"Such As" Statements, Kindergarten – Grade 8

This document contains the "such as" statements that were included in the review committees' final recommendations for revisions to the mathematics Texas Essential Knowledge and Skills (TEKS). Such as statements are possible illustrative examples and are not required to be included in instruction in the TEKS. This document is intended to serve as a resource for teachers in designing instruction for the revised mathematics TEKS.

§111.2, Kindergarten

	Knowledge and Skill Statement/Student Expectation (as adopted in 2012)	**Student Expectation Including Original "Such As" Statement**
(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:	
(6)(C)	identify two-dimensional components of three-dimensional objects;	identify two-dimensional components of three-dimensional objects such as the face of a tissue box is a rectangle;
(6)(D)	identify attributes of two-dimensional shapes using informal and formal geometric language interchangeably;	identify attributes of two-dimensional shapes using informal and formal geometric language interchangeably such as number of corners or vertices and number of sides;
(9)	Personal financial literacy. The student applies mathematical process standards to manage one's financial resources effectively for lifetime financial security. The student is expected to:	
(9)(C)	list simple skills required for jobs; and	list simple skills required for jobs such as bus driver, librarian, cashier, or cook; and

	Knowledge and Skill Statement/Student Expectation (as adopted in 2012)	Student Expectation Including Original "Such As" Statement
(2)	Number and operations. 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:	
(2)(A)	recognize instantly the quantity of structured arrangements;	recognize instantly the quantity of structured arrangements such as seen on a die or a ten frame;
(5)	Algebraic reasoning. 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:	
(5)(G)	apply properties of operations to add and subtract two or three numbers.	apply properties of operations to add and subtract two or three numbers such as if 2 + 3 = 5 is known, then 3 + 2 = 5.
(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:	
(6)(B)	distinguish between attributes that define a two-dimensional or three-dimensional figure and attributes that do not define the shape;	distinguish between attributes that define a two-dimensional or three-dimensional figure such as a closed figure with three sides is a triangle or a solid with exactly six rectangular faces is a rectangular prism and attributes that do not define the shape such as orientation or color;
(6)(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;	identify two-dimensional shapes, including circles, triangles, rectangles, and squares, as special rectangles, rhombuses, and hexagons and describe their attributes using formal geometric language such as vertex and side;
(6)(E)	identify three-dimensional solids, including spheres, cones, cylinders, rectangular prisms (including cubes), and triangular prisms, and describe their attributes using formal geometric language;	identify three-dimensional solids, including spheres, cones, cylinders, rectangular prisms (including cubes), and triangular prisms, and describe their attributes using formal geometric language such as vertex, edge, and face;

(6)(G)	partition two-dimensional figures into two and four fair shares or equal parts and describe the parts using words; and	partition two-dimensional figures such as circles and rectangles into two and four fair shares or equal parts and describe the parts using words such as "halves," "half of," "fourths," or "quarters"; and
(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:	
(7)(A)	use measuring tools to measure the length of objects to reinforce the continuous nature of linear measurement;	use measuring tools such as adding machine tape, ribbon, or string to measure the length of objects to reinforce the continuous nature of linear measurement;
(7)(D)	describe a length to the nearest whole unit using a number and a unit; and	describe a length to the nearest whole unit using a number and a unit such as five craft sticks; and

§111.4, Grade 2

	Knowledge and Skill Statement/Student Expectation (as adopted in 2012)	Student Expectation Including Original "Such As" Statement
(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:	
(3)(A)	partition objects into equal parts and name the parts, including halves, fourths, and eighths, using words;	partition objects such as strips, lines, regular polygons, and circles into equal parts and name the parts, including halves, fourths, and eighths, using words such as "one-half" or "three-fourths";
(3)(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	use concrete models to count fractional parts beyond one whole using words such as "one-fourth," "two-fourths," "three-fourths," "four-fourths," "five-fourths," or "one and one-fourth," and recognize how many parts it takes to equal one whole such as four-fourths equals one whole; and
(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:	
(8)(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;	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 such as vertex, edge, and face;
(8)(D)	compose two-dimensional shapes and three-dimensional solids with given properties or attributes	compose two-dimensional shapes and three-dimensional solids with given properties or attributes such as build a rectangle out of unit squares or build a rectangular prism out of unit cubes; and
(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:	

