Grade 1

(1) Within a well-balanced mathematics curriculum, the primary focal points are building number sense through number relationships, adding and subtracting whole numbers, organizing and analyzing data and working with two- and three-dimensional geometric figures.

(2) Throughout mathematics in Kindergarten-Grade 2, students build a foundation of basic understanding in number, operation, and quantitative reasoning; patterns, relationships, and algebraic thinking; geometry and spatial reasoning; measurement; and probability and statistics. Students use numbers in ordering, labeling, and expressing quantities and relationships to solve problems and translate informal language into mathematical language and symbols. Students use objects to create and identify patterns and use those patterns to express relationships, make predictions, and solve problems as they build an understanding of number, operation, shape, and space. Students progress from the informal to formal language to describe two- and three-dimensional geometric figures and likenesses in the physical world. Students begin to develop measurement concepts as they identify and compare attributes of objects and situations. Students collect, organize, and display data and use information from graphs to answer questions, make summary statements,, and make informal predictions based on their experiences.

(3) Throughout mathematics in K-2, students develop numerical fluency with conceptual understanding and computational accuracy. Students in Kindergarten through grade two use basic number sense to compose and decompose numbers in order to solve problems requiring precision, estimation, and reasonableness. By the end of Grade 2, students know basic addition and subtraction facts and are using them to work flexibly, efficiently and accurately with numbers during addition and subtraction computation.

(4) Problem solving, language and communication, connections within and outside mathematics, and formal and informal reasoning underlie all content areas in mathematics. Throughout mathematics in Kindergarten-Grade 2, students use these processes together with technology and other mathematical tools such as manipulative materials to develop conceptual understanding and solve meaningful problems as they do mathematics.

(1.1) **Number, operation, and quantitative reasoning.** The student uses whole numbers to describe and compare quantities.
1.1(A) compare and order whole numbers up to 99 (less than, greater than, or equal to) using sets of concrete objects and pictorial models * Always use concrete objects or pictorial models. * Show two sets of concrete items - students determine which set is greater. * Students "build" the given numbers using base ten blocks and then order them from least to greatest (or greatest to least). Note: The comparative symbols > = < are not introduced until 2nd grade.
1.1(B) create sets of tens and ones using concrete objects to describe, compare and order whole numbers * Represent the numbers using a variety of concrete objects, such as base 10 pieces, unifix cubes, bundled straws, etc. * Use manipulatives to order whole numbers by comparing values of tens and ones. * Emphasize a larger quantity does not always reflect a greater value - value dependent on unit name (6 unit pieces are not greater than 1 ten unit.)
1.1(C) identify individual coins by name and value and describe relationships among them Include: * Match pictures of coins to the name and value, such as the picture of a nickel would be matched to “nickel”, or 5 ¢. * Pennies, nickels, dimes and quarters will be used. * Physical characteristics such as identifying coins by color and size. * Relationships between values such as five pennies are the same as one nickel. The size of the coin does not necessarily correspond to value. Ex. a dime is smaller than a nickel, but worth more. * No adding of mixed money. Note: This is the first time coins/money are introduced in the TEKS. Counting denominations of coins is introduced in second grade according to the TEKS. First grade does not count/add coins: ex. two dimes and three pennies equals $0.23 is not appropriate in 1st grade.

1.1(D) read and write numbers to 99 to describe sets of concrete objects * Given the number 46, the student can count out that many objects, given 46 objects the student can count and write the numerical symbol that represents the quantity. **Note:** Write using numerals, not words. Words are introduced in 3rd grade TEKS.
(1.2) **Number, operation, and quantitative reasoning.** The student uses pairs of whole numbers to describe fractional parts of whole objects or sets of objects.
1.2(A) separate a whole into two, three, or four equal parts and use appropriate language to describe the parts such as three out of four equal parts * Example - take a whole graham cracker - break into halves and then fourths. **Note:** The symbol 1/2 is not used in first grade, language such as one out of two or one half are appropriate. Fraction symbols are first used in 3rd grade according to the TEKS.
1.2(B) use appropriate language to describe part of a set such as three out of the eight crayons are red * Example - give students concrete objects, such as color tiles, include three red and one blue. Ask, "What part of the tiles are red? What part of the color tiles are blue?" * Refer to situations as three out of four are red and one out of four is blue - no fraction symbol until 3rd grade.

