SECTION ELEVEN: Draft 8th Grade Standards

11A: Introduction

Critical Areas for Grade 8 Mathematics

In Grade 8, instructional time should focus on three critical areas: (1) formulating and reasoning about expressions and equations, including modeling an association in bivariate data with a linear equation, and solving linear equations and systems of linear equations; (2) grasping the concept of a function and using functions to describe quantitative relationships; (3) analyzing two- and three-dimensional space and figures using distance, angle, similarity, and congruence, and understanding and applying the Pythagorean Theorem.

1. Students use linear equations and systems of linear equations to represent, analyze, and solve a variety of problems. Students recognize equations for proportions ($y/x = m$ or $y = mx$) as special linear equations ($y = mx + b$), understanding that the constant of proportionality (m) is the slope, and the graphs are lines through the origin. They understand that the slope (m) of a line is a constant rate of change, so that if the input or x-coordinate changes by an amount A, the output or y-coordinate changes by the amount $m \cdot A$. Students also use a linear equation to describe the association between two quantities in bivariate data (such as arm span vs. height for students in a classroom). At this grade, fitting the model, and assessing its fit to the data are done informally. Interpreting the model in the context of the data requires students to express a relationship between the two quantities in question and to interpret components of the relationship (such as slope and y-intercept) in terms of the situation.

   Students strategically choose and efficiently implement procedures to solve linear equations in one variable, understanding that when they use the properties of equality and the concept of logical equivalence, they maintain the solutions of the original equation. Students solve systems of two linear equations in two variables and relate the systems to pairs of lines in the plane; these intersect, are parallel, or are the same line. Students use linear equations, systems of linear equations, linear functions, and their understanding of slope of a line to analyze situations and solve problems.

2. Students grasp the concept of a function as a rule that assigns to each input exactly one output. They understand that functions describe situations where one quantity determines another. They can translate among representations and partial representations of functions (noting that tabular and graphical representations may be partial representations), and they describe how aspects of the function are reflected in the different representations.

3. Students use ideas about distance and angles, how they behave under translations, rotations, reflections, and dilations, and ideas about congruence and similarity to describe and analyze two-dimensional figures and to solve problems. Students show that the sum of the angles in a triangle is the angle formed by a straight line, and that various configurations of lines give rise to similar triangles because of the angles created when a transversal cuts parallel lines. Students understand the statement of the Pythagorean Theorem and its converse, and can explain why the Pythagorean Theorem holds, for example, by decomposing a square in two different ways. They apply the

Pythagorean Theorem to find distances between points on the coordinate plane, to find lengths, and to analyze polygons. Students complete their work on volume by solving problems involving cones, cylinders, and spheres.

Grade 8 Overview

The Number System

- Know that there are numbers that are not rational, and approximate them by rational numbers.

Expressions and Equations

- Work with radicals and integer exponents.
- Understand the connections between proportional relationships, lines, and linear equations.
- Analyze and solve linear equations and pairs of simultaneous linear equations.

Functions

- Define, evaluate, and compare functions.
- Use functions to model relationships between quantities.

Geometry

- Understand congruence and similarity using physical models, transparencies, or geometry software.
- Understand and apply the Pythagorean Theorem.
- Solve real-world and mathematical problems involving volume of cylinders, cones and spheres.

Statistics and Probability

- Investigate patterns of association in bivariate data.

Mathematical Practices

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Highlights of Major Work in Grades K-8

K-2:	Addition and subtraction – concepts, skills, and problem solving; place value
3-5:	Multiplication and division of whole numbers and fractions – concepts, skills, and problem solving
6:	Ratios and proportional relationships; early expressions and equations
7:	Ratios and proportional relationships; arithmetic of rational numbers
8:	Linear algebra and linear functions

11B: Draft Standards Statements – Grade 8

The standards listed in the tables below list both core standards statements and cluster prioritization for K-8 mathematics. Not all content in a given grade is emphasized equally in the Standards. Some clusters require greater emphasis than others based on the depth of the ideas, the time that they take to master, and/or their importance to future mathematics or the demands of college and career readiness. (Link to Focus by Grade Level documents)

Students should spend the large majority of their time on the major work of the grade (■). Supporting work (□) and, where appropriate, additional work (○) can engage students in the major work of the grade.

8.NS - The Number System

8.NS.A - Know that there are numbers that are not rational, and approximate them by rational numbers. □

Standard	Standards Statement (Jan 2021 Draft)
8.NS.A.1	Know that real numbers that are not rational are called irrational.
8.NS.A.2	Use rational approximations of irrational numbers to compare size and locate on a number line.

