Escondido Union High School District

ELD Math Literacy

EUHSD Board Approval Date: April 17, 2018
The EUHSD ELD Math Literacy curriculum document identifies what students should be able to know by grade level in a comprehensive standards-based course of study. The curriculum document is updated annually based on student academic achievement data, research and best practices, and input from stakeholders. The EUHSD curriculum document contains the following documents and/or information:

A. Course Description
B. Course Guidelines/Requirements - graduation credit information, transcript information, adopted materials, adopted technology, assessment outline
C. Instructional Materials References
D. Scope and Sequence Map with Essential Standards outlined by Unit
E. References to key essential design and implementation documents

A comprehensive course of study and/or program is designed so that all students have access to the rigorous curriculum necessary to graduate high school demonstrating college and career readiness skills. Student-Centered learning provides opportunity for collaboration, communication, and a robust learning environment and provides opportunities for all students to meet the goals of the district’s Instructional Focus at the time of this writing: “All students communicate their thinking, ideas and understanding by effectively using oral, written and/or non-verbal expression.”

Key design considerations in the transition to the new California Content Standards for Mathematics is a focus on changes in pedagogy. The instructional shifts and the Habits of Mind outlined within the Appendix of the standards guide classroom teaching and learning and form the foundation of curriculum and instructional design.
**ELD Math Literacy Course Description**

**Course Description:** *ELD Math Literacy* is a specialized course designed to enhance students’ language fluency and build mathematics numeracy. This class is designed specifically for students identified as English Learners (ELs) and—more particularly—for students with interrupted formal education (“SIFE”). In this intervention course students explore mathematics content through a variety of learning experiences based on the latest best practices and pedagogical research with the goal of helping to ensure they acquire the requisite concepts and skills to be successful when they enroll in the Math 1 course. Throughout this course students participate in small and whole group tasks promoting "math talk" in order to build the array of interpersonal and collaborative skills and habits of mind that will help ensure their success. A key focus of the course is to equip students with the formal academic language to support their mathematical understanding and overall language skills with the larger goal of effective college and career preparation.

**Course Requirements**

<table>
<thead>
<tr>
<th>Course Length: 1 Year</th>
<th>Grade Level: 9-12</th>
</tr>
</thead>
<tbody>
<tr>
<td>UC/CSU Requirement:</td>
<td>Graduation Requirement: EUHSD Elective Credit</td>
</tr>
<tr>
<td>Course Number (Semester A): 8776</td>
<td>Transcript Abbreviation (Semester A): ELD MATH LITERACY A</td>
</tr>
<tr>
<td>Course Number (Semester B): 8777</td>
<td>Transcript Abbreviation (Semester B): ELD MATH LITERACY B</td>
</tr>
<tr>
<td>Credits (Semester A): 5 Elective</td>
<td>Credits (Semester B): 5 Elective</td>
</tr>
<tr>
<td>Required Prerequisite/s: None</td>
<td>Recommended Prerequisite/s: N/A</td>
</tr>
<tr>
<td>Board Approval Date (Curriculum): 4/17/18</td>
<td>Board Approval Date (Materials):</td>
</tr>
<tr>
<td>Core Instructional Material/s: N/A</td>
<td>Supplemental Instructional Material/s:</td>
</tr>
<tr>
<td>Technology Resource/s: TI-84 Calculators</td>
<td></td>
</tr>
<tr>
<td>Assessment/s: Each unit includes formative (“for learning”) and summative assessments (“of learning”) presented in multiple forms and formats. Students are assessed on both math and language objectives.</td>
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</tbody>
</table>

**Meeting the Needs of ELs:**

- All courses in the EUHSD are designed and implemented in order to ensure each and every student can learn the concepts and skills necessary to be successful in the course.
- Our student information system is used by site leaders and instructors to acquire the language levels of EUHSD English Learners in order to ensure they are identified and served.
- Our approach to supporting English learners in based on the CA Department of Education (CDE) adopted language level proficiency descriptors and updated ELD Learning Standards. Visit the following website to learn more about those new descriptors and corresponding standards: [http://www.cde.ca.gov/sp/el/er/documents/eldstndspublication14.pdf](http://www.cde.ca.gov/sp/el/er/documents/eldstndspublication14.pdf)
- EUHSD also uses the ELA-ELD Framework to inform our pedagogical practices related to supporting English Learners. Visit the following URL to learn more about the new frameworks which describe in detail specific best practices used to support English Learners: [http://www.cde.ca.gov/ci/rl/cf/documents/elaeldfwchapter11.pdf](http://www.cde.ca.gov/ci/rl/cf/documents/elaeldfwchapter11.pdf)