(9)(A)	find the length of objects using concrete models for standard units of length;	find the length of objects using concrete models for standard units of length such as the edges of inch tiles or centimeter cubes;
(9)(B)	describe the inverse relationship between the size of the unit and the number of units needed to equal the length of an object;	describe the inverse relationship between the size of the unit and the number of units needed to equal the length of an object such as the longer the unit, the fewer needed and the shorter the unit, the more needed;
(9)(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	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 such as 24 square units; and
(11)	Personal financial literacy. The student applies mathematical process standards to manage one's financial resources effectively for lifetime financial security. The student is expected to:	
(11)(F)	differentiate between producers and consumers and calculate the cost to produce a simple item.	differentiate between producers and consumers and calculate the cost to produce a simple item such as a shirt, a pitcher of lemonade, or a class art project.

	Knowledge and Skill Statement/Student Expectation (as adopted in 2012)	Student Expectation Including Original "Such As" Statement
(2)	Number and operations. The student applies mathematical process standards to represent and compare whole numbers and understand relationships related to place value. The student is expected to:	
(2)(C)	represent a number on a number line as being between two consecutive multiples of 10; 100; 1,000; or 10,000 and use words to describe relative size of numbers in order to round whole numbers; and	represent a number on a number line as being between two consecutive multiples of 10; 100; 1,000; or 10,000 and use words such as "closer to," "is about," or "is nearly" to describe relative size of numbers in order to round whole numbers; and
(3)	Number and operations. The student applies mathematical process standards to represent and explain fractional units. The student is expected to:	
(3)(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;	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 such as two children share five cookies;
(3)(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.	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 such as comparing the size of pieces when sharing a candy bar equally among four people or equally among three people.
(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:	
(4)(J)	determine a quotient using the relationship between multiplication and division; and	determine a quotient using the relationship between multiplication and division such as the quotient of $40 \div 8$ can be found by determining what factor makes 40 when multiplied by 8; and

(5)	Algebraic reasoning. The student applies mathematical process standards to analyze and create patterns and relationships. The student is expected to:	
(5)(A)	represent one- and two-step problems involving addition and subtraction of whole numbers to 1,000 using pictorial models, number lines, and equations;	represent one- and two-step problems involving addition and subtraction of whole numbers to 1,000 using pictorial models, such as strip diagrams and number lines , and equations;
(5)(D)	determine the unknown whole number in a multiplication or division equation relating three whole numbers when the unknown is either a missing factor or product; and	determine the unknown whole number in a multiplication or division equation relating three whole numbers when the unknown is either a missing factor or product such as the value 4 makes 3 x [ ] = 12 a true equation; and
(5)(E)	represent real-world relationships using number pairs in a table and verbal descriptions.	represent real-world relationships using number pairs in a table and verbal descriptions such as 1 insect has 6 legs, 2 insects have 12 legs, and so forth.
(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:	
(6)(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;	classify and sort two- and three-dimensional solids, including cones, cylinders, spheres, triangular and rectangular prisms, and cubes, based on attributes using formal geometric language such as vertex, edge, and face;