(1.3) **Number, operation and quantitative reasoning.** The student recognizes and solves problems in addition and subtraction situations. The student is expected to:

1.3(A) model and create addition and subtraction problem situations with concrete objects and write corresponding number sentences

* There are three types of subtraction problems:
  - Take away ex. John has 8 toys and he gives Sue 5 toys. How many toys does John have now?
  - Comparison ex. John has 8 toy cars, Jill has 5 toy cars. How many more does John have than Jill?
  - Partition - ex. John has 8 toy cars, 5 cars are blue, how many are not blue? (to separate by a characteristic)
* Levels of difficulty from easiest to hardest.
  - 8 - 5 = _____ Result unknown - John has 8 toys and he gives Sue 5 toys, How many toys does John have now?
  - 8 - __ = 2 Change unknown - John had 8 toys, he gave some away and he gave some away and now he only has two toys. How many did he give away?
  - __ - 3 = 5 Start unknown - John had some toys, he gave 3 away and now he has 5 toys. How many toys did John have in the beginning?
* Focus on transitioning from informal vocabulary (joining and separation) to formal vocabulary (adding and subtracting)

Note:
This is when the addition symbol, subtraction symbol and equal sign are introduced.
Important, everything is in the concrete; timed tests and flash cards are not appropriate in 1st grade.

1.3(B) use concrete and pictorial models to apply basic addition and subtraction facts (up to 9 + 9 = 18 and 18 - 9 = 9)

Note:
Important, everything is in the concrete; timed tests and flash cards are not appropriate in 1st grade.

(1.4) Patterns, relationships, and algebraic thinking. The student uses repeating patterns and additive patterns to make predictions.
1.4identify, describe, and extend concrete and pictorial patterns in order to make predictions and solve problems. * Include growth patterns that repeat. Such as: AB, ABB, ABBB * Vocabulary - growing pattern is an additive pattern * Include repeating patterns such as ABABA; ABACABAC * Repetitive addition using pictorial patterns, Ex. eyes on a bear - one bear, two bears, three bears, etc. * Predict only the next in the series - don't predict by skipping levels.
(1.5) **Patterns, relationships, and algebraic thinking.** The student recognizes patterns in number and operations.
1.5(A) use patterns to skip count by twos, fives, and tens * Use visual representations such as tally marks for 5s, bundled straws for 10s.
1.5(B) find patterns in numbers including odd and even * Looking at number patterns - the students will recognize that the ones place determines odd or even properties of numbers. * Describe odd and even geometrically by using tiles to attempt to create rectangles to represent the number. (odd numbers will not pair up to create a rectangle, only even numbers will create pairs to form a rectangle.) * Use a 0 - 99 chart to find number patterns.
1.5(C) compare and order whole numbers using place value * Compare and order whole numbers up to 99 using various tools including a 100s chart. * Students compare numbers when keeping the ten value the same and change the ones ex. 87 83; * Keep the ones value the same and change the tens ex. 34 64 - students make generalizations about how this change effects the value of the number. * When given numbers such as, 34, 35, and 36, in random order students are able to order the numbers. **Note:** This is under the patterns strand; use patterns to teach comparison.

1.5(D) use patterns to develop strategies to solve basic addition and basic subtraction problems * Doubles, doubles plus one, and neighbors * Recognize patterns of plus ten * Counting up or counting back
1.5(E) identify patterns in related addition and subtraction sentences (fact families for sums to 18) such as 2 + 3 = 5, 3 + 2 = 5, 5 - 2 = 3, 5 - 3 = 2
(1.6) **Geometry and spatial reasoning. The student uses attributes to identify two- and three-dimensional geometric figures. The student compares and contrasts tow- and three-dimensional geometric figures, or both.**
1.6(A) describe and identify two dimensional geometric figures including circles, triangles, and rectangles, and squares (a special type of rectangle) * Example - a square has four sides the same length and four vertices. A triangle has three sides and three vertices.
1.6(B) describe and identify three-dimensional geometric figures including spheres, rectangular prisms (including cubes), cylinders, and cones * Identify the three dimensional figure by name and use formal language including faces, vertices, edges to describe. * For example a cube has 8 vertices, six faces, and 12 edges. Note: Formal language is introduced in 1st grade. Kindergarten only used informal language.
1.6(C) describe and identify two- and three-dimensional geometric figures in order to sort them according to a given attribute using informal and formal language * Focus on the transition from informal vocabulary to formal vocabulary. * Two-dimensional - circle, oval, trapezoid, polygon, triangle, square, rectangle, rhombus, pentagon, hexagon, octagon, attributes: sides, vertices * Three-dimensional - spheres, cylinder, cone, triangular prism, cube, rectangular prism, triangular pyramid, rectangular pyramid, attributes: faces, vertices, edges and bases