The Scope and Sequence Guide is a California standards based document that delineates the standards based skills students are expected know and do in order to meet College and Career Readiness expectations. Each unit of study in the Scope and Sequence document is designed to build upon the previous unit and/or prerequisite coursework in support of student mastery of specific standards based skills. The Scope and Sequence document provides the framework of understanding for key assignments, key assessments, and instructional resources and strategies that serve to assist students in meeting unit-learning objectives. The document will be updated annually with input from all stakeholders.

In coursework requiring reading and writing, the literacy standards are not specifically stated in any one unit of study but are implemented throughout the curriculum as students participate in reading, writing, and speaking/listening standards based activities and performance tasks.

- By the end of this course students will engage in the following *math literacy work with substantial linguistic support:
  - While focusing on specific mathematical content, students share perspectives, ask and answer questions, examine specific cases, and address misconceptions; working collaboratively provides students opportunities to both develop and display understanding of important mathematical concepts.
  - Students listen to a variety of orally expressed mathematical information, such as explanations, procedures, or word problems, and demonstrate understanding by asking and answering questions.
  - Students need to be able to use their morphological knowledge and context (e.g., the words or symbols around an unknown word) to derive the meaning of multiple-meaning words or unknown words in mathematics.
  - Students use a variety of general academic and mathematics-specific words and phrases when writing or speaking about mathematics content.
  - As students explain procedures, justify solutions grounded in mathematical concepts, and describe concepts, they use their understandings about how ideas, events, and concepts in a spoken or written text are linked or refer to each other.
  - Students use a variety of verb types and appropriate verb tenses to express their understanding of mathematical concepts and procedures with precision.
  - When explaining their own thinking, or when listening to or reading the explanations or arguments of others, students need to understand how ideas are connected.
  - When explaining their own thinking, or when listening to or reading the explanations or arguments of others, students need to understand how ideas are condensed.

*Adapted from the “Integrating the CA ELD Standards in K-12 Mathematics and Science Teaching and Learning” by WestEd.org

This course—like all EUHSD mathematics courses—is based on and aligned to the latest California Learning Standards and Frameworks referenced here: CA CSS Mathematics
## Unit 1 – The Language of Math Structures and Operations

**Length:** 12 Weeks

<table>
<thead>
<tr>
<th>Focus Unit Common Core Math Standards:</th>
<th>Content Objectives:</th>
<th>Key Unit Assignments:</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.G.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.</td>
<td><strong>Students will be able to…</strong>&lt;br&gt;• Describe the place value for whole number and decimal digits from millionth to hundred billion and demonstrate understanding for number structure by writing expanded summation form.&lt;br&gt;• Use whole number exponent notation to describe repeated multiplication of rational numbers.&lt;br&gt;• Simplify numerical expressions involving multiplication and division of rational numbers written in exponential form with common bases.&lt;br&gt;• Locate integers on a number line and demonstrate understanding for comparative values of positive and negative numbers, using absolute value to represent distance from zero on a number line.&lt;br&gt;• Add, subtract, multiply, and divide integers, demonstrating understanding for the conceptual meaning of these operations (emphasis on conceptual understanding of operations, not computational accuracy without a calculator).&lt;br&gt;• Connect symbolic and visual forms for proper fractions, improper fractions, and mixed numbers, demonstrating understanding for equivalent and reduced forms.&lt;br&gt;• Add, subtract, multiply, and divide fractions, demonstrating understanding for the conceptual meaning of these operations (emphasis on conceptual understanding of operations, not computational accuracy without a calculator).</td>
<td><strong>Students will create visual models for number values written with varied symbolic forms.</strong>&lt;br&gt;<strong>Students will compute basic operations for multiple forms of numbers using calculators, following instructions using English text and symbols.</strong></td>
</tr>
</tbody>
</table>
7.NS.1b: 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. 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.

7.NS.1c: 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. 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.

7.NS.2c: Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers. Apply properties of operations as strategies to multiply and divide rational numbers.

7.NS.2d: Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers. 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.

