

Texas Essential Knowledge and Skills for Mathematics Correlation to Project M²

111.2. Kindergarten

(1) Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:

(A) apply mathematics to problems arising in everyday life, society, and the workplace;

(B) use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution;

(C) select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems;

(D) communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate;

(E) create and use representations to organize, record, and communicate mathematical ideas;

(F) analyze mathematical relationships to connect and communicate mathematical ideas; and

(G) display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication.

Each lesson addresses these standards through the following:

- In-depth investigations and games
- Questioning strategies, including who, what, when, where, why and how questions
- Oral and written mathematical communication and argumentation
 - Think Deeply questions
 - Talk moves
 - Talk frame
- Multiple models on the concrete, pictorial, and abstract levels
- Differentiation
 - Hint Cards
 - Think Beyond questions
- Creative problem solving/problem posing heuristic

(2) Number and operations. The student applies mathematical process standards to understand how to represent and compare whole numbers, the relative position and magnitude of whole numbers, and relationships within the numeration system. The student is expected to:

<p>(A) count forward and backward to at least 20 with and without objects;</p> <p>(B) read, write, and represent whole numbers from 0 to at least 20 with and without objects or pictures;</p> <p>(C) count a set of objects up to at least 20 and demonstrate that the last number said tells the number of objects in the set regardless of their arrangement or order;</p> <p>(D) recognize instantly the quantity of a small group of objects in organized and random arrangements;</p> <p>(E) generate a set using concrete and pictorial models that represents a number that is more than, less than, and equal to a given number up to 20;</p> <p>(F) generate a number that is one more than or one less than another number up to at least 20;</p> <p>(G) compare sets of objects up to at least 20 in each set using comparative language;</p> <p>(H) use comparative language to describe two numbers up to 20 presented as written numerals; and</p> <p>(I) compose and decompose numbers up to 10 with objects and pictures.</p>	<p>(A) Sizing Up the Lily Pad Space Station: Chapter 1, Lesson 2; Chapter 2, Lesson 1; Chapter 2, Lesson 2; Chapter 3, Lesson 1; Chapter 3, Lesson 2</p> <p>(B) Sizing Up the Lily Pad Space Station: Chapter 1, Lesson 2; Chapter 2, Lesson 1; Chapter 2, Lesson 2; Chapter 3, Lesson 1; Chapter 3, Lesson 2</p> <p>(C) Sizing Up the Lily Pad Space Station: Chapter 1, Lesson 2; Chapter 2, Lesson 1; Chapter 2, Lesson 2; Chapter 3, Lesson 1; Chapter 3, Lesson 2</p> <p>(E) Sizing Up the Lily Pad Space Station: Chapter 1, Lesson 2; Chapter 2, Lesson 1; Chapter 2, Lesson 2; Chapter 3, Lesson 1; Chapter 3, Lesson 2</p> <p>(G) Sizing Up the Lily Pad Space Station: Chapter 1, Lesson 2; Chapter 2, Lesson 1; Chapter 2, Lesson 2; Chapter 3, Lesson 1; Chapter 3, Lesson 2</p> <p>(H) Sizing Up the Lily Pad Space Station: Chapter 1, Lesson 2; Chapter 2, Lesson 1; Chapter 2, Lesson 2; Chapter 3, Lesson 1; Chapter 3, Lesson 2</p>
<p>(6) Geometry and measurement. The student applies mathematical process standards to analyze attributes of two-dimensional shapes and three-dimensional solids to develop generalizations about their properties. The student is expected to:</p>	
<p>(A) identify two-dimensional shapes, including circles, triangles, rectangles, and squares as special rectangles;</p> <p>(B) identify three-dimensional solids, including cylinders, cones, spheres, and cubes, in the real world;</p>	<p>(A) Exploring Shapes in Space: Intro; Chapter 1, Lesson 1; Chapter 1, Lesson 2; Chapter 2, Lesson 1; Chapter 2, Lesson 2; Chapter 3, Lesson 1; Chapter 3, Lesson 2</p> <p>(B) Exploring Shapes in Space: Intro; Chapter 1, Lesson 1; Chapter 1, Lesson 2; Chapter 2, Lesson 1; Chapter 2, Lesson 2; Chapter 3, Lesson 1; Chapter 3, Lesson 2</p>

