.M.1 Measure the length of objects and solve multi-step problems involving measurement and conversions between units.	MA.L3.M.1.1 Select and use appropriate tools to measure attributes of objects. MA.L3.M.1.2 Convert within a single system of measurement using the units: yards, feet, inches; kilometers, meters, centimeters, millimeters; pounds, ounces; kilograms, grams; gallons, quarts, pints, cups; liter, milliliter; and hours, minutes, seconds. MA.L3.M.1.3 Solve multi-step real-world problems that involve converting measurement units to equivalent measurements within a single system of

	measurement.
MA.L3.M.2 Solve problems involving time and money.	<p>MA.L3.M.2.1 Solve two-step real-world problems involving distances and intervals of time using any combination of the four operations.</p> <p>MA.L3.M.2.2 Solve one- and two-step addition and subtraction real-world problems involving money using decimal notation.</p> <p>MA.L3.M.2.3 Solve multi-step real-world problems involving money using decimal notation.</p>
<p>Measurement MA.L4.M (GE: 6.0 – 8.9)</p>	
<p><i>Not a focus standard at this level</i></p>	
<p>Geometric Reasoning MA.L1.GR (GE: 0.0 – 1.9)</p>	
MA.L1.GR.1 Identify and analyze two- and three-dimensional figures based on their defining attributes.	<p>MA.L1.GR.1.1 Identify, compare, and sort two- and three-dimensional figures based on their attributes. Figures are limited to circles, semi-circles, triangles, rectangles, squares, trapezoids, hexagons, spheres, cubes, rectangular prisms, cones, and cylinders.</p> <p>MA.L1.GR.1.2 Sketch two-dimensional figures when given defining attributes. Figures are limited to triangles, rectangles, squares, and hexagons.</p> <p>MA.L1.GR.1.3 Compose and decompose two- and three-dimensional figures. Figures are limited to semi-circles, triangles, rectangles, squares, trapezoids, hexagons, cubes, rectangular prisms, cones, and cylinders.</p> <p>MA.L1.GR.1.4 Given a real-world object, identify parts that are modeled by two- and three-dimensional figures. Figures are limited to semi-circles, triangles, rectangles, squares and hexagons, spheres, cubes, rectangular prisms, cones, and cylinders.</p>
<p>Geometric Reasoning MA.L2.GR (GE: 2.0 – 3.9)</p>	
MA.L2.GR.1 Describe and identify relationships between lines and classify quadrilaterals.	<p>MA.L2.GR.1.1 Describe and draw points, lines, line segments, rays, intersecting lines, perpendicular lines, and parallel lines. Identify these in two-dimensional figures.</p> <p>MA.L2.GR.1.2 Informally explore angles as an attribute of two-dimensional figures. Figures are limited to triangles, rectangles, squares, pentagons, hexagons, and octagons.</p> <p>MA.L2.GR.1.3 Categorize two-dimensional figures based on the number and length of sides, number of vertices, whether they are closed or not, and whether the edges are curved or straight.</p> <p>MA.L2.GR.1.4 Identify and draw quadrilaterals based on their defining attributes. Quadrilaterals include parallelograms, rhombi, rectangles, squares, and trapezoids. Draw line(s) of symmetry in a two-dimensional figure and identify line symmetric two-dimensional figures. Identify and draw quadrilaterals based on their defining attributes. Quadrilaterals include parallelograms, rhombi, rectangles, squares, and trapezoids.</p>

	MA.L2.GR.1.5 Draw line(s) of symmetry in a two-dimensional figure and identify line symmetric two-dimensional figures.