1.6(D) use concrete models to combine two-dimensional geometric figures to make new geometric figures * Example - two triangles combine to make rectangle, two trapezoids combine to make a hexagon.
(1.7) Measurement The student directly compares the attributes of length, area, weight/mass, capacity, and temperature. The student uses comparative language to solve problems and answer questions. The student selects and uses nonstandard units to describe length.
1.7(A) estimate and measure length using nonstandard units, such as paper clips or sides of color tiles * Use a variety of materials ex. straws, toothpicks etc. **Note:** Emphasize the "length" of the object being used to measure.
1.7(B) compare and order two or more concrete objects according to length (from longest to shortest)
1.7(C) describe the relationship between the size of the unit and the number of units needed to measure the length of an object **Note:** Emphasis - Students understand that the smaller the unit, the more units it will take to measure an object. Pre-requisite for learning to convert measurements.
1.7(D) compare and order the area of two or more two-dimensional surfaces (e.g. from covers the most to covers the least) * Example - given a sheet of paper, post-it note, and note card - students order from covers the most to covers the least. * Use different manipulatives to cover specific surface and compare. * Manipulatives do not have to be similar shapes.

1.7 (E) compare and order two or more containers according to capacity (e.g. from holds the most to holds the least) * Pour contents of containers from one to another to determine which holds more. They are not to count, just compare. * Containers do not have to be the same shape.
1.7(F) compare and order two or more objects according to weight/mass (e.g. from heaviest to lightest) * The weight of object A is heavier than the weight of object B; the mass of object A is greater than the mass object B. **Note:** Do not use the term "weight" when using a balance. Scales measure weight and balance measures mass.
1.7(G) compare and order two or more objects according to relative temperature (e.g. from hottest to coldest) * Compare temperature in real life situations. Ex. Snowy day, dessert, blooming flowers, etc. **Note:** The thermometer is introduced in 2nd grade.
(1.8) Measurement The student understands that time can be measured. The student uses time to describe and compare situations.
1.8(A) order three or more events according to duration
1.8(B) read time to the hour and half-hour using analog and digital clocks * Given a digital clock student can match to an analog clock with the same time. * Should not write time when given a clock. **Note:** Writing time will be introduced in 2nd grade.

(1.9) **Probability and statistics.** The student displays data in an organized form. The student is expected to:
1.9(A) collect and sort data * Use resources such as: attendance charts, transportation charts; including graphs, charts and tallies.
1.9(B) use organized data to construct real object graphs, picture graphs, and bar-type graphs * Construct both horizontal and vertical graphs. * Use post-it notes, unifix cubes, etc. **Note:** On a picture graph each picture represents one unit of data. Third grade introduces pictographs - where one object may represent more than one unit of data.
(1.10) **Probability and statistics.** The student uses information from organized data. The student is expected to:
1.10(A) draw conclusions and answer questions using information organized in real-object graphs, picture graphs, and bar graphs * Example - answer questions such as: how many more frogs than ducks?
1.10(B) identify events as certain or impossible such as drawing a red crayon from a bag of green crayons

(1.11) **Underlying processes and mathematical tools.** The student applies Grade 1 mathematics to solve problems connected to everyday experiences and activities in and outside of school. The student is expected to:
1.11(A) identify mathematics in everyday situations
1.11(B) solve problems with guidance, that incorporates the process of understanding the problem, making a plan, carrying out the plan, and evaluating the solution for reasonableness * Use manipulatives to represent problem situations. * Encourage different ways to solve a problem. * Have students verbalize observations.
1.11(C) select or develop an appropriate problem-solving plan or strategy including drawing a picture, looking for a pattern, systematic guessing and checking, or acting it out in order to solve a problem. * Encourage different ways to solve a problem
1.11(D) use tools such as real objects, manipulatives, and technology to solve problems
(1.12) **Underlying processes and mathematical tools.** The student communicates about Grade 1 mathematics using informal language. The student is expected to:
1.12(A) explain and record observations using objects, words, pictures, numbers, and technology * Use manipulatives to communicate problems/solutions and have students verbalize observations and ideas.
1.12(B) use tools such as real objects, manipulatives, and technology to solve problems
(1.13) **Underlying processes and mathematical tools.**
1.13The student uses logical reasoning. The student is expected to justify his or her thinking using objects, words, pictures, numbers, and technology. * Ask: "How do you know that is the answer? If someone said they didn't think it was right, how could you convince them?"