Grade 8 Mathematics

This document provides correlations between the 2023 Indiana Academic Standards and the 2020 Indiana Academic Standards for easy reference.

The 2023 Indiana Academic Standards resulted from the standards streamlining process required by Indiana Code 20-31-3-1(c-d) and were adopted by the Indiana State Board of Education in June 2023. Standards designated as essential (E) are shaded in gray and all standards were renumbered to avoid gaps in sequencing.

2023 Indiana Academic Standard		2020 Indiana Academic Standard	
Domain: Number Sense		**Domains: Number Sense/Computation**	
Number	**Text**	**Number**	**Text**
8.NS.1	Give examples of rational and irrational numbers, and explain the difference between them. State decimal equivalents for any number. For rational numbers, show that the decimal equivalent terminates or repeats, and convert a repeating decimal into a rational number.	**8.NS.1**	Give examples of rational and irrational numbers and explain the difference between them. Understand that every number has a decimal equivalent. For rational numbers, show that the decimal equivalent terminates or repeats, and convert a repeating decimal into a rational number.
8.NS.2	Use rational approximations of irrational numbers to compare the size of irrational numbers, plot them approximately on a number line, and estimate the value of expressions involving irrational numbers.	**8.NS.2**	Use rational approximations of irrational numbers to compare the size of irrational numbers, plot them approximately on a number line, and estimate the value of expressions involving irrational numbers.
8.NS.3	Given a numeric expression with common rational number bases and integer exponents, apply the properties of exponents to generate equivalent expressions. (E)	**8.NS.3**	Given a numeric expression with common rational number bases and integer exponents, apply the properties of exponents to generate equivalent expressions.

8.NS.4	Solve real-world problems with rational numbers by using multiple operations. (E)	**8.C.1**	Solve real-world problems with rational numbers by using multiple operations.
		8.C.2	Solve real-world and other mathematical problems involving numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Interpret scientific notation that has been generated by technology, such as a scientific calculator, graphing calculator, or excel spreadsheet.
2023 Indiana Academic Standard		**2020 Indiana Academic Standard**	
Domain: Algebra and Functions		**Domain: Algebra And Functions**	
Number	**Text**	**Number**	**Text**
8.AF.1	Solve linear equations and inequalities with rational number coefficients fluently, including those whose solutions require expanding expressions using the distributive property and collecting like terms. Represent real-world problems using linear equations and inequalities in one variable and solve such problems. (E)	**8.AF.1**	Solve linear equations and inequalities with rational number coefficients fluently, including those whose solutions require expanding expressions using the distributive property and collecting like terms. Represent real-world problems using linear equations and inequalities in one variable and solve such problems.
8.AF.2	Generate linear equations in one variable with one solution, infinitely many solutions, or no solutions. Justify the classification given.	**8.AF.2**	Generate linear equations in one variable with one solution, infinitely many solutions, or no solutions. Justify the classification given.
8.AF.3	Understand that a function assigns to each *x*-value (independent variable) exactly one y-value (dependent variable), and that the graph of a function is the set of ordered pairs (*x,y*).	**8.AF.3**	Understand that a function assigns to each *x*-value (independent variable) exactly one *y*-value (dependent variable), and that the graph of a function is the set of ordered pairs (*x,y*).

8.AF.4	Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear, has a maximum or minimum value). Sketch a graph that exhibits the qualitative features of a function that has been verbally described. (E)	**8.AF.4**	Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear, has a maximum or minimum value). Sketch a graph that exhibits the qualitative features of a function that has been verbally described.
8.AF.5	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. Describe similarities and differences between linear and nonlinear functions from tables, graphs, verbal descriptions, and equations.	**8.AF.5**	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. Describe similarities and differences between linear and nonlinear functions from tables, graphs, verbal descriptions, and equation
8.AF.6	Construct a function to model a linear relationship between two quantities given a verbal description, table of values, or graph. Within the context of a problem, describe the meaning of m (rate of change) and b (y-intercept) in $y = mx + b$. (E)	**8.AF.6**	Construct a function to model a linear relationship between two quantities given a verbal description, table of values, or graph. Recognize in $y = mx + b$ that m is the slope (rate of change) and b is the y-intercept of the graph, and describe the meaning of each in the context of a problem.
8.AF.7	Compare properties of two linear functions given in different forms, such as a table of values, equation, verbal description, and graph (e.g., compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed).	**8.AF.7**	Compare properties of two linear functions given in different forms, such as a table of values, equation, verbal description, and graph (e.g., compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed).

