



Indiana Department of Education

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PRIME Math Course 2023 Indiana Academic Standards (IAS) Correlation Guidance Document

This document provides correlations between the 2023 IAS and the Indiana PRIME Math course for easy reference. The 2023 IAS 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. The Indiana PRIME Math course is intended for high school seniors as a fourth year math course designed to reinforce the skills learned during the Core 40 high school math requirements. The Math Ready Standards (MRS) utilized in this curriculum pull from several different levels of the IAS from grade seven through Algebra 2.

The PRIME Math course utilizes a curriculum developed by the Southern Regional Education Board (SREB), that includes and reinforces the Algebra I, Geometry, Algebra II, and Statistics skills necessary for postsecondary success. This course emphasizes understanding of math concepts rather than just memorizing procedures. PRIME math emphasizes students' reasoning and sense making about procedures (e.g., why to use a certain formula or method to solve a problem). This equips them with higher-order thinking skills in order to apply math skills, functions, and concepts in different situations. The course is intended for students who currently have achieved the minimum math requirements at the secondary level, but need additional experiences to enhance their mathematical knowledge before pursuing credit-bearing courses at a postsecondary institution. In order to offer this course, the instructor must have received training by SREB or the Indiana Department of Education (IDOE). Additionally, the school and the instructor must commit to teaching the PRIME math curriculum with fidelity.



Number and Operations	
SREB Math Ready Standard	2023 Indiana Academic Standard
Reason quantitatively and use units to solve problems.	
NO.1: Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.	Multiple
NO.2: Define appropriate quantities for the purpose of descriptive modeling.	N/A

Expressions and Equations	
SREB Math Ready Standard	2023 Indiana Academic Standard
Understand the connections between proportional relationships, lines, and linear equations.	
EE.1: Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways.	7.RP.1: Identify the unit rate or constant of proportionality in tables, graphs, equations, and verbal descriptions of proportional relationships.
EE.2: 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 equations $y=mx$ for a line through the origin and the equation $y=mx+b$ for a line intercepting the vertical axis at b . Analyze and solve linear equations and pairs of simultaneous linear 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 equations.



Analyze and solve linear equations and pairs of simultaneous linear equations.

EE.3: Solve linear equations in one variable.

AI.L.4: Solve linear and quadratic equations and formulas for a specified variable to highlight a quantity of interest, using the same reasoning as in solving equations. (E)

Algebra

SREB Math Ready Standard

2023 Indiana Academic Standard

Interpret the structure of expressions.

A.1: Interpret expressions that represent a quantity in terms of its context.

AI.L.2: Represent linear functions as graphs from equations (with emphasis on technology), equations from graphs, and equations from tables and other given information (e.g., from a given point on a line and the slope of the line). Find the equations of a line in a slope-intercept, point-slope, and standard forms. Recognize that different forms reveal more or less information about a given situation based on the form used.

A.2: Use the structure of an expression to identify ways to rewrite it.

AI.L.2: Represent linear functions as graphs from equations (with emphasis on technology), equations from graphs, and equations from tables and other given information (e.g., from a given point on a line and the slope of the line). Find the equations of a line in a slope-intercept, point-slope, and standard forms. Recognize that different forms reveal more or less information about a given situation based on the form used.



Write expressions in equivalent forms to solve problems.	
A.3: Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.	AI.L.2: Represent linear functions as graphs from equations (with emphasis on technology), equations from graphs, and equations from tables and other given information (e.g., from a given point on a line and the slope of the line). Find the equations of a line in a slope-intercept, point-slope, and standard forms. Recognize that different forms reveal more or less information about a given situation based on the form used.
Create equations that describe numbers or relationships.	
A.4: Create equations and inequalities in one variable and use them to solve problems.	AI.L.1: Represent real-world problems using linear equations and inequalities in one variable, including those with rational number coefficients and variables on both sides of the equal sign. Solve them fluently, explaining the process used and justify the choice of a solution method. (E)
A.5: Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.	AI.L.2: Represent linear functions as graphs from equations (with emphasis on technology), equations from graphs, and equations from tables and other given information (e.g., from a given point on a line and the slope of the line). Find the equations of a line in a slope-intercept, point-slope, and standard forms. Recognize that different forms reveal more or less information about a given situation based on the form used.
A.6: Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or non-viable options in a modeling context.	AI.SEI.1: Represent real-world problems using linear inequalities in two variables and solve such problems; interpret the solution set, and determine whether it is reasonable. Graph the solutions to a linear inequality in two variables as a half-plane. (E)
A.7: Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations.	AI.L.4: Solve linear and quadratic equations and formulas for a specified variable to highlight a quantity of interest, using the same reasoning as in solving equations. (E)