<p>(C) identify two-dimensional components of three-dimensional objects;</p> <p>(D) identify attributes of two-dimensional shapes using informal and formal geometric language interchangeably;</p> <p>(E) classify and sort a variety of regular and irregular two- and three-dimensional figures regardless of orientation or size; and</p> <p>(F) create two-dimensional shapes using a variety of materials and drawings.</p>	<p>(C) Exploring Shapes in Space: Chapter 1, Lesson 2; Chapter 2, Lesson 1; Chapter 2, Lesson 2; Chapter 3, Lesson 1; Chapter 3, Lesson 2</p> <p>(D) Exploring Shapes in Space: Chapter 1, Lesson 2; Chapter 2, Lesson 1; Chapter 2, Lesson 2; Chapter 3, Lesson 1; Chapter 3, Lesson 2</p> <p>(E) Exploring Shapes in Space: Chapter 1, Lesson 1; Chapter 1, Lesson 2; Chapter 2, Lesson 1; Chapter 2, Lesson 2; Chapter 3, Lesson 1; Chapter 3, Lesson 2</p> <p>(F) Exploring Shapes in Space Chapter 3, Lesson 1; Chapter 3, Lesson 2</p>
<p>(7) Geometry and measurement. The student applies mathematical process standards to directly compare measurable attributes. The student is expected to:</p>	
<p>(A) give an example of a measurable attribute of a given object, including length, capacity, and weight; and</p> <p>(B) compare two objects with a common measurable attribute to see which object has more of/less of the attribute and describe the difference.</p>	<p>(A) Sizing up the Lily Pad Space Station: Intro; Chapter 1, Lesson 1; Chapter 1, Lesson 2; Chapter 2, Lesson 1; Chapter 2, Lesson 2; Chapter 3, Lesson 1; Chapter 3. Lesson 2</p> <p>(B) Sizing up the Lily Pad Space Station: Chapter 1, Lesson 1; Chapter 1, Lesson 2; Chapter 2, Lesson 1; Chapter 2, Lesson 2; Chapter 3, Lesson 1; Chapter 3. Lesson 2</p>
<p>(8) Data analysis. The student applies mathematical process standards to collect and organize data to make it useful for interpreting information. The student is expected to:</p>	
<p>(A) collect, sort, and organize data into two or three categories;</p> <p>(B) use data to create real-object and picture graphs; and</p> <p>(C) draw conclusions from real-object and picture graphs.</p>	<p>(A) Exploring Shapes in Space: Chapter 1, Lesson 1</p>

111.3. Grade 1

(1) Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:

(A) apply mathematics to problems arising in everyday life, society, and the workplace;

(B) use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution;

(C) select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems;

(D) communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate;

(E) create and use representations to organize, record, and communicate mathematical ideas;

(F) analyze mathematical relationships to connect and communicate mathematical ideas; and

(G) display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication.

Each lesson addresses these standards through the following:

- In-depth investigations and games
- Questioning strategies, including who, what, when, where, why and how questions
- Oral and written mathematical communication and argumentation
 - Think Deeply questions
 - Talk moves
 - Talk frame
- Multiple models on the concrete, pictorial, and abstract levels
- Differentiation
 - Hint Cards
 - Think Beyond questions
- Creative problem solving/problem posing heuristic

(6) Geometry and measurement. The student applies mathematical process standards to analyze attributes of two-dimensional shapes and three-dimensional solids to develop generalizations about their properties. The student is expected to:

(A) classify and sort regular and irregular two-dimensional shapes based on attributes using informal geometric language;

(B) distinguish between attributes that define a two-dimensional or three-dimensional figure and attributes that do not define the shape;

(C) create two-dimensional figures, including circles, triangles, rectangles, and squares, as special rectangles, rhombuses, and hexagons;