8.AF.8	Approximate the solution of a system of equations by graphing and interpreting the reasonableness of the approximation. (E)	**8.AF.8**	Understand that solutions to a system of two linear equations correspond to points of intersection of their graphs because points of intersection satisfy both equations simultaneously. Approximate the solution of a system of equations by graphing and interpreting the reasonableness of the approximation.
2023 Indiana Academic Standard		**2020 Indiana Academic Standard**	
Domain: Geometry and Measurement		**Domain: Geometry and Measurement**	
Number	**Text**	**Number**	**Text**
8.GM.1	Explore dilations, translations, rotations, and reflections on two-dimensional figures in the coordinate plane. (E)	**8.GM.6**	Explore dilations, translations, rotations, and reflections on two-dimensional figures in the coordinate plane.
8.GM.2	Solve real-world and other mathematical problems involving volume of cones, spheres, and pyramids and surface area of spheres. (E)	**8.GM.2**	Solve real-world and other mathematical problems involving volume of cones, spheres, and pyramids and surface area of spheres.
8.GM.3	Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and other mathematical problems in two dimensions. (E)	**8.GM.8**	Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and other mathematical problems in two dimensions.
		8.GM.1	Identify, define, and describe attributes of three-dimensional geometric objects (right rectangular prisms, cylinders, cones, spheres, and pyramids). Explore the effects of slicing these objects using appropriate technology and describe the two-dimensional figure that results.

		8.GM.3	Verify experimentally the properties of rotations, reflections, and translations, including: lines are mapped to lines, and line segments to line segments of the same length; angles are mapped to angles of the same measure; and parallel lines are mapped to parallel lines.
		8.GM.4	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. Describe a sequence that exhibits the congruence between two given congruent figures.
		8.GM.5	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. Describe a sequence that exhibits the similarity between two given similar figures.
		8.GM.7	Use inductive reasoning to explain the Pythagorean relationship.
		8.GM.9	Apply the Pythagorean Theorem to find the distance between two points in a coordinate plane.
2023 Indiana Academic Standard		**2020 Indiana Academic Standard**	
Domain: Data Analysis, Statistics, and Probability		**Domain: Data Analysis, Statistics, and Probability**	
Number	**Text**	**Number**	**Text**
8.DSP.1	Construct and interpret scatter plots for bivariate	**8.DSP.1**	Construct and interpret scatter plots for bivariate

	measurement data to investigate patterns of association between two quantitative variables. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.		measurement data to investigate patterns of association between two quantitative variables. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.
8.DSP.2	Write and use equations that model linear relationships to make predictions, including interpolation and extrapolation, in real-world situations involving bivariate measurement data. Interpret the slope and *y*-intercept in context. (E)	**8.DSP.3**	Write and use equations that model linear relationships to make predictions, including interpolation and extrapolation, in real-world situations involving bivariate measurement data. Interpret the slope and *y*-intercept in context.
8.DSP.4	Define the probability of a compound event, just as with simple events, as the fraction of outcomes in the sample space for which the compound event occurs. Use appropriate terminology to describe independent, dependent, complementary, and mutually exclusive events. (E)	**8.DSP.4**	Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs. Understand and use appropriate terminology to describe independent, dependent, complementary, and mutually exclusive events.
8.DSP.3	Represent sample spaces and find probabilities of compound events (independent and dependent) using organized lists, tables, and tree diagrams.(E)	**8.DSP.5**	Represent sample spaces and find probabilities of compound events (independent and dependent) using organized lists, tables, and tree diagrams.
8.DSP.5	For events with a large number of outcomes, understand the use of the multiplication counting principle. Develop the multiplication counting principle, and apply it to situations with a large number of outcomes.	**8.DSP.6**	For events with a large number of outcomes, understand the use of the multiplication counting principle. Develop the multiplication counting principle and apply it to situations with a large number of outcomes.

	8.DSP.2	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 describe the model fit by judging the closeness of the data points to the line.