Understand solving equations as a process of reasoning and explain the reasoning.	
A.8: Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.	AI.L.1: Represent real-world problems using linear equations and inequalities in one variable, including those with rational number coefficients and variables on both sides of the equal sign. Solve them fluently, explaining the process used and justify the choice of a solution method. (E)
A.9: Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.	AII.MFD.2: Represent real-world problems that can be modeled by linear, quadratic, exponential, and rational functions using tables, graphs, and equations. Use technology to represent the functional relationships and translate and interpret different forms (e.g., vertex form of a quadratic, intercepts, end behavior) with respect to the context. (E)
Solve equations and inequalities in one variable.	
A.10: Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.	AI.L.1: Represent real-world problems using linear equations and inequalities in one variable, including those with rational number coefficients and variables on both sides of the equal sign. Solve them fluently, explaining the process used and justify the choice of a solution method. (E)
A.11: Solve quadratic equations in one variable.	AI.QE.3: Solve quadratic equations in one variable by inspection (e.g., for $x^2 = 49$), finding square roots, using the quadratic formula, and factoring, as appropriate to the initial form of the equation.



Solve systems of equations.	
A.12: Prove that, given a system of two equations in two variables, replacing one equation with the sum of that equation and a multiple of the other produces a system with the same solutions.	AI.SEI.2: Write and graph a system of two linear equations in two variables that represents a real-world problem and solve the problem graphically and algebraically with and without technology. Interpret the solution, and determine whether the solution is reasonable. (E)
A.13: Solve systems of linear equations exactly and approximately, focusing on pairs of linear equations in two variables.	AI.SEI.2: Write and graph a system of two linear equations in two variables that represents a real-world problem and solve the problem graphically and algebraically with and without technology. Interpret the solution, and determine whether the solution is reasonable. (E)
A.14: Solve a simple system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically.	AII.ASE.3: Solve quadratic equations in one variable by inspection (e.g., for $x^2 = 49$), finding square roots, using the quadratic formula, and factoring, as appropriate to the initial form of the equation.
Represent and solve equations and inequalities graphically.	
A.15: Explain why the x-coordinates of the points where the graphs of the equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation $f(x) = g(x)$; find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations.	AI.SEI.2: Write and graph a system of two linear equations in two variables that represents a real-world problem and solve the problem graphically and algebraically with and without technology. Interpret the solution, and determine whether the solution is reasonable. (E)
A.16: Graph the solutions to a linear inequality in two variables as a half-plane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes.	AI.SEI.1: Represent real-world problems using linear inequalities in two variables and solve such problems; interpret the solution set, and determine whether it is reasonable. Graph the solutions to a linear inequality in two variables as a half-plane. (E)



Functions	
SREB Math Ready Standard	2023 Indiana Academic Standard
Define, evaluate and compare functions.	
F.1: 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 corresponding output.	AI.NF.3: Extend understanding of independent/dependent variables to encompass domain/range, as applied to relations using tables, graphs, verbal descriptions, and equations. (E)
F.2: Compare properties of two functions each represented in a different way (algebraically, numerically in tables, or by verbal descriptions).	AI.QE.1: Distinguish between situations that can be modeled with linear functions and exponential functions. Understand that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals. Compare linear functions and exponential functions that model real-world situations using tables, graphs, and equations. (E)
F.3: 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.	AI.QE.1: Distinguish between situations that can be modeled with linear functions and exponential functions. Understand that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals. Compare linear functions and exponential functions that model real-world situations using tables, graphs, and equations. (E)
Use functions to model relationships between quantities.	
F.4: 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.	AI.L.3: Represent real-world problems that can be modeled with a linear function using equations, graphs, and tables, including with technology. Translate fluently among these representations and interpret the slope and intercepts. (E)



Interpret functions that arise in application in terms of the context.

F.5: For a function that models a relationship between two quantities, interpret key features of the graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship.

AI.NF.5: Describe, qualitatively, the functional relationship between two quantities by analyzing key features of a graph. Sketch a graph that exhibits given key features of a function that has been verbally described, including intercepts, where the function is increasing or decreasing, where the function is positive or negative, and any relative maximum or minimum values. Identify the independent and dependent variables. (E)

Analyze functions using different representations.