(D) identify two-dimensional shapes, including circles, triangles, rectangles, and squares, as special rectangles, rhombuses, and hexagons and describe their attributes using formal geometric language;

(E) identify three-dimensional solids, including spheres, cones, cylinders, rectangular prisms (including cubes), and triangular prisms, and describe their attributes using formal geometric language;

(F) compose two-dimensional shapes by joining two, three, or four figures to produce a target shape in more than one way if possible;

(G) partition two-dimensional figures into two and four fair shares or equal parts and describe the parts using words; and

(H) identify examples and non-examples of halves and fourths.

(A) Exploring Shapes in Space:
Intro; Chapter 1, Lesson 1; Chapter 1, Lesson 2; Chapter 2, Lesson 1;
Chapter 3, Lesson 1; Chapter 3, Lesson 2

(A) Exploring Shape Games:
Intro; Chapter 1, Lesson 1; Chapter 1, Lesson 2; Chapter 2, Lesson 1;
Chapter 2, Lesson 2; Chapter 3, Lesson 1; Chapter 3, Lesson 2

(B) Exploring Shapes in Space:
Intro; Chapter 1, Lesson 1; Chapter 1, Lesson 2; Chapter 2, Lesson 1,
Chapter 2, Lesson 2; Chapter 3, Lesson 1; Chapter 3, Lesson 2

(B) Exploring Shape Games:
Intro; Chapter 1, Lesson 1; Chapter 1, Lesson 2; Chapter 2, Lesson 1;
Chapter 2, Lesson 2; Chapter 3, Lesson 1; Chapter 3, Lesson 2

(C) Exploring Shapes in Space:
Chapter 3, Lesson 1; Chapter 3, Lesson 2

(C) Exploring Shape Games:
Chapter 1, Lesson 1; Chapter 1, Lesson 2; Chapter 3, Lesson 2

(D) Exploring Shapes in Space:
Intro; Chapter 3, Lesson 1; Chapter 3, Lesson 2

(D) Exploring Shape Games:
Intro; Chapter 1, Lesson 1; Chapter 1, Lesson 2; Chapter 2, Lesson 1;
Chapter 2, Lesson 2; Chapter 3, Lesson 1; Chapter 3, Lesson 2

(E) Exploring Shapes in Space:
Intro; Chapter 1, Lesson 1; Chapter 1, Lesson 2; Chapter 2, Lesson 1,
Chapter 2, Lesson 2

(F) Exploring Shape Games:
Chapter 1, Lesson 1; Chapter 1, Lesson 2; Chapter 2, Lesson 1;
Chapter 2, Lesson 2; Chapter 3, Lesson 1; Chapter 3, Lesson 2