	Knowledge and Skill Statement/Student Expectation (as adopted in 2012)	Student Expectation Including Original "Such As" Statement
(2)	Number and operations. The student applies mathematical process standards to represent, compare, and order whole numbers and decimals and understand relationships related to place value. The student is expected to:	
(2)(B)	represent the value of the digit in whole numbers through 1,000,000,000 and decimals to the hundredths using expanded notation and numerals;	represent the value of the digit in whole numbers through 1,000,000,000 and decimals to the hundredths using expanded notation and numerals such as in the number 3.94, the 3 in the ones place is 3; the 9 in the tenths place is 0.9; and the 4 in the hundredths place is 0.04; and 3.94 is the sum of 3 ones, 9 tenths, and 4 hundredths;
(3)	Number and operations. The student applies mathematical process standards to represent and generate fractions to solve problems. The student is expected to:	
(3)(B)	decompose a fraction in more than one way into a sum of fractions with the same denominator using concrete and pictorial models and recording results with symbolic representations;	decompose a fraction in more than one way into a sum of fractions with the same denominator using concrete and pictorial models and recording results with symbolic representations such as 7/8 = 5/8 + 2/8; 7/8 = 3/8 + 4/8; 2 7/8 = 1 + 1 + 7/8; 2 7/8 = 8/8 + 8/8 + 7/8;
(3)(C)	determine if two given fractions are equivalent using a variety of methods;	determine if two given fractions are equivalent using a variety of methods, including multiplying by a fraction equivalent to one or simplifying a fraction to lowest terms;
(3)(E)	represent and solve addition and subtraction of fractions with equal denominators using objects and pictorial models that build to the number line and properties of operations;	represent and solve addition and subtraction of fractions with equal denominators using objects and pictorial models that build to the number line such as strip diagrams and properties of operations;
(5)	Algebraic reasoning. The student applies mathematical process standards to develop concepts of expressions and equations. The student is expected to:	

(5)(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;	represent problems using an input-output table and numerical expressions to generate a number pattern that follows a given rule representing such as given the rule "Add 3" and the starting number 1, use the expressions 1 + 3, 2 + 3, 3 + 3, and so forth to generate a table to represent the relationship of the values in the resulting sequence and their position in the sequence;
(7)	Geometry and measurement. The student applies mathematical process standards to solve problems involving angles less than or equal to 180 degrees. The student is expected to:	
(7)(E)	determine the measure of an unknown angle formed by two non-overlapping adjacent angles given one or both angle measures.	decompose angles such as complementary and supplementary angles into two non-overlapping angles to determine the measure of an unknown angle formed by two non-overlapping adjacent angles given one or both angle measures.

	Knowledge and Skill Statement/Student Expectation (as adopted in 2012)	Student Expectation Including Original "Such As" Statement
(3)	Number and operations. The student applies mathematical process standards to develop and use strategies and methods for positive rational number computations in order to solve problems with efficiency and accuracy. The student is expected to:	
(3)(H)	represent and solve addition and subtraction of fractions with unequal denominators referring to the same whole using objects and pictorial models and properties of operations;	represent and solve addition and subtraction of fractions with unequal denominators referring to the same whole using objects and pictorial models such as strip diagrams and properties of operations;
(4)	Algebraic reasoning. The student applies mathematical process standards to develop concepts of expressions and equations. The student is expected to:	
(4)(E)	describe the meaning of parentheses and brackets in a numeric expression;	describe the meaning of parentheses and brackets in a numeric expression such as 4 (14 + 5) is 4 times as large as (14 + 5);
(4)(F)	simplify numerical expressions that do not involve exponents, including up to two levels of grouping;	simplify numerical expressions that do not involve exponents, including up to two levels of grouping such as (3 + 7) / (5 - 3);
(4)(H)	represent and solve problems related to perimeter and/or area and related to volume.	represent and solve problems related to perimeter and/or area such as rectangles and composite figures formed by rectangles and related to volume such as rectangular prisms.
(5)	Geometry and measurement. The student applies mathematical process standards to classify two-dimensional figures by attributes and properties. The student is expected to classify two-dimensional figures in a hierarchy of sets and subsets using graphic organizers based on their attributes and properties.	Geometry and measurement. The student applies mathematical process standards to classify two-dimensional figures by attributes and properties. The student is expected to classify two-dimensional figures in a hierarchy of sets and subsets using graphic organizers based on their attributes and properties such as all rectangles have the property that opposite sides are parallel; therefore, every rectangle is a parallelogram.

