

TAKS-Alt Operational Test Spring 2009

Grade 10 Mathematics

Essence Statements

NOTE: The yellow highlight indicates the four state-required essence statements that comprise the TAKS–Alt assessment for Grade 10 Mathematics.

TAKS Objective	TEKS Knowledge and Skills Statement	Essence Statement
Objective 1: The student will describe functional relationships in a variety of ways.	(A.1) Foundations for functions. The student understands that a function represents a dependence of one quantity on another and can be described in a variety of ways.	Shows a basic understanding of functions.
Objective 2: The student will demonstrate an understanding of the properties and attributes of functions.	(A.2) Foundations for functions. The student uses the properties and attributes of functions.	Understands properties and attributes of functions.
Objective 2: The student will demonstrate an understanding of the properties and attributes of functions.	(A.3) Foundations for functions. The student understands how algebra can be used to express generalizations and recognizes and uses the power of symbols to represent situations.	Uses symbols to represent situations.
Objective 2: The student will demonstrate an understanding of the properties and attributes of functions.	(A.4) Foundations for functions. The student understands the importance of the skills required to manipulate symbols in order to solve problems and uses the necessary algebraic skills required to simplify algebraic expressions and solve equations and inequalities in problem situations.	Uses mathematical skills to simplify expressions and solve problems.
Objective 3: The student will demonstrate an understanding of linear functions.	(A.5) Linear functions. The student understands that linear functions can be represented in different ways and translates among their various representations.	Understands different representations of linear functions.
Objective 3: The student will demonstrate an understanding of linear functions.	(A.6) Linear functions. The student understands the meaning of the slope and intercepts of the graphs of linear functions and zeros of linear functions and interprets and describes the effects of changes in parameters of linear functions in real-world and mathematical situations.	Understands the meaning of the slope and intercepts of linear functions.
Objective 4: The student will formulate and use linear equations and inequalities.	(A.7) Linear functions. The student formulates equations and an inequality based on linear functions, uses a variety of methods to solve them, and analyzes the solutions in terms of the situation.	Formulates and solves equations and inequalities of linear functions.
Objective 4: The student will formulate and use linear equations and inequalities.	(A.8) Linear functions. The student formulates systems of linear equations from problem situations, uses a variety of methods to solve them, and analyzes the solutions in terms of the situation.	Formulates and solves systems of linear equations.

Objective 5: The student will demonstrate an understanding of quadratic and other nonlinear functions.	(A.9) Quadratic and other nonlinear functions. The student understands that the graphs of quadratic functions are affected by the parameters of the function and can interpret and describe the effects of changes in the parameters of quadratic functions.	Understands the graphs of quadratic functions.
Objective 5: The student will demonstrate an understanding of quadratic and other nonlinear functions.	(A.10) Quadratic and other nonlinear functions. The student understands there is more than one way to solve a quadratic equation and solves them using appropriate methods.	Solves quadratic equations in a variety of ways.
Objective 5: The student will demonstrate an understanding of quadratic and other nonlinear functions.	(A.11) Quadratic and other nonlinear functions. The student understands there are situations modeled by functions that are neither linear nor quadratic and models the situations.	Uses models for nonlinear functions.
Objective 6: The student will demonstrate an understanding of geometric relationships and spatial reasoning.	(8.6) Geometry and spatial reasoning. The student uses transformational geometry to develop spatial sense.	Understands and uses transformational geometry.
Objective 6: The student will demonstrate an understanding of geometric relationships and spatial reasoning.	(8.7) Geometry and spatial reasoning. The student uses geometry to model and describe the physical world.	Uses the coordinate plane.
Objective 7: The student will demonstrate an understanding of two- and three-dimensional representations of geometric relationships and shapes.	(8.7) Geometry and spatial reasoning. The student uses geometry to model and describe the physical world.	Uses geometric models in the physical world.
Objective 8: The student will demonstrate an understanding of the concepts and uses of measurement and similarity.	(8.8) Measurement. The student uses procedures to determine measures of three-dimensional figures.	Understands and uses measurements of three-dimensional figures.
Objective 8: The student will demonstrate an understanding of the concepts and uses of measurement and similarity.	(8.9) Measurement. The student uses indirect measurement to solve problems.	Uses indirect measurement.
Objective 8: The student will demonstrate an understanding of the concepts and uses of measurement and similarity.	(8.10) Measurement. The student describes how changes in dimensions affect linear, area, and volume measures.	Understands changes in dimensions and their effects on measurements.
Objective 9: The student will demonstrate an understanding of percents, proportional relationships, probability, and statistics in application problems.	(8.3) Patterns, relationships, and algebraic thinking. The student identifies proportional or non-proportional linear relationships in problem situations and solves problems.	Estimates and solves problems using proportions and percents.
Objective 9: The student will demonstrate an understanding of percents, proportional relationships, probability, and statistics in application problems.	(8.11) Probability and statistics. The student applies concepts of theoretical and experimental probability to make predictions.	Uses probability to make predictions.
Objective 9: The student will demonstrate an understanding of percents, proportional relationships, probability, and statistics in application problems.	(8.12) Probability and statistics. The student uses statistical procedures to describe data.	Uses statistics to describe data.

Objective 9: The student will demonstrate an understanding of percents, proportional relationships, probability, and statistics in application problems.	(8.13) Probability and statistics. The student evaluates predictions and conclusions based on statistical data.	Recognizes valid and invalid conclusions based on statistical data.
Objective 10: The student will demonstrate an understanding of the mathematical processes and tools used in problem solving.	(8.14) Underlying processes and mathematical tools. The student applies Grade 8 mathematics to solve problems connected to everyday experiences, investigations in other disciplines, and activities in and outside of school.	Uses mathematics to solve everyday problems.
Objective 10: The student will demonstrate an understanding of the mathematical processes and tools used in problem solving.	(8.15) Underlying processes and mathematical tools. The student communicates about Grade 8 mathematics through informal and mathematical language, representations, and models.	Communicates using informal mathematical language.
Objective 10: The student will demonstrate an understanding of the mathematical processes and tools used in problem solving.	(8.16) Underlying processes and mathematical tools. The student uses logical reasoning to make conjectures and verify conclusions.	Uses logical reasoning.