F.6: Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.

AI.QE.1: Distinguish between situations that can be modeled with linear functions and exponential functions. Understand that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals. Compare linear functions and exponential functions that model real-world situations using tables, graphs, and equations. (E)

F.7: Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function.

AII.ASE.2 Rewrite algebraic rational expressions in equivalent forms (e.g., using properties of exponents and factoring techniques) and describe how rewriting those expressions reveals mathematical structure. Add, subtract, multiply, and divide algebraic rational expressions. (E)

F.8: Compare properties of two functions each represented in a different way (algebraically, numerically in tables, or by verbal descriptions).

AI.QE.1: Distinguish between situations that can be modeled with linear functions and exponential functions. Understand that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals. Compare linear functions and exponential functions that model real-world situations using tables, graphs, and equations. (E)



Build a function that models a relationship between two quantities.	
F.9: Write a function that describes a relationship between two quantities.	AI.NF.5: Describe, qualitatively, the functional relationship between two quantities by analyzing key features of a graph. Sketch a graph that exhibits given key features of a function that has been verbally described, including intercepts, where the function is increasing or decreasing, where the function is positive or negative, and any relative maximum or minimum values. Identify the independent and dependent variables. (E)
F.10: Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.	N/A
Build new functions from existing functions.	
F.11: Identify the effect on the graph of replacing $f(x)$ with $f(x) + k$, $kf(x)$, $f(kx)$, and $f(x + k)$ for specific values of k (both positive and negative); find the value of k give the graphs.	AII.MFD.4: Explore the effects of function transformations using graphing technology. Explain the effects of transformations of functions such as $f(x) + k$, $kf(x)$, $f(kx)$, or $f(x + k)$ for different functions and values of k . (E)
Construct and compare linear, quadratic and exponential models and solve problems.	
F.12: Distinguish between situations that can be modeled with linear functions and with exponential functions.	AI.QE.1: Distinguish between situations that can be modeled with linear functions and exponential functions. Understand that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals. Compare linear functions and exponential functions that model real-world situations using tables, graphs, and equations. (E)



<p>F.13: Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).</p>	<p>AI.QE.1: Distinguish between situations that can be modeled with linear functions and exponential functions. Understand that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals. Compare linear functions and exponential functions that model real-world situations using tables, graphs, and equations. (E)</p>
<p>F.14: Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function.</p>	<p>AII.MFD.3: Use technology to find a linear, quadratic, or exponential function that models a relationship for a bivariate data set to make predictions; interpret the correlation coefficient for linear models. Compare and evaluate model fit using different function families. (E)</p>
<p>Interpret expressions for functions in terms of the situation they model.</p>	
<p>F.15: Interpret the parameters in a linear or exponential function in terms of a context.</p>	<p>AI.QE.2: Represent real-world and other mathematical problems that can be modeled with simple exponential functions using tables, graphs, and equations of the form $y = ab^x$ (for integer values of $x > 1$, rational values of $b > 0$ and $b \neq 1$) with and without technology; interpret the values of a and b.</p>



Geometry & Spatial Sense	
SREB Math Ready Standard	2023 Indiana Academic Standard
Use coordinates to prove simple geometric theorems algebraically.	
G.1: Use coordinates to prove simple geometric theorems algebraically.	G.GF.7: Develop the distance formula using the Pythagorean Theorem. Find the lengths and midpoints of line segments in the two-dimensional coordinate system. (E)
G.2: Use coordinates to compute perimeters of polygons and areas of triangles and rectangles.	G.QP.4: Compute perimeters and areas of regular and irregular polygons to solve real-world and other mathematical problems. (E)
Explain volume formulas and use them to solve problems.	
G.3: Give an informal argument for the formulas for the circumference of a circle, area of a circle, volume of a cylinder, pyramid and cone.	7.GM.2: Understand the formulas for area and circumference of a circle and use them to solve real-world and other mathematical problems; give an informal derivation of the relationship between circumference and area of a circle.
G.4: Use volume formulas for cylinders, pyramids, cones and spheres to solve problems.	G.TS.4: Solve real-world and other mathematical problems involving volume and surface area of prisms, cylinders, cones, spheres, and pyramids, including problems that involve composite solids and algebraic expressions. (E)
Apply geometric concepts in modeling situations.	
G.5: Apply concepts of density based on area and volume in modeling situations.	G.TS.4: Solve real-world and other mathematical problems involving volume and surface area of prisms, cylinders, cones, spheres, and pyramids, including problems that involve composite solids and algebraic expressions. (E)
G.6: Apply geometric methods to create and solve design problems.	G.TS.5: Apply geometric methods to create and solve design problems. (E)



Data Analysis and Statistics

SREB Math Ready Standard

2023 Indiana Academic Standard

Summarize, represent and interpret data on a single count or measurement variable.

