Mathematical Process Standards

4.1 Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding.

Tools to Know

4.1(A) apply mathematics to problems arising in everyday life, society, and the workplace
4.1(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
4.1(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

Decimals

Connected Knowledge and Skills 4.3

4.2 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.

STAAR	Readiness Standards	Supporting Standards
4-6 items	4.2(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 4.4(A) add and subtract whole numbers and decimals to the hundredths place using the standard algorithm	4.2(A) interpret the value of each place-value position as 10 times the position to the right and as one-tenth of the value of the place to its left 4.2(C) compare and order whole numbers to 1,000,000,000 and represent comparisons using the symbols >, <, or = 4.2(E) represent decimals, including tenths and hundredths, using concrete and visual models and money 4.2(F) compare and order decimals using concrete and visual models to the hundredths 4.2(H) determine the corresponding decimal to the tenths or hundredths place of a specified point on a number line 4.3(G) represent fractions and decimals to the tenths or hundredths as distances from zero on a number line

Fractions

Connected Knowledge and Skills 4.2

4.3 Number and operations. The student applies mathematical process standards to represent and generate fractions to solve problems.

6-9 items	4.2(G) relate decimals to fractions that name tenths and hundredths 4.3(D) compare two fractions with different numerators and different denominators and represent the comparison using the symbols >, =, or < 4.3(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	4.3(A) represent a fraction a/b as a sum of fractions 1/b, where a and b are whole numbers and $b > 0$, including when $a > b$ 4.3(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 4.3(C) determine if two given fractions are equivalent using a variety of methods 4.3(F) evaluate the reasonableness of sums and differences of fractions using benchmark fractions 0, 1/4, 1/2, 3/4, and 1, referring to the same whole 4.3(G) represent fractions and decimals to the tenths or hundredths as distances from zero on a number line

Whole Number Operations

Connected Knowledge and Skills 4.2

4.4 Number and operations. The student applies mathematical process standards to develop and use strategies and methods for whole number computations and decimal sums and differences in order to solve problems with efficiency and accuracy.

4.5 Algebraic reasoning. The student applies mathematical process standards to develop concepts of expressions and equations.

STAAR	Readiness Standards	Supporting Standards
7-9 items	4.4(H) solve with fluency one- and two-step problems involving multiplication and division, including interpreting remainders 4.5(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 4.5(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	4.2(D) round whole numbers to a given place value through the hundred thousand place 4.4(B) determine products of a number and 10 or 100 using properties of operations and place value understandings 4.4(C) represent the product of 2 two-digit numbers using arrays, area models, or equations, including perfect squares through 15 by 15 4.4(D) use strategies and algorithms, including the standard algorithm, to multiply up to a four-digit number by a one-digit number and to multiply a two-digit number by a two-digit number. Strategies may include mental math, partial products, and the commutative, associative, and distributive properties 4.4(E) represent the quotient of up to a four-digit whole number divided by a one-digit whole number using arrays, area models, or equations 4.4(F) use strategies and algorithms, including the standard algorithm, to divide up to a four-digit dividend by a one-digit divisor 4.4(G) round to the nearest 10, 100, or 1,000 or use compatible numbers to estimate solutions involving whole numbers

Geometry

4.6 Geometry and measurement. The student applies mathematical process standards to analyze geometric attributes in order to develop generalizations about their properties.

4.7 Geometry and measurement. The student applies mathematical process standards to solve problems involving angles less than or equal to 180 degrees.

4-6 items	4.6(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 4.7(C) determine the approximate measures of angles in degrees to the nearest whole number using a protractor	4.6(A) identify points, lines, line segments, rays, angles, and perpendicular and parallel lines 4.6(B) identify and draw one or more lines of symmetry, if they exist, for a two-dimensional figure 4.6(C) apply knowledge of right angles to identify acute, right, and obtuse triangles 4.7(D) draw an angle with a given measure 4.7(E) determine the measure of an unknown angle formed by two non-overlapping adjacent angles given one or both angle measures
	SEs Not Included in Assessed Curriculum	*4.7(A) Illustrate the measure of an angle as the part of a circle whose center is at the vertex of the angle that is "cut out" by the rays of the angle. Angle measures are limited to whole numbers.* *4.7(B) Illustrate degrees as the units used to measure an angle, where 1/360 of any circle is 1 degree and an angle that "cuts" n/360 out of any circle whose center is at the angle's vertex has a measure of n degrees. Angle measures are limited to whole numbers.*

Measurement

Connected Knowledge and Skills 4.5

4.8 Geometry and measurement. The student applies mathematical process standards to select appropriate customary and metric units, strategies, and tools to solve problems involving measurement.

4-5 items	4.5(D) solve problems related to perimeter and area of rectangles where dimensions are whole numbers 4.8(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	4.8(A) identify relative sizes of measurement units within the customary and metric systems 4.8(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
	SEs Not Included in Assessed Curriculum	*4.5(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 x w)*

Data Analysis

4.9 Data analysis. The student applies mathematical process standards to solve problems by collecting, organizing, displaying, and interpreting data.

STAAR	Readiness Standards	Supporting Standards
2-3 items	4.9(A) represent data on a frequency table, dot plot, or stem-and-leaf plot marked with whole numbers and fractions	4.9(B) solve one- and two-step problems using data in whole number, decimal, and fraction form in a frequency table, dot plot, or stem-and-leaf plot

Personal Financial Literacy

4.10 Personal financial literacy. The student applies mathematical process standards to manage one's financial resources effectively for lifetime financial security.

1-2 items		4.10(A) distinguish between fixed and variable expenses 4.10(B) calculate profit in a given situation 4.10(E) describe the basic purpose of financial institutions, including keeping money safe, borrowing money, and lending
	SEs Not Included in Assessed Curriculum	*4.10(C) compare the advantages and disadvantages of various savings options* *4.10(D) describe how to allocate weekly allowance among spending, saving, including for college; and sharing*

32 items	**19-21 questions from Readiness Standards**	**11-13 questions from Supporting Standards**

Mathematical Process Standards

4.1 Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding.

Ways to Show

4.1(D) communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate
4.1(E) create and use representations to organize, record, and communicate mathematical ideas
4.1(F) analyze mathematical relationships to connect and communicate mathematical ideas
4.1(G) display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication

NOTE: The classification of standards on this Snapshot represents the reviewed and synthesized input of a sample of Texas Math teachers. This Snapshot DOES NOT represent a publication of the Texas Education Agency. District curriculum may reflect other classifications.