MA.L2.GR.2 Solve problems involving the perimeter and area of rectangles.	<p>MA.L2.GR.2.1 Explore perimeter as an attribute of a figure by placing unit segments along the boundary without gaps or overlaps. Find perimeters of rectangles by counting unit segments.</p> <p>MA.L2.GR.2.2 Find the perimeter of a polygon with whole-number side lengths. Polygons are limited to triangles, rectangles, squares, and pentagons.</p> <p>MA.L2.GR.2.3 Explore area as an attribute of a two-dimensional figure by covering the figure with unit squares without gaps or overlaps. Find areas of rectangles by counting unit squares.</p> <p>MA.L2.GR.2.4 Find the area of a rectangle with whole-number side lengths using a visual model and a multiplication formula.</p> <p>MA.L2.GR.2.5 Solve mathematical and real-world problems involving the perimeter and area of rectangles with whole-number side lengths using a visual model and a formula.</p> <p>MA.L2.GR.2.6 Solve mathematical and real-world problems involving the perimeter and area of composite figures composed of non-overlapping rectangles with whole number side lengths.</p>
Geometric Reasoning MA.L3.GR (GE: 4.0 – 5.9)	
MA.L3.GR.1a Draw, classify and measure angles.	<p>MA.L3.GR.1a.1 Identify and classify angles as acute, right, obtuse, straight, or reflex.</p> <p>MA.L3.GR.1a.2 Estimate angle measures. Using a protractor, measure angles in whole-number degrees and draw angles of specified measure in whole-number degrees. Demonstrate that angle measure is additive.</p> <p>MA.L3.GR.1a.3 Solve real-world and mathematical problems involving unknown whole number angle measures. Write an equation to represent the unknown.</p>
MA.L3.GR.1b Classify two-dimensional figures and three-dimensional figures based on defining attributes.	<p>MA.L3.GR.1b.1 Classify triangles or quadrilaterals into different categories based on shared defining attributes. Explain why a triangle or quadrilateral would or would not belong to a category.</p> <p>MA.L3.GR.1b.2 Identify and classify three-dimensional figures into categories based on their defining attributes. Figures are limited to right pyramids, right prisms, right circular cylinders, right circular cones, and spheres.</p>
MA.L3.GR.2 Solve problems involving the perimeter and area of rectangles.	<p>MA.L3.GR.2.1 Solve perimeter and area mathematical and real-world problems, including problems with unknown sides, for rectangles with whole-number side lengths.</p> <p>MA.L3.GR.2.2 Solve problems involving rectangles with the same perimeter and different areas or with the same area and different perimeters.</p> <p>MA.L3.GR.2.3 Find the perimeter and area of a rectangle with fractional or decimal side lengths using visual models and formulas.</p>
MA.L3.GR.3 Solve problems involving the volume of right rectangular prisms.	<p>MA.L3.GR.3.1 Explore volume as an attribute of three-dimensional figures by packing them with unit cubes without gaps. Find the volume of a right rectangular prism with whole-number side lengths by counting unit cubes.</p> <p>MA.L3.GR.3.2 Find the volume of a right rectangular prism with whole-number side lengths using a visual model and a formula.</p> <p>MA.L3.GR.3.3 Solve real-world problems involving the volume of right rectangular prisms, including problems with an unknown edge length, with whole-number edge lengths using a visual model or a formula. Write an equation with a variable for the</p>

	unknown to represent the problem.
MA.L3.GR.4 Plot points and represent problems on the coordinate plane.	<p>MA.L3.GR.4.1 Identify the origin and axes in the coordinate system. Plot and label ordered pairs in the first quadrant of the coordinate plane.</p> <p>MA.L3.GR.4.2 Represent mathematical and real-world problems by plotting points in the first quadrant of the coordinate plane and interpret coordinate values of points in the context of the situation.</p> <p>MA.L3.GR.4.3 Solve mathematical and real-world problems by plotting points on a coordinate plane, including finding the perimeter or area of a rectangle.</p>
Geometric Reasoning	
MA.L4.GR (GE: 6.0 – 8.9)	
MA.L4.GR.1a Model and solve problems involving two-dimensional figures including applying previous understandings of the coordinate plane.	<p>MA.L4.GR.1a.1 Extend previous understanding of the coordinate plane to plot rational number ordered pairs in all four quadrants and on both axes. Identify the x- or y-axis as the line of reflection when two ordered pairs have an opposite x- or y-coordinate.</p> <p>MA.L4.GR.1a.2 Find distances between ordered pairs, limited to the same x-coordinate or the same y-coordinate, represented on the coordinate plane.</p> <p>MA.L4.GR.1a.3 Derive a formula for the area of a right triangle using a rectangle. Apply a formula to find the area of a triangle.</p> <p>MA.L4.GR.1a.4 Solve mathematical and real-world problems involving the area of quadrilaterals and composite figures by decomposing them into triangles or rectangles.</p>