§111.26, Grade 6

	Knowledge and Skill Statement/Student Expectation (as adopted in 2012)	Student Expectation Including Original "Such As" Statement
(10)	Expressions, equations, and relationships. The student applies mathematical process standards to use equations and inequalities to solve problems. The student is expected to:	
(10)(A)	model and solve one-variable, one-step equations and inequalities that represent problems, including geometric concepts; and	model and solve one-variable, one-step equations and inequalities that represent problems, including geometric concepts such as complementary and supplementary angles; and
(13)	Measurement and data. The student applies mathematical process standards to use numerical or graphical representations to solve problems. The student is expected to:	
(13)(B)	distinguish between situations that yield data with and without variability.	distinguish between situations that yield data with and without variability such as the question "How tall am I?" which would be answered with a single height versus the question "How tall are the students in my class?" which would be answered based on heights that vary.

	Knowledge and Skill Statement/Student Expectation (as adopted in 2012)	Student Expectation Including Original "Such As" Statement
(2)	Number and operations. The student applies mathematical process standards to represent and use rational numbers in a variety of forms. The student is expected to extend previous knowledge of sets and subsets using a visual representation to describe relationships between sets of rational numbers.	Number and operations. The student applies mathematical process standards to represent and use rational numbers in a variety of forms. The student is expected to extend previous knowledge of sets and subsets using a visual representation such as a Venn diagram to describe relationships between sets of rational numbers.
(4)	Proportionality. The student applies mathematical process standards to represent and solve problems involving proportional relationships. The student is expected to:	
(4)(D)	solve problems involving ratios, rates, and percents, including multi-step problems involving percent increase and percent decrease, and financial literacy problems; and	solve problems involving ratios, rates, and percents, including multi-step problems involving percent increase and percent decrease, and financial literacy problems such as tax, tip, discount, simple interest, and commission; and

	Knowledge and Skill Statement/Student Expectation (as adopted in 2012)	Student Expectation Including Original "Such As" Statement
(2)	Number and operations. The student applies mathematical process standards to represent and use real numbers in a variety of forms. The student is expected to:	
(2)(A)	extend previous knowledge of sets and subsets using a visual representation to describe relationships between sets of real numbers;	extend previous knowledge of sets and subsets using a visual representation such as a Venn diagram to describe relationships between sets of real numbers;
(3)	Proportionality. The student applies mathematical process standards to use proportional relationships to describe dilations. The student is expected to:	
(3)(C)	use an algebraic representation to explain the effect of a given positive rational scale factor applied to two-dimensional figures on a coordinate plane with the origin as the center of dilation.	use an algebraic representation to explain the effect of a given positive rational scale factor applied to two-dimensional figures on a coordinate plane with the origin as the center of dilation such as $(x, y) \rightarrow (0.5x, 0.5y)$.
(10)	Two-dimensional shapes. The student applies mathematical process standards to develop transformational geometry concepts. The student is expected to:	
(10)(C)	explain the effect of translations, reflections over the x- or y-axis, and rotations limited to 90°, 180°, 270°, and 360° as applied to two-dimensional shapes on a coordinate plane using an algebraic representation; and	explain the effect of translations, reflections over the x- or y-axis, and rotations limited to 90°, 180°, 270°, and 360° as applied to two-dimensional shapes on a coordinate plane using an algebraic representation such as $(x, y) \rightarrow (x + 2, y + 2)$; and
(11)	Measurement and data. The student applies mathematical process standards to use statistical procedures to describe data. The student is expected to:	
(11)(A)	construct a scatterplot and describe the observed data to address questions of association such as linear, non-linear, and no association between bivariate data;	construct a scatterplot and describe the observed data such as positive trend, negative trend, and no trend to address questions of association such as linear, non-linear, and no association between bivariate data;

(12)	Personal financial literacy. The student applies mathematical process standards to develop an economic way of thinking and problem solving useful in one's life as a knowledgeable consumer and investor. The student is expected to:	
(12)(E)	identify and explain the advantages and disadvantages of different payment methods;	(E) identify and explain the advantages and disadvantages of different payment methods such as stored-value cards, debit cards, and online payment systems;