8.EE - Expressions & Equations

8.EE.A - Expressions and Equations Work with radicals and integer exponents. ■

Standard	Standards Statement (Jan 2021 Draft)
8.EE.A.1	Apply the properties of integer exponents using powers of 10 to generate equivalent numerical expressions.
8.EE.A.2	Represent solutions to equations using square root and cube root symbols.
8.EE.A.3	Estimate very large or very small quantities using a single digit times an integer power of ten.
8.EE.A.4	Perform operations with numbers expressed in scientific notation.

8.EE.B - Understand the connections between proportional relationships, lines, and linear equations. ■

Standard	Standards Statement (Jan 2021 Draft)
8.EE.B.5	Graph proportional relationships in authentic contexts and interpret the unit rate as the slope of the graph.
8.EE.B.6	Write the equation for a line in slope intercept form y = mx + b, where m and b are rational numbers, and explain in context why the slope m is the same between any two distinct points.

8.EE.C - Analyze and solve linear equations and pairs of simultaneous linear equations. ■

Standard	Standards Statement (Jan 2021 Draft)
8.EE.C.7	Solve linear equations in one variable including equations with rational number coefficients, with the variable on both sides, or whose solutions require using the distributive property and/or combining like terms.

Standard	Standards Statement (Jan 2021 Draft)
8.EE.C.8	Find, analyze, and interpret solutions to pairs of simultaneous linear equations using graphs or tables.

8.F - Functions

8.F.A -Define, evaluate, and compare functions.

Standard	Standards Statement (Jan 2021 Draft)
8.F.A.1	Understand in authentic contexts, that the graph of a function is the set of ordered pairs consisting of an input and a corresponding output.
8.F.A.2	Compare the properties of two functions represented algebraically, graphically, numerically in tables, or verbally by description.
8.F.A.3	Understand and identify linear functions, whose graph is a straight line, and identify examples of functions that are not linear.

8.F.B - Use functions to model relationships between quantities.

Standard	Standards Statement (Jan 2021 Draft)
8.F.B.4	Construct a function to model a linear relationship in authentic contexts between two quantities.
8.F.B.5	Describe qualitatively the functional relationship between two quantities in authentic contexts by analyzing a graph.

8.G - Geometry

8.G.A - Understand congruence and similarity using physical models, transparencies, or geometry software.

Standard	Standards Statement (Jan 2021 Draft)
8.G.A.1	Verify experimentally the properties of rotations, reflections, and translations.
8.G.A.2	Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations.
8.G.A.3	Describe the effect of dilations, translations, rotations and reflections on two-dimensional figures using coordinates.
8.G.A.4	Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations.
8.G.A.5	Use informal arguments to establish facts about interior and exterior angles of triangles and angles formed by parallel lines cut with a transversal.

8.G.B - Understand and apply the Pythagorean Theorem.

Standard	Standards Statement (Jan 2021 Draft)
8.G.B.6	Distinguish between the Pythagorean Theorem and its Converse.

Standard	Standards Statement (Jan 2021 Draft)
8.G.B.7	Apply the Pythagorean Theorem to determine unknown side lengths in right triangles.
8.G.B.8	Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.

8.G.C - Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres.

Standard	Standards Statement (Jan 2021 Draft)
8.G.C.9	Choose and use the appropriate formula for the volume of cones, cylinders, and spheres to solve problems in authentic contexts.

8.SP - Statistics & Probability

8.SP.A - Investigate patterns of association in bivariate data.

Standard	Standards Statement (Jan 2021 Draft)
8.SP.A.1	Construct and interpret scatter plots for bivariate data to investigate patterns of association between two quantities.
8.SP.A.2	Know that straight lines are widely used to model relationships between two quantitative variables.
8.SP.A.3	Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept.
8.SP.A.4	Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table.

11C: Grade 8 Crosswalk with Clarifying Guidance

CLUSTER: 8.NS.A - Know that there are numbers that are not rational, and approximate them by rational numbers.

STANDARD: 8.NS.A.1

DRAFT Standards Statement (JAN 2021):

Know that real numbers that are not rational are called irrational.

DRAFT Clarifying Guidance (JAN 2021):

Understand that every number has a decimal expansion. For rational numbers show that the decimal expansion repeats eventually. Convert a decimal expansion which repeats eventually into a rational number expressed as a fraction.

Original CCSS Text (2010):

Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and convert a decimal expansion which repeats eventually into a rational number.

STANDARD: 8.NS.A.2

DRAFT Standards Statement (JAN 2021):

Use rational approximations of irrational numbers to compare size and locate on a number line.