**Unit ELD Standards (Emerging Level):**

P.I.A.1- Engage in conversational exchanges and express ideas on familiar current events and academic topics by asking and answering yes-no questions and wh- questions and responding using phrases and short sentences.

P.I.B.6c- Use knowledge of morphology (e.g., common prefixes and suffixes), context, reference materials, and visual cues to determine the meaning of unknown and multiple-meaning words on familiar topics.

P.I.C.12b- Use knowledge of morphology to appropriately select basic affixes (e.g., The skull protects the brain).

**Language Objectives:**

Students will be able to...

- Connect symbolic and visual forms for decimals, in relationship to fraction equivalents.
- Demonstrate understanding for algorithmic processes used to add, subtract, multiply, and divide decimals (emphasis on conceptual understanding of algorithmic processes, not computational accuracy without a calculator).
- Write equivalent values using fractions, decimals, and percent notations.

**Language Objectives:**

Students will be able to...

- Discuss mathematics by answering yes-no questions and wh-questions and responding using phrases and short sentences.
- Use morphology, context clues, and/or reference materials to determine the meaning of words.
- Choose the correct basic affix to change the form of words.
### Sample Unit Resources:

- Math Word Parts (Roots, Prefixes and Suffixes)-  
- Most Common Prefixes and Suffixes-  
- TI-84 Calculators
- Fraction bars
- Integer chips

### Unit Assessments:

- **Assessment for Learning**: Feedback given in many forms such as direct teacher conversations and revision suggestions, mini-quizzes, peer grading rubrics, and self-grading will help students to improve their quality of work and deepen their understanding. Informal daily assessments will be used daily by teachers through warm ups, journaling, questioning, and observations. Informal observations are important for teachers to conduct daily to get the pulse of the classroom and see how students are internalizing the content and procedures.
- **Assessment of Learning**: Small quizzes and larger unit tests will assess what students have learned.
- **Writing to Learn**: Students will keep a mathematics journal to write about their thinking during investigations and projects.
- **Performance Assessments**: There will be smaller projects and key assignments during the year in which students will show their mastery of the content through a project that allows students to display their learning using multiple representations.

### Language Assessments:

- **Note**: These can be incorporated into the assessments above when applicable.
  - Students use the correct affix for words in simple sentences that they write.
  - Students determine the meaning of new words by using the word parts that they have previously learned.
  - Students ask and answer questions using *wh-* words correctly.
# ELD Math Literacy Scope and Sequence

## Unit 2 – Basic Geometry

**Length:** 6 Weeks

### Unit Description:
This unit provides either an introduction or review of basic geometrical structures required for college preparatory study of mathematics, with consideration of students’ varied prior exposure to and engagement with these structures. For students with prior knowledge, instruction will provide content review with an emphasis on English vocabulary words and phrases used to describe these structures. Instruction will provide access to the content for all students regardless of the extent to which prior exposure may be limited, including extensive use of students’ native languages and cultural experiences.

### Unit Standards:

<table>
<thead>
<tr>
<th>Standard</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.MD.1</td>
<td>Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.</td>
</tr>
<tr>
<td>2.G.1</td>
<td>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.</td>
</tr>
<tr>
<td>3.G.1</td>
<td>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.</td>
</tr>
<tr>
<td>4.G.1</td>
<td>Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.</td>
</tr>
<tr>
<td>4.G.2</td>
<td>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.</td>
</tr>
<tr>
<td>5.MD.1</td>
<td>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.</td>
</tr>
<tr>
<td>5.G.1</td>
<td>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).</td>
</tr>
<tr>
<td>5.G.4</td>
<td>Classify two-dimensional figures in a hierarchy based on properties.</td>
</tr>
<tr>
<td>6.RP.3d</td>
<td>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 graphs.</td>
</tr>
</tbody>
</table>

### Learning Objectives:

**Students will be able to…**

- Measure quantities using appropriate, linear tools, volume tools, or scales.
- Draw common geometric figures and label them symbolically, including marking for congruent parts, perpendicular intersections, and parallel lines or line segments.
- Describe geometric figures using standard English vocabulary.
- Classify polygons based on the number of sides using standard English vocabulary.
- Graph ordered pairs on a coordinate plane.
- Describe locations on a coordinate plane using ordered pairs.

### Language Objectives:

**Students will be able to…**

- Use general academic terms and math specific terms to express themselves in simple oral and written sentences.
- Use general words and phrases to connect ideas together.