S.1: Represent data with plots on the real number line (dot plots, histograms and box plots).

6.DS.1: Select, create, and interpret graphical representations of numerical data, including line plots, histograms, and box plots.

S.2: Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets.

7.DSP.2: Find, use, and interpret measures of central tendency (mean and median) and measures of spread (range, interquartile range, and mean absolute deviation) for numerical data from random samples to draw comparative inferences about two populations. (E)

S.3: Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers).

7.DSP.3: Make observations about the degree of visual overlap of two numerical data distributions represented in line plots or box plots. Describe how data, particularly outliers, added to a data set may affect the mean and/or median.

Summarize, represent and interpret data on two categorical and quantitative variables.

S.4: Summarize bivariate categorical data in two-way frequency tables. Interpret relative frequencies in the contexts of the data (including joint, marginal, and conditional relative frequencies). Recognize possible associations and trends in data.

AI.DS.4: Summarize bivariate categorical data in two-way frequency tables. Interpret relative frequencies in the contexts of the data (including joint, marginal, and conditional relative frequencies). Recognize possible associations and trends in data.

S.5: Represent data on two quantitative variables on a scatter plot, and describe how the variables are related.

7.DSP.3: Make observations about the degree of visual overlap of two numerical data distributions represented in line plots or box plots. Describe how data, particularly outliers, added to a data set may affect the mean and/or median.



Interpret linear models.	
S.6: Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.	AI.DS.3: Use technology to find a linear function that models a relationship between two quantitative variables to make predictions and interpret the slope and y-intercept. Using technology, compute and interpret the correlation coefficient. (E)
S.7: Compute (using technology) and interpret the correlation coefficient of a linear fit.	AI.DS.3: Use technology to find a linear function that models a relationship between two quantitative variables to make predictions and interpret the slope and y-intercept. Using technology, compute and interpret the correlation coefficient. (E)
S.8: Distinguish between correlation and causation.	N/A
Understand and evaluate random processes underlying statistical experiments.	
S.9: Understand statistics as a process for making inferences about population parameters based on a random sample from that population.	AI.DS.1: Interpret statistics as a process for making inferences about a population based on a random sample from that population. Recognize the purposes of and differences among sample surveys, experiments, and observational studies; explain how randomization relates to each. (E)
Make inferences and justify conclusions from sample surveys, experiments and observational studies.	
S.10: Recognize the purposes of and differences among sample surveys, experiments, and observational studies; explain how randomization relates to each.	AI.DS.1: Interpret statistics as a process for making inferences about a population based on a random sample from that population. Recognize the purposes of and differences among sample surveys, experiments, and observational studies; explain how randomization relates to each. (E)



Process Standards	
SREB Process Readiness Indicator	2023 Indiana Mathematics Process Standard
PRI 1: Make sense of problems and persevere in solving through reasoning and exploration.	PS.1: Make sense of problems and persevere in solving them.
PRI 2: Reason abstractly and quantitatively by using multiple forms of representations to make sense of and understand mathematics.	PS.2: Reason abstractly and quantitatively.
PRI 3: Describe and justify mathematical understandings by constructing viable arguments, critiquing the reasoning of others and engaging in meaningful mathematical discourse.	PS.3: Construct viable arguments and critique the reasoning of others.
PRI 4: Contextualize mathematical ideas by connecting them to real-world situations. Model with mathematics.	PS.4: Model with mathematics.
PRI 5: Use appropriate tools strategically to support thinking and problem solving.	PS.5: Use appropriate tools strategically.
PRI 6: Attend to precision.	PS.6: Attend to precision.
PRI 7: Look for and make use of patterns and structure.	PS.7: Look for and make use of structure.
PRI 8: Look for and express regularity in repeated reasoning.	PS.8: Look for and express regularity in repeated reasoning.
PRI 9: Demonstrate flexible use of strategies and methods while reflecting on which procedures seem to work best for specific types of problems.	PS.4: Model with mathematics.



PRI 10: Reflect on mistakes and misconceptions to improve mathematical understanding.

PS.4: Model with mathematics.