

7TH GRADE MATH STANDARDS

ALGEBRA STANDARDS

Goal 1: Students will use the language of algebra to explore, describe, represent, and analyze number expressions and relations that represent variable quantities.

Indicator 1: Use procedures to transform algebraic expressions.

- **7.A.1.1:** (Application) Write and evaluate algebraic expressions using the set of whole numbers.
- **7.A.1.2:** (Knowledge) Identify associative, commutative, distributive, and identity properties involving algebraic expressions.

Indicator 2: Use a variety of algebraic concepts and methods to solve equations and inequalities.

- **7.A.2.1:** (Application) Write and solve one-step 1st degree equations, with one variable, using the set of integers and inequalities, with one variable, using the set of whole numbers.

Indicator 3: Interpret and develop mathematical models.

- **7.A.3.1:** (Application) Identify and graph ordered pairs on a coordinate plane and inequalities on a number line.

Indicator 4: Analyze and describe the properties and behaviors of relations, functions, and their inverses.

- **7.A.4.1:** (Application) Recognize one-step patterns using tables, graphs, and models and create one-step algebraic expressions representing the pattern.

GEOMETRY STANDARDS

Goal 2: Students will use the language of geometry to discover, analyze, and communicate geometric concepts, properties, and relationships.

Indicator 1: Use deductive and inductive reasoning to recognize and apply properties of geometric figures.

- **7.G.1.1:** (Application) Identify, describe, and classify polygons having up to 10 sides.
- **7.G.1.2:** (Knowledge) Identify and describe elements of geometric figures

Indicator 2: Use properties of geometric figures to solve problems from a variety of perspectives.

- **7.G.2.1:** (Application) Demonstrate ways that shapes can be transformed.

MEASUREMENT STANDARDS

Goal 3: Students will apply systems of measurement and use appropriate measurement tools to describe and analyze the world around them.

Indicator 1: Apply measurement concepts in practical applications.

- **7.M.1.1:** (Comprehension) Select, use, and convert appropriate unit of measurement for a situation including capacity and angle measurement.

- **7.M.1.2:** (Comprehension) Given the formulas, find the circumference, perimeter, and area of circles, parallelograms, triangles, and trapezoids (whole number measurement).

NUMBER SENSE STANDARDS

Goal 4: Students will develop and use number sense to investigate the characteristics of numbers in a variety of forms and modes of operation.

Indicator 1: Use the structural characteristics of the set of real numbers and its various subsets. Apply the concept of value, magnitude, and relative magnitude of real numbers.

- **7.N.1.1:** (Comprehension) Represent numbers in a variety of forms by describing, ordering, and comparing integers, decimals, percents, and fractions.
- **7.N.1.2:** (Application) Find and use common multipliers and factors of whole numbers.

Indicator 2: Apply operations within the set of real numbers.

- **7.N.2.1:** (Application) Add, subtract, multiply, and divide integers and positive fractions.

Indicator 3: Develop conjectures, predictions, or estimations to solve problems and verify or justify the results.

- **7.N.3.1:** (Application) Use various strategies to solve one- and two-step problems involving positive fractions and integers.

STATISTICS AND PROBABILITY STANDARDS

Goal 5: Students will apply statistical methods to analyze data and explore probability for making decisions and predictions.

Indicator 1: Use statistical models to gather, analyze, and display data to draw conclusions.

- **7.S.1.1:** (Comprehension) Find the mean, median, mode, and range of a set of data.
- **7.S.1.2:** (Application) Display data, using frequency tables, line plots, stem-and-leaf plots and make predictions from data displayed in a graph.

Indicator 2: Apply the law of probability to predict outcomes and solve problems.

- **7.S.2.1:** (Comprehension) Given a sample space, find the probability of a specific outcome.

8th GRADE MATH STANDARDS

ALGEBRA STANDARDS

Goal 1: Students will use the language of algebra to explore, describe, represent, and analyze number expressions and relations that represent variable quantities.

Indicator 1: Use procedures to transform algebraic expressions.

- 8. A.1.1. (Application) Use properties to expand, combine, and simplify 1st degree algebraic expressions with the set of integers.

Indicator 2: Use a variety of algebraic concepts and methods to solve equations and inequalities.

- 8. A.2.1. (Application) Write and solve two-step 1st degree equations, with one variable, and one-step inequalities, with one variable, using the set of integers.

Indicator 3: Interpret and develop mathematical models.

- 8. A.3.1. (Comprehension) Describe and determine linear relationships.

Indicator 4: Analyze and describe the properties and behaviors of relations, functions, and their inverses.

- 8. A.4.1. (Synthesis) Create rules to explain the relationship between numbers when a change in the first variable affects the second variable.
- 8. A.4.2. (Analysis) Describe and represent relations using tables, graphs, and rules.

GEOMETRY STANDARDS

Goal 2: Students will use the language of geometry to discover, analyze, and communicate geometric concepts, properties, and relationships.

Indicator 1: Use deductive and inductive reasoning to recognize and apply properties of geometric figures.