### Unit Assignments:

- Students will practice measuring common household and school objects.
- Students will create visual models for geometric figures.
- Students will draw geometric figures on coordinate planes using ordered pairs.
- Students will draw geometric figures on coordinate planes, and then provide the ordered pairs to describe the figures.
equations. Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.

6.NS.6c: 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. 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.

Unit ELD Standards (Emerging Level):

P.I.12a- Use familiar general academic (e.g., temperature, document) and domain-specific (e.g., characterization, photosynthesis, society, quadratic functions) words to create clear spoken and written texts.

P.II.2b- Apply knowledge of familiar language resources for linking ideas, events, or reasons throughout a text (e.g., using connecting/transition words and phrases, such as first, second, third) to comprehending and writing brief texts.

Unit Resources:

- TI-84 Calculators
- Three-dimensional models for common shapes

Unit Assessments:

- Assessment for Learning- Feedback given in many forms such as direct teacher conversations and revision suggestions, mini-quizzes, peer grading rubrics, and self-grading will help students to improve their quality of work and deepen their understanding. Informal daily assessments will be used daily by teachers through warm ups, journaling, questioning, and observations. Informal observations are important for teachers to conduct daily to get the pulse of the classroom and see how students are internalizing the content and procedures.
- Assessment of Learning- Brief quizzes and larger unit assessments will measure what students have learned.
- Writing to Learn- Students will keep a mathematics journal to write about their thinking during investigations and projects.
- Performance Assessments- There will be smaller projects and key assignments during the year in which students will show their mastery of the content through a project that allows students to display their learning using multiple representations.

Language Assessments:

*Note: These can be incorporated into the assessments above when applicable.

- Students use academic and math terms correctly in oral and written sentences.
- Students use words and phrases to connect ideas together.
ELD Math Literacy Scope and Sequence
Unit 3 – Beginning Algebra
Length: 5 Weeks

Unit Description: This unit provides either an introduction or review of basic mathematical structures and operations involving variables, with consideration of students’ varied prior exposure to and engagement with these concepts. For students with prior knowledge, instruction will provide content review with an emphasis on English vocabulary words and phrases that parallel mathematical operations. Instruction will provide access to the content for all students regardless of the extent to which prior exposure may be limited, including extensive use of students’ native languages and cultural experiences.

Unit Standards:

K.OA.1: Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem.

3.OA.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.

4.OA.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.

4.OA.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.

7.NS.3: Solve real-world and mathematical problems involving the four operations with rational numbers.

6.EE.2a: Write, read, and evaluate expressions in which letters stand for numbers. Write expressions that record operations with numbers and with letters standing for numbers.

6.EE.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.

Unit ELD Standards (Emerging Level):
P.I.B5- Demonstrate comprehension of oral presentations and discussions on familiar social and academic topics by asking and answering questions, with prompting and substantial support.
P.II.2b- Apply knowledge of familiar language resources for linking ideas, events, or reasons throughout a text (e.g., using connecting/transition words and phrases, such as first, second, third) to comprehending and writing brief texts.
P.II.B.3- Use a variety of verbs in different tenses (e.g., past, present, future, simple, progressive) appropriate to the text type and discipline to create short texts on familiar academic topics.

Learning Objectives:

Students will be able to...

• Connect variables in expressions and equations to unknown quantities from real world contexts.
• Write variable expressions and equations to represent simple situations described in English.
• Solve simple English word problems requiring addition, subtraction, multiplication, and/or division.

Language Objectives:

Students will be able to...

• Demonstrate comprehension of things they hear by asking and answering questions.
• Use general words and phrases to connect ideas together.
• Use a variety of verb tenses when speaking and writing.

Unit Assignments:

• Create visual models to link algebraic expressions and equations to key words using context written in native language(s).
• Create and solve word problems using native language(s).
• Create visual models to link algebraic expressions and equations to key words using context written in English.
• Prepare and give oral presentations, using native language(s) and/or English, to explain solutions to word problems provided in English.
Unit Resources:

- Coordinating Conjunctions to Connect Ideas Together-  
- TI-84 Calculators

Unit Assessments:

- Assessment for Learning- Feedback given in many forms such as direct teacher conversations and revision suggestions, mini-quizzes, peer grading rubrics, and self-grading will help students to improve their quality of work and deepen their understanding. Informal daily assessments will be used daily by teachers through warm ups, journaling, questioning, and observations. Informal observations are important for teachers to conduct daily to get the pulse of the classroom and see how students are internalizing the content and procedures.
- Assessment of Learning- Small quizzes and larger unit tests will assess what students have learned.
- Writing to Learn- Students will keep a mathematics journal to write about their thinking during investigations and projects.
- Performance Assessments- There will be smaller projects and key assignments during the year in which students will show their mastery of the content through a project that allows students to display their learning using multiple representations.