(F) Creating the School Measurement Fair:
Chapter 2, Lesson 1

(G) Creating the School Measurement Fair:
Chapter 2, Lesson 1

<p>(7) Geometry and measurement. The student applies mathematical process standards to select and use units to describe length and time. The student is expected to:</p>	
<p>(A) use measuring tools to measure the length of objects to reinforce the continuous nature of linear measurement;</p> <p>(B) illustrate that the length of an object is the number of same-size units of length that, when laid end-to-end with no gaps or overlaps, reach from one end of the object to the other;</p> <p>(C) measure the same object/distance with units of two different lengths and describe how and why the measurements differ;</p> <p>(D) describe a length to the nearest whole unit using a number and a unit; and</p> <p>(E) tell time to the hour and half hour using analog and digital clocks.</p>	<p>(A) Sizing up the Lily Pad Space Station: Intro; Chapter 1, Lesson 1; Chapter 1, Lesson 2; Chapter 2, Lesson 1</p> <p>(A) Creating the School Measurement Fair: Intro</p> <p>(B) Sizing up the Lily Pad Space Station: Chapter 1, Lesson 1; Chapter 1, Lesson 2; Chapter 2, Lesson 1; Chapter 2, Lesson 2 (note this is area, not length); Chapter 3, Lesson 1 (note this is volume, not length)</p> <p>(B) Creating the School Measurement Fair: Chapter 3, Lesson 1; Chapter 3, Lesson 2</p> <p>(C) Sizing up the Lily Pad Space Station: Chapter 1, Lesson 2; Chapter 2, Lesson 1; Chapter 2, Lesson 2 (note this is area, not length); Chapter 3, Lesson 1 (note this is volume, not length)</p> <p>(C) Creating the School Measurement Fair: Chapter 3, Lesson 1; Chapter 3, Lesson 2</p> <p>(D) Sizing up the Lily Pad Space Station: Chapter 1, Lesson 2; Chapter 2, Lesson 1; Chapter 2, Lesson 2 (note this is area, not length); Chapter 3, Lesson 1 (note this is volume, not length)</p> <p>(D) Creating the School Measurement Fair: Chapter 3, Lesson 1; Chapter 3, Lesson 2</p>
<p>(8) Data analysis. The student applies mathematical process standards to organize data to make it useful for interpreting information and solving problems. The student is expected to:</p>	
<p>(A) collect, sort, and organize data in up to three categories using models/representations such as tally marks or T-charts;</p>	<p>(A) Exploring Shapes in Space: Chapter 1, Lesson 1</p> <p>(A) Exploring Shape Games: Chapter 2, Lesson 1; Chapter 2, Lesson 2</p>

(B) use data to create picture and bar-type graphs; and

(C) draw conclusions and generate and answer questions using information from picture and bar-type graphs.

111.4. Grade 2

(1) Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:

- (A) apply mathematics to problems arising in everyday life, society, and the workplace;
- (B) use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution;
- (C) select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems;
- (D) communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate;
- (E) create and use representations to organize, record, and communicate mathematical ideas;
- (F) analyze mathematical relationships to connect and communicate mathematical ideas; and
- (G) display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication.

Each lesson addresses these standards through the following:

- In-depth investigations and games
- Questioning strategies, including who, what, when, where, why and how questions
- Oral and written mathematical communication and argumentation
 - Think Deeply questions
 - Talk moves
 - Talk frame
- Multiple models on the concrete, pictorial, and abstract levels
- Differentiation
 - Hint Cards
 - Think Beyond questions
- Creative problem solving/problem posing heuristic

(3) Number and operations. The student applies mathematical process standards to recognize and represent fractional units and communicates how they are used to name parts of a whole. The student is expected to:

- (A) partition objects into equal parts and name the parts, including halves, fourths, and eighths, using words;

(A) Using Everyday Measures:
Chapter 3, Lesson 1

<p>(B) explain that the more fractional parts used to make a whole, the smaller the part; and the fewer the fractional parts, the larger the part;</p> <p>(C) use concrete models to count fractional parts beyond one whole using words and recognize how many parts it takes to equal one whole; and</p> <p>(D) identify examples and non-examples of halves, fourths, and eighths.</p>	<p>(B) Using Everyday Measures: Chapter 3, Lesson 1</p> <p>(C) Using Everyday Measures: Chapter 3, Lesson 1</p> <p>(D) Using Everyday Measures: Chapter 3, Lesson 1</p>
<p>(4) Number and operations. The student applies mathematical process standards to develop and use strategies and methods for whole number computations in order to solve addition and subtraction problems with efficiency and accuracy. The student is expected to:</p>	
<p>(A) recall basic facts to add and subtract within 20 with automaticity;</p> <p>(B) add up to four two-digit numbers and subtract two-digit numbers using mental strategies and algorithms based on knowledge of place value and properties of operations;</p> <p>(C) solve one-step and multi-step word problems involving addition and subtraction within 1,000 using a variety of strategies based on place value, including algorithms; and</p> <p>(D) generate and solve problem situations for a given mathematical number sentence involving addition and subtraction of whole numbers within 1,000.</p>	<p>(A) Using Everyday Measures: Chapter 2, Lesson 1</p> <p>(B) Using Everyday Measures: Chapter 2, Lesson 1</p> <p>(C) Using Everyday Measures: Chapter 2, Lesson 1</p> <p>(D) Using Everyday Measures: Chapter 2, Lesson 1</p>
<p>(8) Geometry and measurement. The student applies mathematical process standards to analyze attributes of two-dimensional shapes and three-dimensional solids to develop generalizations about their properties. The student is expected to:</p>	
<p>(A) create two-dimensional shapes based on given attributes, including number of sides and vertices;</p>	<p>(A) Exploring Shapes in Space: Chapter 3, Lesson 1; Chapter 3, Lesson 2</p> <p>(A) Exploring Shape Games:</p>