MA.L4.GR.1b Solve problems involving two-dimensional figures, including circles.	<p>MA.L4.GR.1b.1 Apply formulas to find the areas of trapezoids, parallelograms, and rhombi.</p> <p>MA.L4.GR.1b.2 Solve mathematical or real-world problems involving the area of polygons or composite figures by decomposing them into triangles or quadrilaterals.</p> <p>MA.L4.GR.1b.3 Explore the proportional relationship between circumferences and diameters of circles. Apply a formula for the circumference of a circle to solve mathematical and real-world problems.</p> <p>MA.L4.GR.1b.4 Explore and apply a formula to find the area of a circle to solve mathematical and real-world problems</p> <p>MA.L4.GR.1b.5 Solve mathematical and real-world problems involving dimensions and areas of geometric figures, including scale drawings and scale factors.</p>
MA.L4.GR.1c Develop an understanding of the Pythagorean Theorem and angle relationships involving triangles.	<p>MA.L4.GR.1c.1 Apply the Pythagorean Theorem to solve mathematical and real-world problems involving unknown side lengths in right triangles.</p> <p>MA.L4.GR.1c.2 Apply the Pythagorean Theorem to solve mathematical and real-world problems involving the distance between two points in a coordinate plane.</p> <p>MA.L4.GR.1c.3 Use the Triangle Inequality Theorem to determine if a triangle can be formed from a given set of sides. Use the converse of the Pythagorean Theorem to determine if a right triangle can be formed from a given set of sides.</p> <p>MA.L4.GR.1c.4 Solve mathematical problems involving the relationships between supplementary, complementary, vertical, or adjacent angles.</p> <p>MA.L4.GR.1c.5 Solve problems involving the relationships of interior and exterior angles of a triangle.</p> <p>MA.L4.GR.1c.6 Develop and use formulas for the sums of the interior angles of regular polygons by decomposing them into triangles.</p>

<p>MA.L4.GR.2a Model and solve problems involving three dimensional figures.</p>	<p>MA.L4.GR.2a.1 Solve mathematical and real-world problems involving the volume of right rectangular prisms with positive rational number edge lengths using a visual model and a formula MA.L4.GR.2a.2 Given a mathematical or real-world context, find the surface area of right rectangular prisms and right rectangular pyramids using the figure’s net.</p>
<p>MA.L4.GR.2b Solve problems involving three-dimensional figures, including right circular cylinders.</p>	<p>MA.L4.GR.2b.1 Given a mathematical or real-world context, find the surface area of a right circular cylinder using the figure’s net. MA.L4.GR.2b.2 Solve real-world problems involving surface area of right circular cylinders. MA.L4.GR.2b.3 Solve mathematical and real-world problems involving volume of right circular cylinders.</p>
<p>MA.L4.GR.2c Understand similarity and congruence using models and transformations.</p>	<p>MA.L4.GR.2c.1 Given a preimage and image generated by a single transformation, identify the transformation that describes the relationship. MA.L4.GR.2c.2 Given a preimage and image generated by a single dilation, identify the scale factor that describes the relationship. MA.L4.GR.2c.3 Describe and apply the effect of a single transformation on two-dimensional figures using coordinates and the coordinate plane. MA.L4.GR.2c.4 Solve mathematical and real-world problems involving proportional relationships between similar triangles.</p>
<p>Data and Probability MA.L1.DP (GE: 0.0 – 1.9)</p>	
<p>MA.L1.DP.1 Collect, represent and interpret data using pictographs and tally marks.</p>	<p>MA.L1.DP.1.1 Collect data into categories and represent the results using tally marks or pictographs. MA.L1.DP.1.2 Interpret data represented with tally marks or pictographs by calculating the total number of data points and comparing the totals of different categories.</p>
<p>Data and Probability MA.L2.DP (GE: 2.0 – 3.9)</p>	
<p>MA.L2.DP.1 Collect, represent and interpret numerical and categorical data.</p>	<p>MA.L2.DP.1.1 Collect and represent numerical and categorical data with whole-number values using tables, scaled pictographs, scaled bar graphs, or line plots. Use appropriate titles, labels, and units. MA.L2.DP.1.2 Interpret data with whole-number values represented with tables, scaled pictographs, circle graphs, scaled bar graphs, or line plots by solving one- and two-step problems.</p>
