



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**