(B) classify and sort three-dimensional solids, including spheres, cones, cylinders, rectangular prisms (including cubes as special rectangular prisms), and triangular prisms, based on attributes using formal geometric language;

(C) classify and sort polygons with 12 or fewer sides according to attributes, including identifying the number of sides and number of vertices;

(D) compose two-dimensional shapes and three-dimensional solids with given properties or attributes; and

(E) decompose two-dimensional shapes such as cutting out a square from a rectangle, dividing a shape in half, or partitioning a rectangle into identical triangles and identify the resulting geometric parts.

Chapter 1, Lesson 1; Chapter 1, Lesson 2

(A) Designing a Shape Gallery:
Intro; Chapter 1, Lesson 1; Chapter 1, Lesson 2; Chapter 2, Lesson 2;
Chapter 3, Lesson 2

(B) Exploring Shapes in Space:
Chapter 1, Lesson 1; Chapter 1, Lesson 2;

(B) Designing a Shape Gallery:
Chapter 2, Lesson 1; Chapter 2, Lesson 2; Chapter 3, Lesson 1;
Chapter 3, Lesson 2

(C) Exploring Shapes in Space:
Chapter 3, Lesson 1; Chapter 3, Lesson 2

(C) Exploring Shape Games:
Chapter 1, Lesson 1; Chapter 1, Lesson 2; Chapter 2, Lesson 1;
Chapter 2, Lesson 2

(C) Designing a Shape Gallery:
Intro; Chapter 1, Lesson 1; Chapter 1, Lesson 2; Chapter 2, Lesson 2;
Chapter 3, Lesson 2

(D) Exploring Shapes in Space:
Chapter 1, Lesson 1; Chapter 1, Lesson 2; Chapter 3, Lesson 1;
Chapter 3, Lesson 2

(D) Exploring Shape Games:
Chapter 1, Lesson 1; Chapter 1, Lesson 2

(D) Designing a Shape Gallery:
Chapter 1, Lesson 1; Chapter 1, Lesson 2; Chapter 2, Lesson 1;
Chapter 2, Lesson 2; Chapter 3, Lesson 1; Chapter 3, Lesson 2

(E) Exploring Shapes in Space:
Chapter 3, Lesson 1; Chapter 3, Lesson 2

(E) Exploring Shape Games:
Chapter 1, Lesson 1; Chapter 1, Lesson 2

(E) Designing a Shape Gallery:
Chapter 1, Lesson 1; Chapter 1, Lesson 2; Chapter 2, Lesson 2

(9) Geometry and measurement. The student applies mathematical process standards to select and use units to describe length, area, and time. The student is expected to:

- (A) find the length of objects using concrete models for standard units of length;
- (B) describe the inverse relationship between the size of the unit and the number of units needed to equal the length of an object;
- (C) represent whole numbers as distances from any given location on a number line;
- (D) determine the length of an object to the nearest marked unit using rulers, yardsticks, meter sticks, or measuring tapes;
- (E) determine a solution to a problem involving length, including estimating lengths;
- (F) use concrete models of square units to find the area of a rectangle by covering it with no gaps or overlaps, counting to find the total number of square units, and describing the measurement using a number and the unit; and
- (G) read and write time to the nearest one-minute increment using analog and digital clocks and distinguish between a.m. and p.m.