Language Assessments:

*These can be incorporated into the assessments above when applicable-

- After an oral presentation or discussion, students can ask and answer questions to show comprehension.
- Students use words and phrases to connect ideas together in their writing or speaking.
- Students write and speak using a variety of verb tenses.
ELD Math Literacy Scope and Sequence
Unit 4 – Advanced Geometry and Measurement
Length: 5 Weeks

Unit Description: This unit provides either an introduction or review of geometry and measurement concepts required for success in college preparatory study of mathematics, with consideration of students’ varied prior exposure to and engagement with these concepts. For students with prior knowledge, instruction will provide content review with an emphasis on English vocabulary words and phrases related to these concepts. Instruction will provide access to the content for all students regardless of the extent to which prior exposure may be limited, including extensive use of students’ native languages and cultural experiences.

Unit Standards:
3.MD.5: Recognize area as an attribute of plane figures and understand concepts of area measurement.
3.MD.6: Measure areas by counting unit squares (square cm, square m, square in, square ft, and improvised units).
3.MD.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.
5.MD.3: Recognize volume as an attribute of solid figures and understand concepts of volume measurement.
5.MD.5b: Relate volume to the operations of multiplication and addition and solve real-world and mathematical problems involving volume. 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.
6.RP.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.
6.G.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.
6.G.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 \( V = l \times w \times h \) and \( V = b \times h \) to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.
7.RP.1: Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units.
7.G.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.
7.G.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.

Learning Objectives:
Students will be able to…
- Solve rate problems involving various standard and metric measurement units.
- Interpret and create scale drawings representing real world objects.
- Identify and create congruent geometric figures using known congruent parts or symmetry and rigid transformations.
- Use standards symbols to write congruence statements.
- Follow verbal and symbolic descriptions of translations to draw images from given pre-images.
- Describe translations from a pre-image to an image using English verbal and symbolic descriptions.
- Use the Pythagorean Theorem to find unknown lengths in right triangles.
- Calculate perimeter, circumference, area, and volume for common geometric figures with known dimensions, with answers including appropriate units.
- Calculate area for irregular shaped figures using a variety of strategies involving the addition and or subtraction of areas for standard shapes.

Unit Assignments:
- Create visual representations to explain solutions for rate problems.
- Create scale drawings for real world objects in which dimensions are provided or measurement is possible.
- Create visual representations of congruent figures with explanations, written or diagrammatic, for why congruence is known.
- Create visual representations of labeled translations, with verbal and symbolic descriptions.
- Investigate the relationship between the lengths of the sides of right triangles by measuring and squaring the lengths measured.
- Create visual representations for perimeter, circumference, area, and volume to demonstrate the conceptual meaning of these measurements and calculations.
- Create visual representations for multiple strategies to calculate area for irregular shaped figures.
### 8.G.1: Verify experimentally the properties of rotations, reflections, and translations:

- **a.** Lines are taken to lines, and line segments to line segments of the same length.
- **b.** Angles are taken to angles of the same measure.
- **c.** Parallel lines are taken to parallel lines.

### 8.G.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.

### 8.G.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.G.9: Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.

### Unit ELD Standards (Emerging Level):

| PI.B.6c | Use knowledge of morphology (e.g., common prefixes and suffixes), context, reference materials, and visual cues to determine the meaning of unknown and multiple-meaning words on familiar topics. |
| PI.II.B.6 | Combine clauses in a few basic ways (e.g., creating compound sentences using *and, but, so*; creating complex sentences using *because*) to make connections between and to join ideas (e.g., *I want to read this book because it describes the solar system*). |
| PI.II.B.7 | Condense ideas in a few basic ways (e.g., by compounding verb or prepositional phrases) to create precise and detailed simple, compound, and complex sentences (e.g., *The students asked survey questions and recorded the responses*). |

