

**Chapter 111. Texas Essential Knowledge and Skills for Mathematics
Subchapter A. Elementary**

§111.3. Grade 1, Adopted 2012.

(a) Introduction.

(1) The ***desire to achieve educational excellence*** is the driving force behind the Texas essential knowledge and skills for mathematics, guided by the college and career readiness standards. By embedding statistics, probability, and finance, while focusing on computational thinking, mathematical fluency and solid understanding, Texas will lead the way in mathematics education and prepare all Texas students for the challenges they will face in the 21st century.

(2) The ***process standards*** describe ways in which students are expected to engage in the content. The placement of the process standards at the beginning of the knowledge and skills listed for each grade and course is intentional. The process standards weave the other knowledge and skills together so that students may be successful problem solvers and use mathematics efficiently and effectively in daily life. The process standards are integrated at every grade level and course. When possible,

- students will apply mathematics to problems arising in everyday life, society, and the workplace.
- Students will 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.
- Students will select appropriate tools such as real objects, manipulatives, algorithms, paper and pencil, and technology and techniques such as mental math, estimation, and number sense, and generalization and abstraction to solve problems.
- Students will effectively communicate mathematical ideas, reasoning, and their implications using multiple representations such as symbols, diagrams, graphs, computer programs, and language.
- Students will use mathematical relationships to generate solutions and make connections and predictions.
- Students will analyze mathematical relationships to connect and communicate mathematical ideas.
- Students will display, explain, or justify mathematical ideas and arguments using precise mathematical language in written or oral communication.

(3) For students to become ***fluent in mathematics***, students must develop a robust sense of number. The National Research Council's report, "Adding It Up," defines procedural fluency as "skill in carrying out procedures flexibly, accurately, efficiently, and appropriately." As students develop procedural fluency, they must also realize that true problem solving may take time, effort, and perseverance. Students in Grade 1 are expected to perform their work without the use of calculators.

(4) The ***primary focal areas*** in Grade 1 are

- understanding and applying place value,
- solving problems involving addition and subtraction,
- and composing and decomposing two-dimensional shapes and three-dimensional solids.

(A) Students use relationships within the numeration system to understand the sequential order of the counting numbers and their relative magnitude.

(B) Students extend their use of addition and subtraction beyond the actions of joining and separating to include comparing and combining. Students use properties of operations and the relationship between addition and subtraction to solve problems. By comparing a variety of solution strategies, students use efficient, accurate, and generalizable methods to perform operations.

(C) Students use basic shapes and spatial reasoning to model objects in their environment and construct more complex shapes. Students are able to identify, name, and describe basic two-dimensional shapes and three-dimensional solids.

(5) Statements that contain the word "including" reference content that must be mastered, while those containing the phrase "such as" are intended as possible illustrative examples.

(b) Knowledge and skills.