- 8. G.1.1. Describe and classify prisms, pyramids, cylinders, and cones.
- 8. G.1.2. (Application) Given any two sides of an illustrated right triangle, use the Pythagorean Theorem to find the third side.

Indicator 2: Use properties of geometric figures to solve problems from a variety of perspectives.

- 8. G.2.1. (Application) Write and solve proportions that express the relationships between corresponding parts of similar quadrilaterals and triangles.

MEASUREMENT STANDARDS

Goal 3: Students will apply systems of measurement and use appropriate measurement tools to describe and analyze the world around them.

Indicator 1: Apply measurement concepts in practical applications.

- 8. M.1.1. (Application) Apply proportional reasoning to solve measurement problems with rational number measurements.
- 8. M.1.2. (Comprehension) Find area, volume, and surface area with whole number measurements.

NUMBER SENSE STANDARDS

Goal 4: Students will develop and use number sense to investigate the characteristics of numbers in a variety of forms and modes of operation.

Indicator 1: Use the structural characteristics of the set of real numbers and its various subsets. Apply the concept of value, magnitude, and relative magnitude of real numbers.

- 8.N.1.1. (Comprehension) Represent numbers in a variety of forms and identify the subsets of rational numbers.

Indicator 2: Apply operations within the set of real numbers.

- 8. N.2.1. (Application) Read, write, and compute within any subset of rational numbers.

Indicator 3: Develop conjectures, predictions, or estimations to solve problems and verify or justify the results.

- 8. N.3.1. (Application) Use various strategies to solve multi-step problems involving rational numbers.

STATISTICS AND PROBABILITY STANDARDS

Goal 5: Students will apply statistical methods to analyze data and explore probability for making decisions and predictions.

Indicator 1: Use statistical models to gather, analyze, and display data to draw conclusions.

- 8. S.1.1. (Comprehension) Find the mean, median, mode, and range of a data set from a stem-and-leaf plot and a line plot.
- 8. S.1.2. (Application) Use a variety of visual representations to display data to make comparisons and predictions.

Indicator 2: Apply the law of probability to predict outcomes and solve problems.

- 8. S.2.1. (Comprehension) Find the sample space and compute probability for two simultaneous independent events.

HIGH SCHOOL ALGEBRA STANDARDS

Goal 1: Students will use the language of algebra to explore, describe, represent, and analyze number expressions and relations that represent variable quantities.

Indicator 1: Use procedures to transform algebraic expressions.

Core HS Standards

- 9-12.A.1.1. (Comprehension) Write equivalent forms of algebraic expressions using properties of the set of real numbers.

Advanced HS Standards

- 9-12.A.1.1A. (Application) Write equivalent forms of rational algebraic expressions using properties of real numbers.
- 9-12.A.1.2A. (Application) Apply properties and definitions of trigonometric, exponential, and logarithmic expressions.

Indicator 2: Use a variety of algebraic concepts and methods to solve equations and inequalities.

Core HS Standards

- 9-12.A.2.1. (Comprehension) Use algebraic properties to transform multi-step, single variable, and first-degree equations.
- 9-12.A.2.2. (Application) Use algebraic properties to transform multi-step, single variable, and first-degree inequalities and represent solutions using a number line.

Advanced HS Standards

- 9-12.A.2.1A. (Analysis) Determine solutions of quadratic equations.
- 9-12.A.2.2A. (Application) Determine the solution of systems of equations and systems of inequalities.
- 9-12.A.2.3A. (Application) Determine solutions to absolute value statements.

Indicator 3: Interpret and develop mathematical models.

Core HS Standards

- 9-12.A.3.1. (Application) Create linear models to represent problem situations.
- 9-12.A.3.2. (Comprehension) Distinguish between linear and nonlinear models.

Advanced HS Standards

- 9-12.A.3.1A. (Analysis) Distinguish between linear, quadratic, inverse variations, and exponential models.
- 9-12.A.3.2A. (Synthesis) Create formulas to model relationships that are algebraic, geometric, trigonometric, and exponential.
- 9-12.A.3.3A. (Analysis) Use sequences and series to model relationships.

Indicator 4: Analyze and describe the properties and behaviors of relations, functions, and their inverses.

Core HS Standards

- 9-12.A.4.1. (Application) Use graphs, tables, and equations to represent linear functions.

Advanced HS Standards

- 9-12.A.4.1A. (Analysis) Determine the domain, range, and intercepts of a function.
- 9-12.A.4.2A. (Analysis) Describe the behavior of a polynomial, given the leading coefficient, roots, and degree.
- 9-12.A.4.3A. (Analysis) Apply transformations to graphs and describe the results.
- 9-12.A.4.4A. (Application) Apply properties and definitions of trigonometric, exponential, and logarithmic expressions.
- 9-12.A.4.5A. (Analysis) Describe characteristics of nonlinear functions and relations.
- 9-12.A.4.6A. (Application) Graph solutions to linear inequalities.

HIGH SCHOOL GEOMETRY AND MEASUREMENT STANDARDS

GEOMETRY STANDARDS

Goal 2: Students will use the language of geometry to discover, analyze, and communicate geometric concepts, properties, and relationships.

Indicator 1: Use deductive and inductive reasoning to recognize and apply properties of geometric figures.