### Language Objectives:

**Students will be able to...**

- Use morphology, context clues, and/or reference materials to determine the meaning of words.
- Combine clauses to create compound and complex sentences.
- Condense simple ideas by creating detailed longer sentences.
### Unit Resources:

- Teacher Reference Guide for Simple, Compound, Complex Sentences - [http://www2.ivcc.edu/rambo/eng1001/sentences.htm](http://www2.ivcc.edu/rambo/eng1001/sentences.htm)
- TI-84 Calculators
- Three-dimensional models for common shapes

### Unit Assessments:

- **Assessment for Learning**: Feedback given in many forms such as direct teacher conversations and revision suggestions, mini-quizzes, peer grading rubrics, and self-grading will help students to improve their quality of work and deepen their understanding. Informal daily assessments will be used daily by teachers through warm ups, journaling, questioning, and observations. Informal observations are important for teachers to conduct daily to get the pulse of the classroom and see how students are internalizing the content and procedures.
- **Assessment of Learning**: Small quizzes and larger unit tests will assess what students have learned.
- **Writing to Learn**: Students will keep a mathematics journal to write about their thinking during investigations and projects.
- **Performance Assessments**: There will be smaller projects and key assignments during the year in which students will show their mastery of the content through a project that allows students to display their learning using multiple representations.

### Language Assessments:

*These can be incorporated into the assessments above when applicable -

- Students determine the meaning of new words by using the word parts that they have previously learned.
- Students write or speak using compound and complex sentences.
- Students combine two simple sentences into one more detailed sentences.
ELD Math Literacy Scope and Sequence
Unit 5– Advanced Algebra Topics
Length: 8 Weeks

**Unit Description:** This unit provides either an introduction or review of basic linear and nonlinear functions involving variables, with consideration of students’ varied prior exposure to and engagement with these functions. For students with prior knowledge, instruction will provide content review with an emphasis on English vocabulary words and phrases to describe features of functions. Instruction will provide access to the content for all students regardless of the extent to which prior exposure may be limited, including extensive use of students’ native languages and cultural experiences.

**Unit Standards:**

| 6.EE.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.EE.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. |
| 7.RP.2a: Recognize and represent proportional relationships between quantities. 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. |
| 7.RP.2b: Recognize and represent proportional relationships between quantities. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships. |
| 7.RP.2c: Recognize and represent proportional relationships between quantities. Represent proportional relationships by equations. |
| 7.EE.1: Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients. |
| 8.EE.5: Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. |
| 8.EE.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. |
| 8.EE.8a: Analyze and solve pairs of simultaneous linear equations. 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. |

**Learning Objectives:**

**Students will be able to…**

- Solve one and two-step linear equations and inequalities using any method, demonstrating understanding for the meaning of the solution or solution range.
- Simplify variable monomial expressions involving properties of exponents and common factors.
- Simplify polynomial expressions involving addition and subtraction of like and unlike terms.
- Simplify polynomial expressions involving multiplication by a monomial term.
- Solve equations involving linear absolute value using any method, demonstrating understanding for the meaning of the solutions.
- Model real world contexts with linear patterns using tables, graphs, and equations.
- Calculate and interpret the slope of linear functions.
- Graph linear functions.
- Write equations for linear functions given tables or graphs.
- Solve systems of linear equations using any method, demonstrating understanding for the meaning of the solutions.
- Graph quadratic functions, identifying vertices, maximums, minimums, y-intercepts, x-intercepts, and axes of symmetry.

**Unit Assignments:**

- Explore paired values for linear equations, linear inequalities, and linear absolute value equations using tables and graphs.
- Use manipulatives to explore solving equations by keeping the two sides in balance, connecting actions with manipulatives to concepts of inverse operations.
- Create visual representations of monomials at various stages of simplification with explanations for how simplifications are possible.
- Use manipulatives to explore the ability and lack of ability to combine terms in polynomial expressions, connecting actions with manipulatives to symbolic representations.
- Use area models to represent polynomial expressions multiplied by a monomial term.
- Create visual representations showing the connections between real world contexts, tables, graphs, and equations.
- Explore rise over run ratios for linear graphs, noting equality of values for any pair of points used.
- Create visual representations showing graphs of linear functions, highlighting relationships between features of the graphs, tables, and of the equations.
- Create visual representations of linear systems of equations, demonstrating understanding of the
**8.EE.8b:** Analyze and solve pairs of simultaneous linear equations. Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection.