DRAFT Clarifying Guidance (JAN 2021):

Compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of square roots. For example, start with locating the nearest perfect squares and obtain closer and closer successive decimal approximations.

Original CCSS Text (2010):

Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g., π^2). For example, by truncating the decimal expansion of √2, show that √2 is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations.

CLUSTER: 8.EE.A - Expressions and Equations Work with radicals and integer exponents.

STANDARD: 8.EE.A.1

DRAFT Standards Statement (JAN 2021):

Apply the properties of integer exponents using powers of 10 to generate equivalent numerical expressions.

DRAFT Clarifying Guidance (JAN 2021):

Generate equivalent numerical expressions. For example, 10^2 × 10^(–5) = 10^(–3) = 1/(10^3) = 1/1000.

Original CCSS Text (2010):

Know and apply the properties of integer exponents to generate equivalent numerical expressions. For example, $3^2 \times 3^{-5} = 3^{-3} = 1/3^3 = 1/27$.

STANDARD: 8.EE.A.2

DRAFT Standards Statement (JAN 2021):

Represent solutions to equations using square root and cube root symbols.

DRAFT Clarifying Guidance (JAN 2021):

Equations are of the form x^2 = p and x^3 = p, where p is a positive rational number. In addition, evaluate square roots of small perfect squares up to 225 and cube roots of small perfect cubes up to 1000. Know that any square root that is not an integer is irrational.

Original CCSS Text (2010):

Use square root and cube root symbols to represent solutions to equations of the form $x^2 = p$ and $x^3 = p$, where p is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that √2 is irrational.

STANDARD: 8.EE.A.3

DRAFT Standards Statement (JAN 2021):

Estimate very large or very small quantities using a single digit times an integer power of ten.

DRAFT Clarifying Guidance (JAN 2021):

Compare two quantities written in this format. For example, estimate the population of the United States as 3 × 10^8 and the population of the world as 7 × 10^9, and determine that the world population is more than 20 times larger.

Original CCSS Text (2010):

Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other. For example, estimate the population of the United States as 3 times 10^8 and the population of the world as 7 times 10^9, and determine that the world population is more than 20 times larger.

STANDARD: 8.EE.A.4

DRAFT Standards Statement (JAN 2021):

Perform operations with numbers expressed in scientific notation.

DRAFT Clarifying Guidance (JAN 2021):

Include real-world problems where both standard and scientific notation are used. Use scientific notation to choose units of appropriate size for measurements of very large or very small quantities. For example, use millimeters per year for seafloor spreading. Interpret scientific notation that has been generated by technology.

Original CCSS Text (2010):

Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology

CLUSTER: 8.EE.B - Understand the connections between proportional relationships, lines, and linear equations.

STANDARD: 8.EE.B.5

DRAFT Standards Statement (JAN 2021):

Graph proportional relationships in authentic contexts and interpret the unit rate as the slope of the graph.

DRAFT Clarifying Guidance (JAN 2021):

Interpret the unit rate as the slope of the graph. Compare one or more proportional relationships represented in different ways.

For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.

Original CCSS Text (2010):

Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.

STANDARD: 8.EE.B.6

DRAFT Standards Statement (JAN 2021):

Write the equation for a line in slope intercept form y = mx + b, where m and b are rational numbers, and explain in context why the slope m is the same between any two distinct points.

DRAFT Clarifying Guidance (JAN 2021):

Know that the slope m is the same between any two distinct points on a non-vertical line and be able to explain or demonstrate why.

Original CCSS Text (2010):

Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation y = mx for a line through the origin and the equation y = mx + b for a line intercepting the vertical axis at b.

CLUSTER: 8.EE.C - Analyze and solve linear equations and pairs of simultaneous linear equations.

STANDARD: 8.EE.C.7

DRAFT Standards Statement (JAN 2021):

Solve linear equations in one variable including equations with rational number coefficients, with the variable on both sides, or whose solutions require using the distributive property and/or combining like terms.

DRAFT Clarifying Guidance (JAN 2021):

This standard also includes solving or giving examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions.

Original CCSS Text (2010):

Solve linear equations in one variable.

8.EE.C.7.A *Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form x = a, a = a, or a = b results (where a and b are different numbers).*

8.EE.C.7.B *Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.*

STANDARD: 8.EE.C.8

DRAFT Standards Statement (JAN 2021):

Find, analyze, and interpret solutions to pairs of simultaneous linear equations using graphs or tables.

DRAFT Clarifying Guidance (JAN 2021):

8A: Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs.

8B: Solve systems of equations graphically and using tables. Understand that the solution may be approximate.