Core HS Standards

- 9-12.G.1.1. (Application) Apply the properties of triangles and quadrilaterals to find unknown parts.
- 9-12.G.1.2. (Application) Identify and apply relationships among triangles.

Advanced HS Standards

- 9-12.G.1.1A. (Evaluation) Justify properties of geometric figures.
- 9-12.G.1.2A. (Application) Determine the values of the sine, cosine, and tangent ratios of right triangles.
- 9-12.G.1.3A. (Application) Apply properties associated with circles.
- 9-12.G.1.4A. (Analysis) Use formulas for surface area and volume to solve problems involving three-dimensional figures.

Indicator 2: Use properties of geometric figures to solve problems from a variety of perspectives.

Core HS Standards

- 9-12.G.2.1. (Analysis) Recognize the relationship between a three-dimensional figure and its two-dimensional representation.
- 9-12.G.2.2. (Application) Reflect across vertical or horizontal lines, and translate two-dimensional figures.
- 9-12.G.2.3. (Application) Use proportions to solve problems.

Advanced HS Standards

- 9-12.G.2.1A. (Synthesis) Use Cartesian coordinates to verify geometric properties.

MEASUREMENT STANDARDS

Goal 3: Students will apply systems of measurement and use appropriate measurement tools to describe and analyze the world around them.

Indicator 1: Apply measurement concepts in practical applications.

Core HS Standards

- 9-12.M.1.1. (Comprehension) Choose appropriate unit label, scale, and precision.
- 9-12.M.1.2. (Comprehension) Use suitable units when describing rate of change.
- 9-12.M.1.3. (Application) Use formulas to find perimeter, circumference, and area to solve problems involving common geometric figures.

Advanced HS Standards

- 9-12.M.1.1A. (Application) Use dimensional analysis to check answers and determine units of a problem solution.
- 9-12.M.1.2A. (Analysis) Use indirect measurement in problem situations that defy direct measurement.

HIGH SCHOOL NUMBER SENSE AND STATISTICS AND PROBABILITY STANDARDS

NUMBER SENSE STANDARDS

Goal 4: Students will develop and use number sense to investigate the characteristics of numbers in a variety of forms and modes of operation.

Indicator 1: Use the structural characteristics of the set of real numbers and its various subsets. Apply the concept of value, magnitude, and relative magnitude of real numbers.

Core HS Standards

- 9-12.N.1.1. (Comprehension) Identify multiple representations of a real number.
- 9-12.N.1.2. (Comprehension) Apply the concept of place value, magnitude, and relative magnitude of real numbers.

Advanced HS Standards

- 9-12.N.1.1A. (Comprehension) Describe the relationship of the real number system to the complex number system.
- 9-12.N.1.2A. (Application) Apply properties and axioms of the real number system to various subsets, e.g., axioms of order, closure.

Indicator 2: Apply operations within the set of real numbers.

Core HS Standards

- 9-12.N.2.1. (Comprehension) Add, subtract, multiply, and divide real numbers including integral exponents.

Advanced HS Standards

- 9-12.N.2.1A. (Application) Add, subtract, multiply, and divide real numbers including rational exponents.

Indicator 3: Develop conjectures, predictions, or estimations to solve problems and verify or justify the results.

Core HS Standards

- 9-12.N.3.1. (Analysis) Use estimation strategies in problem situations to predict results and to check the reasonableness of results.

STATISTICS AND PROBABILITY STANDARDS

Goal 5: Students will apply statistical methods to analyze data and explore probability for making decisions and predictions.

Indicator 1: Use statistical models to gather, analyze, and display data to draw conclusions.

Core HS Standards

- 9-12.S.1.1. (Analysis) Draw conclusions from a set of data.
- 9-12.S.1.2. (Comprehension) Compare multiple one-variable data sets, using range, interquartile range, mean, mode, and median.
- 9-12.S.1.3. (Analysis) Represent a set of data in a variety of graphical forms and draw conclusions.

Advanced HS Standards

- 9-12.S.1.1A. (Evaluation) Analyze and evaluate the design of surveys and experiments.
- 9-12.S.1.2A. (Evaluation) Analyze and evaluate graphical displays of data.
- 9-12.S.1.3A. (Analysis) Compare multiple one-variable data sets, using standard deviation and variance.
- 9-12.S.1.4A. (Application) Describe the normal curve and use it to make predictions.
- 9-12.S.1.5A. (Application) Use scatter plots, best-fit lines, and correlation coefficients to model data and support conclusions.

Indicator 2: Apply the law of probability to predict outcomes and solve problems.

Core HS Standards

- 9-12.S.2.1. (Knowledge) Distinguish between experimental and theoretical probability.
- 9-12.S.2.2. (Comprehension) Predict outcomes of simple events using given theoretical probabilities.

Advanced HS Standards

- 9-12.S.2.1A. (Application) Use probabilities to solve problems.
- 9-12.S.2.2A. (Application) Determine probability of compound, complementary, independent, and mutually exclusive events.
- 9-12.S.2.3A. (Analysis) Generate data and use the data to estimate empirical probabilities.