- (A) Sizing up the Lily Pad Space Station:
Chapter 2, Lesson 1
- (A) Creating the School Measurement Fair:
Chapter 3, Lesson 1; Chapter 3, Lesson 2
- (A) Using Everyday Measures:
Chapter 1, Lesson 1; Chapter 1, Lesson 2
- (B) Sizing up the Lily Pad Space Station:
Chapter 2, Lesson 1
- (B) Creating the School Measurement Fair:
Chapter 3, Lesson 1; Chapter 3, Lesson 2
- (B) Using Everyday Measures:
Chapter 1, Lesson 1; Chapter 1, Lesson 2
- (D) Creating the School Measurement Fair:
Chapter 3, Lesson 1; Chapter 3, Lesson 2
- (D) Using Everyday Measures:
Intro; Chapter 1, Lesson 1; Chapter 1, Lesson 2
- (E) Sizing up the Lily Pad Space Station:
Chapter 1, Lesson 1; Chapter 1, Lesson 2; Chapter 2, Lesson 1
- (E) Creating the School Measurement Fair:
Chapter 3, Lesson 1; Chapter 3, Lesson 2
- (E) Using Everyday Measures:
Intro; Chapter 1, Lesson 1; Chapter 1, Lesson 2
- (F) Sizing up the Lily Pad Space Station:
Chapter 2, Lesson 2; Chapter 3, Lesson 1 (note this is volume, not area)
- (F) Creating the School Measurement Fair:
Chapter 2, Lesson 1; Chapter 2, Lesson 2

111.5. Grade 3

(1) Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:

(A) apply mathematics to problems arising in everyday life, society, and the workplace;

(B) use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution and evaluating the problem-solving process and the reasonableness of the solution;

(C) select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems;

(D) communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate;

(E) create and use representations to organize, record, and communicate mathematical ideas;

(F) analyze mathematical relationships to connect and communicate mathematical ideas; and

(G) display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication.

Each lesson addresses these standards through the following:

- In-depth investigations and games
- Questioning strategies, including who, what, when, where, why and how questions
- Oral and written mathematical communication and argumentation
 - Think Deeply questions
 - Talk moves
 - Talk frame
- Multiple models on the concrete, pictorial, and abstract levels
- Differentiation
 - Hint Cards
 - Think Beyond questions
- Creative problem solving/problem posing heuristic

(3) Number and operations. The student applies mathematical process standards to represent and explain fractional units. The student is expected to:

(A) represent fractions greater than zero and less than or equal to one with denominators of 2, 3, 4, 6, and 8 using concrete objects and pictorial models, including strip diagrams and number lines;

(B) determine the corresponding fraction greater than zero and less than or equal to one with denominators of 2, 3, 4, 6, and 8 given a specified point on a number line;

(C) explain that the unit fraction $1/b$ represents the quantity formed by one part of a whole that has been partitioned into b equal parts where b is a non-zero whole number;

(D) compose and decompose a fraction a/b with a numerator greater than zero and less than or equal to b as a sum of parts $1/b$;

(E) solve problems involving partitioning an object or a set of objects among two or more recipients using pictorial representations of fractions with denominators of 2, 3, 4, 6, and 8;

(F) represent equivalent fractions with denominators of 2, 3, 4, 6, and 8 using a variety of objects and pictorial models, including number lines;

(G) explain that two fractions are equivalent if and only if they are both represented by the same point on the number line or represent the same portion of a same size whole for an area model; and

(H) compare two fractions having the same numerator or denominator in problems by reasoning about their sizes and justifying the conclusion using symbols, words, objects, and pictorial models.