8C: Include real-world and mathematical problems leading to two linear equations in two variables. For example, given coordinates for two pairs of points, determine whether the line through the first pair of points intersects the line through the second pair.

Original CCSS Text (2010):

Analyze and solve pairs of simultaneous linear equations.

8.EE.C.8.A *Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously.*

8.EE.C.8.B *Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection. For example, $3x + 2y = 5$ and $3x + 2y = 6$ have no solution because $3x + 2y$ cannot simultaneously be 5 and 6.*

8.EE.C.8.C *Solve real-world and mathematical problems leading to two linear equations in two variables. For example, given coordinates for two pairs of points, determine whether the line through the first pair of points intersects the line through the second pair.*

CLUSTER: 8.F.A - Define, evaluate, and compare functions.

STANDARD: 8.F.A.1

DRAFT Standards Statement (JAN 2021):

Understand in authentic contexts, that the graph of a function is the set of ordered pairs consisting of an input and a corresponding output.

DRAFT Clarifying Guidance (JAN 2021):

Understanding that a function is a rule that assigns exactly one output to each input and using function notation are not required in Grade 8.

Original CCSS Text (2010):

Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output.

STANDARD: 8.F.A.2

DRAFT Standards Statement (JAN 2021):

Compare the properties of two functions represented algebraically, graphically, numerically in tables, or verbally by description.

DRAFT Clarifying Guidance (JAN 2021):

For example, given a linear function represented by a table of values and a linear function represented by an algebraic equation, determine which function has the greater rate of change.

Original CCSS Text (2010):

Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). For example, given a linear function represented by a table of values and a linear function represented by an algebraic expression, determine which function has the greater rate of change.

STANDARD: 8.F.A.3

DRAFT Standards Statement (JAN 2021):

Understand and identify linear functions, whose graph is a straight line, and identify examples of functions that are not linear.

DRAFT Clarifying Guidance (JAN 2021):

For example, A) determine if an equation represents a linear function and give examples of both linear and non-linear functions and B) show that the function A = s^2 is not linear because its graph contains the points (1,1), (2,4) and (3,9), which are not on a straight line.

Original CCSS Text (2010):

Interpret the equation $y = mx + b$ as defining a linear function, whose graph is a straight line; give examples of functions that are not linear. For example, the function $A = s^2$ giving the area of a square as a function of its side length is not linear because its graph contains the points (1,1), (2,4) and (3,9), which are not on a straight line.

CLUSTER: 8.F.B - Use functions to model relationships between quantities.

STANDARD: 8.F.B.4

DRAFT Standards Statement (JAN 2021):

Construct a function to model a linear relationship in authentic contexts between two quantities.

DRAFT Clarifying Guidance (JAN 2021):

Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.

Original CCSS Text (2010):

Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.

STANDARD: 8.F.B.5

DRAFT Standards Statement (JAN 2021):

Describe qualitatively the functional relationship between two quantities in authentic contexts by analyzing a graph.

DRAFT Clarifying Guidance (JAN 2021):

For example, where the function is increasing or decreasing, linear or nonlinear. Sketch a graph that exhibits the qualitative features of a function that has been described verbally.

Original CCSS Text (2010):

Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.

CLUSTER: 8.G.A - Understand congruence and similarity using physical models, transparencies, or geometry software.

STANDARD: 8.G.A.1

DRAFT Standards Statement (JAN 2021):

Verify experimentally the properties of rotations, reflections, and translations.

DRAFT Clarifying Guidance (JAN 2021):

Understand that: A) Lines are taken to lines, and line segments to line segments of the same length. B) Angles are taken to angles of the same measure. C) Parallel lines are taken to parallel lines.

For example, show these properties using physical models, transparencies, and/or geometry software.

Original CCSS Text (2010):

Verify experimentally the properties of rotations, reflections, and translations:

8.G.A.1.A	*Lines are taken to lines, and line segments to line segments of the same length.*
8.G.A.1.B	*Angles are taken to angles of the same measure.*
8.G.A.1.C	*Parallel lines are taken to parallel lines.*

STANDARD: 8.G.A.2

DRAFT Standards Statement (JAN 2021):

Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations.

DRAFT Clarifying Guidance (JAN 2021):

For example, given two congruent figures, describe a sequence of transformations that demonstrates the congruence between them.

Original CCSS Text (2010):

Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them.

STANDARD: 8.G.A.3

DRAFT Standards Statement (JAN 2021):

Describe the effect of dilations, translations, rotations and reflections on two-dimensional figures using coordinates.

