

Texas Essential Knowledge & Skills Mathematics, Grade 5.

(a) Introduction.

(1) Within a well-balanced mathematics curriculum, the primary focal points at Grade 5 are comparing and contrasting lengths, area, and volume of geometric shapes and solids; representing and interpreting data in graphs, charts, and tables; and applying whole number operations in a variety of contexts.

(2) Throughout mathematics in Grades 3-5, students build a foundation of basic understandings in number, operation, and quantitative reasoning; patterns, relationships, and algebraic thinking; geometry and spatial reasoning; measurement; and probability and statistics. Students use algorithms for addition, subtraction, multiplication, and division as generalizations connected to concrete experiences; and they concretely develop basic concepts of fractions and decimals. Students use appropriate language and organizational structures such as tables and charts to represent and communicate relationships, make predictions, and solve problems. Students select and use formal language to describe their reasoning as they identify, compare, and classify shapes and solids; and they use numbers, standard units, and measurement tools to describe and compare objects, make estimates, and solve application problems. Students organize data, choose an appropriate method to display the data, and interpret the data to make decisions and predictions and solve problems.

(3) Problem solving, language and communication, connections within and outside mathematics, and formal and informal reasoning underlie all content areas in mathematics. Throughout mathematics in Grades 3-5, students use these processes together with technology and other mathematical tools such as manipulative materials to develop conceptual understanding and solve problems as they do mathematics.

(b) Knowledge and skills.

(1) Number, operation, and quantitative reasoning. The student uses place value to represent whole numbers and decimals. The student is expected to:

(A) use place value to read, write, compare, and order whole numbers through the billions place; and

(B) use place value to read, write, compare, and order decimals through the thousandths place.

(2) Number, operation, and quantitative reasoning. The student uses fractions in problem-solving situations. The student is expected to:

(A) generate equivalent fractions;

(B) compare two fractional quantities in problem-solving situations using a variety of methods, including common denominators; and

(C) use models to relate decimals to fractions that name tenths, hundredths, and thousandths.

(3) Number, operation, and quantitative reasoning. The student adds, subtracts, multiplies, and divides to solve meaningful problems. The student is expected to:

(A) use addition and subtraction to solve problems involving whole numbers and decimals;

(B) use multiplication to solve problems involving whole numbers (no more than three digits times two digits without technology);

(C) use division to solve problems involving whole numbers (no more than two-digit divisors and three-digit dividends without technology);

(D) identify prime factors of a whole number and common factors of a set of whole numbers; and

(E) model and record addition and subtraction of fractions with like denominators in problem-solving situations.

(4) Number, operation, and quantitative reasoning. The student estimates to determine reasonable results. The student is expected to:

(A) round whole numbers and decimals through tenths to approximate reasonable results in problem situations; and

(B) estimate to solve problems where exact answers are not required.

(5) Patterns, relationships, and algebraic thinking. The student makes generalizations based on observed patterns and relationships. The student is expected to:

(A) use concrete objects or pictures to make generalizations about determining all possible combinations;

(B) use lists, tables, charts, and diagrams to find patterns and make generalizations such as a procedure for determining equivalent fractions; and

(C) identify prime and composite numbers using concrete models and patterns in factor pairs.

(6) Patterns, relationships, and algebraic thinking. The student describes relationships mathematically. The student is expected to select from and use diagrams and number sentences to represent real-life situations.

(7) Geometry and spatial reasoning. The student generates geometric definitions using critical attributes. The student is expected to:

(A) identify critical attributes including parallel, perpendicular, and congruent parts of geometric shapes and solids; and

(B) use critical attributes to define geometric shapes or solids.

(8) Geometry and spatial reasoning. The student models transformations. The student is expected to:

(A) sketch the results of translations, rotations, and reflections; and

(B) describe the transformation that generates one figure from the other when given two congruent figures.

(9) Geometry and spatial reasoning. The student recognizes the connection between ordered pairs of numbers and locations of points on a plane. The student is expected to locate and name points on a coordinate grid using ordered pairs of whole numbers.

(10) Measurement. The student selects and uses appropriate units and procedures to measure volume. The student is expected to:

(A) measure volume using concrete models of cubic units; and

(B) estimate volume in cubic units.

(11) Measurement. The student applies measurement concepts. The student is expected to:

(A) measure to solve problems involving length (including perimeter), weight, capacity, time, temperature, and area; and

(B) describe numerical relationships between units of measure within the same measurement system such as an inch is one-twelfth of a foot.

(12) Probability and statistics. The student describes and predicts the results of a probability experiment. The student is expected to:

(A) use fractions to describe the results of an experiment; and

(B) use experimental results to make predictions.

(13) Probability and statistics. The student solves problems by collecting, organizing, displaying, and interpreting sets of data. The student is expected to:

(A) use tables of related number pairs to make line graphs;

(B) describe characteristics of data presented in tables and graphs including the shape and spread of the data and the middle number; and

(C) graph a given set of data using an appropriate graphical representation such as a picture or line.

(14) Underlying processes and mathematical tools. The student applies Grade 5 mathematics to solve problems connected to everyday experiences and activities in and outside of school. The student is expected to:

(A) identify the mathematics in everyday situations;

(B) use a problem-solving model that incorporates understanding the problem, making a plan, carrying out the plan, and evaluating the solution for reasonableness;

(C) select or develop an appropriate problem-solving strategy, including drawing a picture, looking for a pattern, systematic guessing and checking, acting it out, making a table, working a simpler problem, or working backwards to solve a problem; and

(D) use tools such as real objects, manipulatives, and technology to solve problems.

(15) Underlying processes and mathematical tools. The student communicates about Grade 5 mathematics using informal language. The student is expected to:

(A) explain and record observations using objects, words, pictures, numbers, and technology; and

(B) relate informal language to mathematical language and symbols.

(16) Underlying processes and mathematical tools. The student uses logical reasoning to make sense of his or her world. The student is expected to:

(A) make generalizations from patterns or sets of examples and nonexamples; and

(B) justify why an answer is reasonable and explain the solution process.

Source: The provisions of this §111.21 adopted to be effective September 1, 1998, 22 TexReg 7623.