(C) Using Everyday Measures;
Chapter 3, Lesson 1

(F) Using Everyday Measures;
Chapter 3, Lesson 1

(4) Number and operations. The student applies mathematical process standards to develop and use strategies and methods for whole number computations in order to solve problems with efficiency and accuracy. The student is expected to:

(A) solve with fluency one-step and two-step problems involving addition and subtraction within 1,000 using strategies based on place value, properties of operations, and the relationship between addition and subtraction;

(B) round to the nearest 10 or 100 or use compatible numbers to estimate solutions to addition and subtraction problems;

(C) determine the value of a collection of coins and bills;

(D) determine the total number of objects when equally-sized groups of objects are combined or arranged in arrays up to 10 by 10;

(E) represent multiplication facts by using a variety of approaches such as repeated addition, equal-sized groups, arrays, area models, equal jumps on a number line, and skip counting;

(F) recall facts to multiply up to 10 by 10 with automaticity and recall the corresponding division facts;

(G) use strategies and algorithms, including the standard algorithm, to multiply a two-digit number by a one-digit number. Strategies may include mental math, partial products, and the commutative, associative, and distributive properties;

(H) determine the number of objects in each group when a set of objects is partitioned into equal shares or a set of objects is shared equally;

(I) determine if a number is even or odd using divisibility rules;

(D) Using Everyday Measures:
Chapter 2, Lesson 1; Chapter 2, Lesson 2

<p>(J) determine a quotient using the relationship between multiplication and division; and</p> <p>(K) solve one-step and two-step problems involving multiplication and division within 100 using strategies based on objects; pictorial models, including arrays, area models, and equal groups; properties of operations; or recall of facts.</p>	
<p>(6) Geometry and measurement. The student applies mathematical process standards to analyze attributes of two-dimensional geometric figures to develop generalizations about their properties. The student is expected to:</p>	
<p>(A) classify and sort two- and three-dimensional figures, including cones, cylinders, spheres, triangular and rectangular prisms, and cubes, based on attributes using formal geometric language;</p> <p>(B) use attributes to recognize rhombuses, parallelograms, trapezoids, rectangles, and squares as examples of quadrilaterals and draw examples of quadrilaterals that do not belong to any of these subcategories;</p> <p>(C) determine the area of rectangles with whole number side lengths in problems using multiplication related to the number of rows times the number of unit squares in each row;</p> <p>(D) decompose composite figures formed by rectangles into non-overlapping rectangles to determine the area of the original figure using the additive property of area; and</p> <p>(E) decompose two congruent two-dimensional figures into parts with equal areas and express the area of each part as a unit fraction of the whole and recognize that equal shares of identical wholes need not have the same shape.</p>	<p>(A) Exploring Shape Games: Chapter 2, Lesson 1; Chapter 2, Lesson 2</p> <p>(A) Designing a Shape Gallery: Intro; Chapter 1, Lesson 1; Chapter 1, Lesson 2; Chapter 2, Lesson 1; Chapter 2, Lesson 2; Chapter 3, Lesson 1; Chapter 3, Lesson 2</p> <p>(B) Exploring Shape Games: Chapter 2, Lesson 1; Chapter 2, Lesson 2</p> <p>(B) Designing a Shape Gallery: Intro; Chapter 1, Lesson 2; Chapter 2, Lesson 2; Chapter 3, Lesson 1; Chapter 3, Lesson 2</p> <p>(C) Using Everyday Measures: Chapter 2, Lesson 1; Chapter 2, Lesson 2</p> <p>(D) Exploring Shape Games: Chapter 2, Lesson 1; Chapter 2, Lesson 2</p> <p>(E) Designing a Shape Gallery: Chapter 1, Lesson 1</p>

<p>(7) Geometry and measurement. The student applies mathematical process standards to select appropriate units, strategies, and tools to solve problems involving customary and metric measurement. The student is expected to:</p>	
<p>(A) represent fractions of halves, fourths, and eighths as distances from zero on a number line;</p> <p>(B) determine the perimeter of a polygon or a missing length when given perimeter and remaining side lengths in problems;</p> <p>(C) determine the solutions to problems involving addition and subtraction of time intervals in minutes using pictorial models or tools such as a 15-minute event plus a 30-minute event equals 45 minutes;</p> <p>(D) determine when it is appropriate to use measurements of liquid volume (capacity) or weight; and</p> <p>(E) determine liquid volume (capacity) or weight using appropriate units and tools.</p>	<p>(B) Using Everyday Measures: Chapter 2, Lesson 2</p> <p>(D) Sizing up the Lily Pad Space Station: Chapter 3, Lesson 2</p> <p>(D) Creating the School Measurement Fair: Chapter 1, Lesson 1; Chapter 1, Lesson 2</p> <p>(D) Using Everyday Measures: Chapter 3, Lesson 1; Chapter 3, Lesson 2</p> <p>(E) Sizing up the Lily Pad Space Station: Chapter 3, Lesson 2</p> <p>(E) Creating the School Measurement Fair: Chapter 1, Lesson 1; Chapter 1, Lesson 2</p>