DRAFT Clarifying Guidance (JAN 2021):

For example, given a triangle with given coordinates, give the new coordinates after a prescribed transformation.

Original CCSS Text (2010):

Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.

STANDARD: 8.G.A.4

DRAFT Standards Statement (JAN 2021):

Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations.

DRAFT Clarifying Guidance (JAN 2021):

For example, given two similar two-dimensional figures, describe a sequence of transformations that demonstrates the similarity between them.

Original CCSS Text (2010):

Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them.

STANDARD: 8.G.A.5

DRAFT Standards Statement (JAN 2021):

Use informal arguments to establish facts about interior and exterior angles of triangles and angles formed by parallel lines cut with a transversal.

DRAFT Clarifying Guidance (JAN 2021):

This standard includes using the properties of the angle sum of the interior angles of a triangle, exterior angle of triangles, the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles to find missing angle measures.

Original CCSS Text (2010):

Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles. For example, arrange three copies of the same triangle so that the sum of the three angles appears to form a line, and give an argument in terms of transversals why this is so.

CLUSTER: 8.G.B - Understand and apply the Pythagorean Theorem.

STANDARD: 8.G.B.6

DRAFT Standards Statement (JAN 2021):

Distinguish between the Pythagorean Theorem and its Converse.

DRAFT Clarifying Guidance (JAN 2021):

Students should have the opportunity to explore one or more proofs of the Pythagorean Theorem.

Original CCSS Text (2010):

Explain a proof of the Pythagorean Theorem and its converse.

STANDARD: 8.G.B.7

DRAFT Standards Statement (JAN 2021):

Introduce applications of the Pythagorean Theorem in authentic contexts to determine unknown side lengths in right triangles.

DRAFT Clarifying Guidance (JAN 2021):

Include real-world and mathematical problems in two and three dimensions.

Original CCSS Text (2010):

Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.

STANDARD: 8.G.B.8

DRAFT Standards Statement (JAN 2021):

Introduce applications of the Pythagorean Theorem in authentic contexts to determine unknown side lengths in right triangles.

DRAFT Clarifying Guidance (JAN 2021):

The Distance Formula is NOT included in the 8th grade standard.

Original CCSS Text (2010):

Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.

CLUSTER: 8.G.C - Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres.

STANDARD: 8.G.C.9

DRAFT Standards Statement (JAN 2021):

Choose and use the appropriate formula for the volume of cones, cylinders, and spheres to solve problems in authentic contexts.

DRAFT Clarifying Guidance (JAN 2021):

Memorizing the formulas is NOT included in this standard.

Original CCSS Text (2010):

Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.

CLUSTER: 8.SP.A - Investigate patterns of association in bivariate data.

STANDARD: 8.SP.A.1

DRAFT Standards Statement (JAN 2021):

Construct and interpret scatter plots for bivariate data to investigate patterns of association between two quantities.

DRAFT Clarifying Guidance (JAN 2021):

Bivariate data are data for two variables (usually two types of related data), such as height and weight.

Describe patterns such as clustering, outliers, positive/negative/no association, linear association, and nonlinear association.

Original CCSS Text (2010):

Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.

STANDARD: 8.SP.A.2

DRAFT Standards Statement (JAN 2021):

Know that straight lines are widely used to model relationships between two quantitative variables.

DRAFT Clarifying Guidance (JAN 2021):

For example, create a scatter plot for bivariate data and, if appropriate, informally fit a straight line and use the line to predict values. Informally assess the model fit by judging the closeness of the data points to the line.

Original CCSS Text (2010):

Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line.

STANDARD: 8.SP.A.3

DRAFT Standards Statement (JAN 2021):

Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept.

DRAFT Clarifying Guidance (JAN 2021):

For example, in a linear model for a biology experiment, interpret a slope of 1.5 cm/hr as meaning that an additional hour of sunlight each day is associated with an additional 1.5 cm in mature plant height.

Original CCSS Text (2010):

Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept. For example, in a linear model for a biology experiment, interpret a slope of 1.5 cm/hr as meaning that an additional hour of sunlight each day is associated with an additional 1.5 cm in mature plant height.

STANDARD: 8.SP.A.4

DRAFT Standards Statement (JAN 2021):

Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table.

DRAFT Clarifying Guidance (JAN 2021):

Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables. For example, collect data from students in your class on whether or not they have a curfew on school nights and whether or not they have assigned chores at home. Is there evidence that those who have a curfew also tend to have chores?

Original CCSS Text (2010):

Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables. For example, collect data from students in your class on whether or not they have a curfew on school nights and whether or not they have assigned chores at home. Is there evidence that those who have a curfew also tend to have chores?