Mathematical Process Standards	Number and Operations	Algebraic Reasoning	Geometry and Measurement	Data Analysis	Personal Financial Literacy
<p>1.1 The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:</p> <p>(A) <i>apply</i> mathematics to problems arising in everyday life, society, and the workplace;</p> <p>(B) <i>use</i> a problem-solving model that incorporates <i>analyzing</i> given information, <i>formulating</i> a plan or strategy, <i>determining</i> a solution, <i>justifying</i> the solution, <i>evaluating</i> the problem-solving process and the reasonableness of the solution;</p> <p>(C) <i>select</i> tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to <i>solve</i> problems;</p> <p>(D) <i>communicate</i> mathematical ideas, reasoning, and their implications <i>using</i> multiple representations, including symbols, diagrams, graphs, and language as appropriate;</p> <p>(E) <i>create and use</i> representations to organize, record, and communicate mathematical ideas;</p> <p>(F) <i>analyze</i> mathematical relationships to connect and communicate mathematical ideas; and</p> <p>(G) <i>display, explain, and justify</i> mathematical ideas and arguments <i>using</i> precise mathematical language in written or oral communication.</p>	<p>1.2 The student applies mathematical process standards to represent and compare whole numbers, the relative position and magnitude of whole numbers, and relationships within the numeration system related to place value. The student is expected to:</p> <p>(A) <i>recognize instantly</i> the quantity of structured arrangements;</p> <p>(B) <i>use</i> concrete and pictorial models to <i>compose and decompose</i> numbers up to 120 in more than one way as so many hundreds, so many tens, and so many ones;</p> <p>(C) <i>use</i> objects, pictures, and expanded and standard forms to <i>represent</i> numbers up to 120;</p> <p>(D) <i>generate</i> a number that is greater than or less than a given whole number up to 120;</p> <p>(E) <i>use</i> place value to <i>compare</i> whole numbers up to 120 using comparative language;</p> <p>(F) <i>order</i> whole numbers up to 120 using place value and open number lines; and</p> <p>(G) <i>represent</i> the comparison of two numbers to 100 using the symbols $>$, $<$, or $=$.</p> <p>1.3 The student applies mathematical process standards to develop and use strategies for whole number addition and subtraction computations in order to solve problems. The student is expected to:</p> <p>(A) <i>use</i> concrete and pictorial models to <i>determine</i> the sum of a multiple of 10 and a one-digit number in problems up to 99;</p> <p>(B) <i>use</i> objects and pictorial models to <i>solve</i> word problems involving joining, separating, and comparing sets within 20 and unknowns as any one of the terms in the problem such as $2 + 4 = []$; $3 + [] = 7$; and $5 = [] - 3$;</p> <p>(C) <i>compose</i> 10 with two or more addends with and without concrete objects;</p> <p>(D) <i>apply</i> basic fact strategies to add and subtract within 20, including making 10 and decomposing a number leading to a 10;</p> <p>(E) <i>explain</i> strategies used to solve addition and subtraction problems up to 20 using spoken words, objects, pictorial models, and number sentences; and</p> <p>(F) <i>generate and solve</i> problem situations when given a number sentence involving addition or subtraction of numbers within 20.</p> <p>1.4 The student applies mathematical process standards to identify coins, their values, and the relationships among them in order to recognize the need for monetary transactions. The student is expected to:</p> <p>(A) <i>identify</i> U.S. coins, including pennies, nickels, dimes, and quarters, by value and describe the relationships among them;</p> <p>(B) <i>write</i> a number with the cent symbol to describe the value of a coin; and</p> <p>(C) <i>use</i> relationships to count by twos, fives, and tens to determine the value of a collection of pennies, nickels, and/or dimes.</p>	<p>1.5 The student applies mathematical process standards to identify and apply number patterns within properties of numbers and operations in order to describe relationships. The student is expected to:</p> <p>(A) <i>recite</i> numbers forward and backward from any given number between 1 and 120;</p> <p>(B) <i>skip count</i> by twos, fives, and tens to determine the total number of objects up to 120 in a set;</p> <p>(C) <i>use</i> relationships to determine the number that is 10 more and 10 less than a given number up to 120;</p> <p>(D) <i>represent</i> word problems involving addition and subtraction of whole numbers up to 20 using concrete and pictorial models and number sentences;</p> <p>(E) <i>understand</i> that the equal sign represents a relationship where expressions on each side of the equal sign represent the same value(s);</p> <p>(F) <i>determine</i> the unknown whole number in an addition or subtraction equation when the unknown may be any one of the three or four terms in the equation; and</p> <p>(G) <i>apply</i> properties of operations to add and subtract two or three numbers.</p>	<p>1.6 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) <i>classify and sort</i> regular and irregular two-dimensional shapes based on attributes using informal geometric language;</p> <p>(B) <i>distinguish between</i> attributes that define a two-dimensional or three-dimensional figure and attributes that do not define the shape;</p> <p>(C) <i>create</i> two-dimensional figures, including circles, triangles, rectangles, and squares, as special rectangles, rhombuses, and hexagons;</p> <p>(D) <i>identify</i> two-dimensional shapes, including circles, triangles, rectangles, and squares, as special rectangles, rhombuses, and hexagons and describe their attributes using formal geometric language;</p> <p>(E) <i>identify</i> three-dimensional solids, including spheres, cones, cylinders, rectangular prisms (including cubes), and triangular prisms, and describe their attributes using formal geometric language;</p> <p>(F) <i>compose</i> two-dimensional shapes by joining two, three, or four figures to produce a target shape in more than one way if possible;</p> <p>(G) <i>partition</i> two-dimensional figures into two and four fair shares or equal parts and describe the parts using words; and</p> <p>(H) <i>identify</i> examples and non-examples of halves and fourths.</p> <p>1.7 The student applies mathematical process standards to select and use units to describe length and time. The student is expected to:</p> <p>(A) <i>use</i> measuring tools to measure the length of objects to reinforce the continuous nature of linear measurement;</p> <p>(B) <i>illustrate</i> 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) <i>measure</i> the same object/distance with units of two different lengths and <i>describe</i> how and why the measurements differ;</p> <p>(D) <i>describe</i> a length to the nearest whole unit using a number and a unit; and</p> <p>(E) <i>tell time</i> to the hour and half hour using analog and digital clocks.</p>	<p>1.8 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) <i>collect, sort, and organize</i> data in up to three categories using models/representations such as tally marks or T-charts;</p> <p>(B) <i>use</i> data <i>to create</i> picture and bar-type graphs; and</p> <p>(C) <i>draw conclusions</i> and <i>generate</i> and <i>answer</i> questions using information from picture and bar-type graphs.</p>	<p>1.9 The student applies mathematical process standards to manage one's financial resources effectively for lifetime financial security. The student is expected to:</p> <p>(A) <i>define</i> money earned as income;</p> <p>(B) <i>identify</i> income as a means of obtaining goods and services, oftentimes making choices between wants and needs;</p> <p>(C) <i>distinguish between</i> spending and saving; and</p> <p>(D) <i>consider</i> charitable giving.</p>

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