**8.EE.8c:** Analyze and solve pairs of simultaneous linear equations. Solve real-world and mathematical problems leading to linear equations in two variables.

**8.F.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.

**Unit ELD Standards (Emerging Level):**

**PI.B.6c:** Use knowledge of morphology (e.g., common prefixes and suffixes), context, reference materials, and visual cues to determine the meaning of unknown and multiple-meaning words on familiar topics.

**PII.B.6:** Combine clauses in a few basic ways (e.g., creating compound sentences using and, but, so; creating complex sentences using because) to make connections between and to join ideas (e.g., I want to read this book because it describes the solar system).

**PII.B.7:** Condense ideas in a few basic ways (e.g., by compounding verb or prepositional phrases) to create precise and detailed simple, compound, and complex sentences (e.g., The students asked survey questions and recorded the responses).

**Students will be able to...**

- Use morphology, context clues, and/or reference materials to determine the meaning of words.
- Combine clauses to create compound and complex sentences.
- Condense simple ideas by creating detailed longer sentences.

**Language Assessments:**

*These can be incorporated into the assessments above when applicable-

- Students determine the meaning of new words by using the word parts that they have previously learned.
- Students write or speak using compound and complex sentences.
- Students combine two simple sentences into one more detailed sentences.

**Unit Resources:**

- Connected Math – 7th Grade Linear Functions Unit
- Teacher Reference Guide for Simple, Compound, Complex Sentences- [http://www2.ivcc.edu/rambo/eng1001/sentences.htm](http://www2.ivcc.edu/rambo/eng1001/sentences.htm)
- TI-84 Calculators

**Unit Assessments:**

- Assessment for Learning- Feedback given in many forms such as direct teacher conversations and revision suggestions, mini-quizzes, peer grading rubrics, and self-grading will help students to improve their quality of work and deepen their understanding. Informal daily assessments will be used daily by teachers through warm ups, journaling, questioning, and observations. Informal observations are important for teachers to conduct daily to get the pulse of the classroom and see how students are internalizing the content and procedures.
- Assessment of Learning- Brief quizzes and larger unit assessments will measure what students have learned.
- Writing to Learn- Students will keep a mathematics journal to write about their thinking during investigations and projects.
- Performance Assessments- There will be smaller projects and key assignments during the year in which students will show their mastery of the content through a project that allows students to display their learning using multiple representations.
Potential Investigations for SIFE Students to Push In to the Math 1 SE class – will require regular coordination with the Math 1 SE teacher

Unit 1 – Patterns of Change
- Lesson 1, Investigation 1 – Bungee Physics
- Lesson 1, Investigation 2 – Taking Chances

Unit 2 – Patterns in Data
- Lesson 1, Think About the Situation – Stacking Pennies
- Lesson 1, Investigation 1 #7 – Heights (using class data)

Unit 3 – Linear Functions
- Lesson 1, Investigation 3 #5-7 – How’s The Weather Up There?
- Lesson 2, Investigation 3 #1-3 – Using Your Head…More or Less

Unit 4 – Discrete Mathematical Modeling
- Lesson 1, Investigation 1 – Locker Painting
- Lesson 2, Think About The Situation & Investigation 1 – Building a Model
- Lesson 2, Investigation 2 – Scheduling Meetings & Coloring Maps

Unit 5 – Exponential Functions
- Lesson 1, Think About the Situation & Investigation 1 – Pay it Forward
- Lesson 2, Think About the Situation – Oil Spill Cleanup
- Lesson 2, Investigation 1 – More Bounce to the Ounce
- Lesson 2, Investigation 3 – Modeling Decay

Unit 6 – Patterns in Shape
- Lesson 1, Investigation 1 – Building Triangles
- Lesson 1, Investigation 1 – Design Characteristics of Triangles and Quadrilaterals
- Lesson 1, Investigation 2 – Conditions of Congruence of Triangles
- Lesson 2, Investigation 1 – Symmetry Patterns
- Lesson 2, Investigation 3 – Patterns with Polygons
- Lesson 3, Investigation 1 – Building and Analyzing Polyhedra Frames

Unit 7 – Quadratic Functions
- Lesson 3, Think About the Situation – Basketball Shot Time in Flight

Unit 8 – Patterns in Chance
- Lesson 1, Investigation 1 – Probability Distributions
- Lesson 2, Investigation 1 – When It’s a 50-50 Chance