<p>Data and Probability MA.L3.DP (GE: 4.0 – 5.9)</p>	
<p>MA.L3.DP.1 Collect and represent data and find the mean, mode, median or range of a data set.</p>	<p>MA.L3.DP.1.1 Develop an understanding of statistics and determine measures of center and measures of variability. MA.L3.DP.1.2 Recognize and formulate a statistical question that would generate numerical data. MA.L3.DP.1.3 Discuss a set of data collected to answer a statistical questions as a distribution which can be described by its center, spread, and overall shape MA.L3.DP.1.4 Collect and represent numerical data, including fractional and decimal values, using tables, stem-and-leaf plots, line plots, or line graphs MA.L3.DP.1.5 Create box plots and histograms to represent sets of numerical data</p>

	<p>within real world contexts.</p> <p>MA.L3.DP.1.6 Given a real-world scenario, solve problems involving numerical data and determine and describe how changes in data values impact measures of center and variation.</p>
<p>Data and Probability MA.L4.DP (GE: 6.0 – 8.9)</p>	
<p>MA.L4.DP.1a Summarize statistical distributions graphically and numerically.</p>	<p>MA.L4.DP.1a.1 Given a numerical data set within a real-world context, find and interpret mean, median, mode, and range.</p> <p>MA.L4.DP.1a.2 Given a box plot within a real-world context, determine the minimum, the lower quartile, the median, the upper quartile, and the maximum. Use this summary of the data to describe the spread and distribution of the data.</p> <p>MA.L4.DP.1a.3 Given a histogram or line plot within a real-world context, qualitatively describe and interpret the spread and distribution of the data, including any symmetry, skewness, gaps, clusters, outliers, and the range.</p>
<p>MA.L4.DP.1b Represent and interpret numerical and categorical data.</p>	<p>MA.L4.DP.1b.1 Interpret data and find the mean, mode, median, or range of a data set.</p> <p>MA.L4.DP.1b.2 Interpret numerical data, with whole-number values, represented with tables or line plots by determining the mean, mode, median, or range.</p> <p>MA.L4.DP.1b.3 Determine an appropriate measure of center or measure of variation to summarize numerical data, represented numerically or graphically, taking into consideration the context and any outliers.</p> <p>MA.L4.DP.1b.4 Given two numerical or graphical representations of data, use the measure(s) of center and measure(s) of variability to make comparisons, interpret results, and draw conclusions about the two populations.</p> <p>MA.L4.DP.1b.5 Given categorical data from a random sample, use proportional relationships to make predictions about a population.</p> <p>MA.L4.DP.1b.6 Use proportional reasoning to construct, display, and interpret data in circle graphs.</p> <p>MA.L4.DP.1b.6 Given a real-world numerical or categorical data set, choose and create an appropriate graphical representation.</p>
<p>MA.L4.DP.1c Represent and investigate numerical bivariate data.</p>	<p>MA.L4.DP.1c.1 Given a set of real-world bivariate numerical data, construct a scatter plot or a line graph as appropriate for the context.</p> <p>MA.L4.DP.1c.2 Given a scatter plot within a real-world context, describe patterns of association.</p> <p>MA.L4.DP.1c.3 Given a scatter plot with a linear association, informally fit a straight line.</p>
<p>MA.L4.DP.2a Develop an understanding of probability. Find and compare experimental and theoretical probabilities.</p>	<p>MA.L4.DP.2a.1 Determine the sample space for a simple experiment.</p> <p>MA.L4.DP.2a.2 Given the probability of a chance event, interpret the likelihood of it occurring. Compare the probabilities of chance events.</p> <p>MA.L4.DP.2a.3 Find the theoretical probability of an event related to a simple experiment.</p> <p>MA.L4.DP.2a.4 Use a simulation of a simple experiment to find experimental probabilities and compare them to theoretical probabilities.</p>
<p>MA.L4.DP.2b Represent and find probabilities of repeated experiments.</p>	<p>MA.L4.DP.2b.1 Determine the sample space for a repeated experiment.</p> <p>MA.L4.DP.2b.2 Find the theoretical probability of an event related to a repeated experiment.</p> <p>MA.L4.DP.2b.3 Solve real-world problems involving probabilities related to single or</p>

	repeated experiments, including making predictions based on theoretical probability.
--	--