Grade 7 Mathematics Assessment

Eligible Texas Essential Knowledge and Skills

STAAR Grade 7 Mathematics Assessment

Mathematical Process Standards

These student expectations will not be listed under a separate reporting category. Instead, they will be incorporated into test questions across reporting categories since the application of mathematical process standards is part of each knowledge statement.

(7.1)   **Mathematical process standards.** The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to

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

  (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;

  (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;

  (D)   communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate;

  (E)   create and use representations to organize, record, and communicate mathematical ideas;

  (F)   analyze mathematical relationships to connect and communicate mathematical ideas; and

  (G)   display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication.

Reporting Category 1:
Probability and Numerical Representations

The student will demonstrate an understanding of how to represent probabilities and numbers.

(7.2) **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

    (A)   extend previous knowledge of sets and subsets using a visual representation to describe relationships between sets of rational numbers. ***Supporting Standard***

(7.6) **Proportionality.** The student applies mathematical process standards to use probability and statistics to describe or solve problems involving proportional relationships. The student is expected to

    (A)   represent sample spaces for simple and compound events using lists and tree diagrams; ***Supporting Standard***

    (C)   make predictions and determine solutions using experimental data for simple and compound events; ***Supporting Standard***

    (D)   make predictions and determine solutions using theoretical probability for simple and compound events; ***Supporting Standard***

    (E)   find the probabilities of a simple event and its complement and describe the relationship between the two; ***Supporting Standard***

    (H)   solve problems using qualitative and quantitative predictions and comparisons from simple experiments; and ***Readiness Standard***

    (I)   determine experimental and theoretical probabilities related to simple and compound events using data and sample spaces. ***Readiness Standard***

Reporting Category 2:
Computations and Algebraic Relationships

The student will demonstrate an understanding of how to perform operations and represent algebraic relationships.

(7.3)   **Number and operations.** The student applies mathematical process standards to add, subtract, multiply, and divide while solving problems and justifying solutions. The student is expected to

   (A)   add, subtract, multiply, and divide rational numbers fluently; and ***Supporting Standard***

   (B)   apply and extend previous understandings of operations to solve problems using addition, subtraction, multiplication, and division of rational numbers. ***Readiness Standard***

(7.4)   **Proportionality.** The student applies mathematical process standards to represent and solve problems involving proportional relationships. The student is expected to

   (A)   represent constant rates of change in mathematical and real-world problems given pictorial, tabular, verbal, numeric, graphical, and algebraic representations, including $d = rt$; ***Readiness Standard***

   (B)   calculate unit rates from rates in mathematical and real-world problems; ***Supporting Standard***

   (C)   determine the constant of proportionality ($k = y/x$) within mathematical and real-world problems; and ***Supporting Standard***

   (D)   solve problems involving ratios, rates, and percents, including multi-step problems involving percent increase and percent decrease, and financial literacy problems. ***Readiness Standard***

(7.7)   **Expressions, equations, and relationships.** The student applies mathematical process standards to represent linear relationships using multiple representations. The student is expected to

   (A)   represent linear relationships using verbal descriptions, tables, graphs, and equations that simplify to the form $y = mx + b$. ***Readiness Standard***

(7.10)   **Expressions, equations, and relationships.** The student applies mathematical process standards to use one-variable equations and inequalities to represent situations. The student is expected to

   (A)   write one-variable, two-step equations and inequalities to represent constraints or conditions within problems; *Supporting Standard*

   (B)   represent solutions for one-variable, two-step equations and inequalities on number lines; and *Supporting Standard*

   (C)   write a corresponding real-world problem given a one-variable, two-step equation or inequality. *Supporting Standard*

(7.11)   **Expressions, equations, and relationships.** The student applies mathematical process standards to solve one-variable equations and inequalities. The student is expected to

   (A)   model and solve one-variable, two-step equations and inequalities; and *Readiness Standard*

   (B)   determine if the given value(s) make(s) one-variable, two-step equations and inequalities true. *Supporting Standard*

Reporting Category 3:
Geometry and Measurement

The student will demonstrate an understanding of how to represent and apply geometry and measurement concepts.

(7.4)   **Proportionality.** The student applies mathematical process standards to represent and solve problems involving proportional relationships. The student is expected to

     (E)   convert between measurement systems, including the use of proportions and the use of unit rates. ***Supporting Standard***

(7.5)   **Proportionality.** The student applies mathematical process standards to use geometry to describe or solve problems involving proportional relationships. The student is expected to

     (A)   generalize the critical attributes of similarity, including ratios within and between similar shapes; ***Supporting Standard***

     (B)   describe π as the ratio of the circumference of a circle to its diameter; and ***Supporting Standard***

     (C)   solve mathematical and real-world problems involving similar shape and scale drawings. ***Readiness Standard***

(7.9)   **Expressions, equations, and relationships.** The student applies mathematical process standards to solve geometric problems. The student is expected to

     (A)   solve problems involving the volume of rectangular prisms, triangular prisms, rectangular pyramids, and triangular pyramids; ***Readiness Standard***

     (B)   determine the circumference and area of circles; ***Readiness Standard***

     (C)   determine the area of composite figures containing combinations of rectangles, squares, parallelograms, trapezoids, triangles, semicircles, and quarter circles; and ***Readiness Standard***

     (D)   solve problems involving the lateral and total surface area of a rectangular prism, rectangular pyramid, triangular prism, and triangular pyramid by determining the area of the shape's net. ***Supporting Standard***

(7.11) **Expressions, equations, and relationships.** The student applies mathematical process standards to solve one-variable equations and inequalities. The student is expected to

    (C)   write and solve equations using geometry concepts, including the sum of the angles in a triangle, and angle relationships. ***Supporting Standard***

Reporting Category 4:
Data Analysis and Personal Financial Literacy

The student will demonstrate an understanding of how to represent and analyze data and how to describe and apply personal financial concepts.

(7.6)   **Proportionality.** The student applies mathematical process standards to use probability and statistics to describe or solve problems involving proportional relationships. The student is expected to

    (G)   solve problems using data represented in bar graphs, dot plots, and circle graphs, including part-to-whole and part-to-part comparisons and equivalents. ***Readiness Standard***

(7.12)   **Measurement and data.** The student applies mathematical process standards to use statistical representations to analyze data. The student is expected to

    (A)   compare two groups of numeric data using comparative dot plots or box plots by comparing their shapes, centers, and spreads; ***Readiness Standard***

    (B)   use data from a random sample to make inferences about a population; and ***Supporting Standard***

    (C)   compare two populations based on data in random samples from these populations, including informal comparative inferences about differences between the two populations. ***Supporting Standard***

(7.13)   **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

    (A)   calculate the sales tax for a given purchase and calculate income tax for earned wages; ***Supporting Standard***

    (B)   identify the components of a personal budget, including income; planned savings for college, retirement, and emergencies; taxes; and fixed and variable expenses, and calculate what percentage each category comprises of the total budget; ***Supporting Standard***

    (C)   create and organize a financial assets and liabilities record and construct a net worth statement; ***Supporting Standard***

(D)   use a family budget estimator to determine the minimum household budget and average hourly wage needed for a family to meet its basic needs in the student's city or another large city nearby; **Supporting Standard**

(E)   calculate and compare simple interest and compound interest earnings; and **Supporting Standard**

(F)   analyze and compare monetary incentives, including sales, rebates, and coupons. **Supporting Standard**