111.6. Grade 4

(1) Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:

(A) apply mathematics to problems arising in everyday life, society, and the workplace;

(B) use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution;

(C) select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems;

(D) communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate;

(E) create and use representations to organize, record, and communicate mathematical ideas;

(F) analyze mathematical relationships to connect and communicate mathematical ideas; and

(G) display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication.

Each lesson addresses these standards through the following:

- In-depth investigations and games
- Questioning strategies, including who, what, when, where, why and how questions
- Oral and written mathematical communication and argumentation
 - Think Deeply questions
 - Talk moves
 - Talk frame
- Multiple models on the concrete, pictorial, and abstract levels
- Differentiation
 - Hint Cards
 - Think Beyond questions
- Creative problem solving/problem posing heuristic

(5) Algebraic reasoning. The student applies mathematical process standards to develop concepts of expressions and equations. The student is expected to:

<p>(A) represent multi-step problems involving the four operations with whole numbers using strip diagrams and equations with a letter standing for the unknown quantity;</p> <p>(B) represent problems using an input-output table and numerical expressions to generate a number pattern that follows a given rule representing the relationship of the values in the resulting sequence and their position in the sequence;</p> <p>(C) use models to determine the formulas for the perimeter of a rectangle ($l + w + l + w$ or $2l + 2w$), including the special form for perimeter of a square ($4s$) and the area of a rectangle ($l \times w$); and</p> <p>(D) solve problems related to perimeter and area of rectangles where dimensions are whole numbers.</p>	<p>(D) Using Everyday Measures: Chapter 2, Lesson 1; Chapter 2, Lesson 2</p>
<p>(6) Geometry and measurement. The student applies mathematical process standards to analyze geometric attributes in order to develop generalizations about their properties. The student is expected to:</p>	
<p>(A) identify points, lines, line segments, rays, angles, and perpendicular and parallel lines;</p> <p>(B) identify and draw one or more lines of symmetry, if they exist, for a two-dimensional figure;</p> <p>(C) apply knowledge of right angles to identify acute, right, and obtuse triangles; and</p> <p>(D) 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.</p>	<p>(A) Exploring Shape Games: Chapter 2, Lesson 1; Chapter 2, Lesson 2</p> <p>(B) Exploring Shape Games: Chapter 3, Lesson 2</p> <p>(B) Designing a Shape Gallery: Chapter 1, Lesson 1</p> <p>(C) Exploring Shape Games: Chapter 2, Lesson 1; Chapter 2, Lesson 2</p> <p>(D) Exploring Shape Games: Chapter 2, Lesson 1; Chapter 2, Lesson 2</p>
<p>(8) Geometry and measurement. The student applies mathematical process standards to select appropriate customary and metric units, strategies, and tools to solve problems involving measurement. The student is expected to:</p>	

(A) identify relative sizes of measurement units within the customary and metric systems;

(B) convert measurements within the same measurement system, customary or metric, from a smaller unit into a larger unit or a larger unit into a smaller unit when given other equivalent measures represented in a table; and

(C) solve problems that deal with measurements of length, intervals of time, liquid volumes, mass, and money using addition, subtraction, multiplication, or division as appropriate.

(B) Using Everyday Measures:
Chapter 3, Lesson 1

(C) Using Everyday Measures:
Chapter 1, Lesson 1; Chapter 1, Lesson 2; Chapter 3, Lesson 1;
Chapter 3, Lesson 2