Indiana Academic Standards 2020
PRIME Transitions Course
Standards Correlation Guidance Document

Intentional alignment of instructional practices and curricular materials to the Indiana Academics Standards (IAS) is vital to improving student outcomes. This guide is meant to encourage strong standards-based instruction when utilizing curricular materials. Use of this guide will ensure strong alignment to IAS and foster critical conversations around instructional decisions.

Considerations for use:

- Identify the desired IAS;
- Determine the correlating MRS;
- Consider the differences between IAS and learning objective from MRS aligned curricular material;
- Identify instructional gaps (in content or complexity) and consider strategies to supplement; and
- Prioritize content in curricular material that is identified in the IAS.

IDOE's Math Framework provides student success criteria, vertical planning, digital resources, and practical instructional examples to consider when planning, implementing, and teaching IAS.

Indiana Academic Standards (IAS) 2020	SREB Math Ready Standards (MRS)	Difference Between IAS 2020 and MRS
Algebra 1: Equations		
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 justifying the choice of a solution method.	**EE.3:** Solve linear equations in one variable. **A.4:** Create equations and inequalities in one variable and use them to solve problems. **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. **A.10:** Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.	IAS extends to rational number coefficients, variables on both sides, and justification of solution method.
AI.L.4: Represent real-world problems that can be modeled with a linear function using equations, graphs, and tables; translate fluently among these representations, and interpret the slope and intercepts.	**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.	IAS requires students to be able to translate between representations fluently.
AI.L.5: Translate among equivalent forms of equations for linear functions, including slope-intercept, point-slope, and standard. Recognize that different forms reveal more or less information about a given situation.	**A.1:** Interpret expressions that represent a quantity in terms of its context. **A.2:** Use the structure of an expression to identify ways to rewrite it. **A.3:** Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression. **F.7:** Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function.	IAS is limited to linear functions.

AI.L.6: 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.	**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. **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.	IAS requires students to represent real-world problems; does not include systems of linear inequalities in two variables.
AI.L.7: 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.	**A.7:** Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations.	IAS is limited to linear and quadratic equations and formulas.

Indiana Academic Standards (IAS) 2020	SREB Math Ready Standards (MRS)	Difference Between IAS 2020 and MRS
Algebra 1: Systems of Equations and Inequalities		
AI.SEI.1: Understand the relationship between a solution of a system of two linear equations in two variables and the graphs of the corresponding lines. Solve pairs of linear equations in two variables by graphing; approximate solutions when the coordinates of the solution are non-integer numbers.	**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.	IAS is limited to systems of linear equations.
AI.SEI.2: Verify that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions, including cases with no solution and infinitely many solutions. Solve systems of two linear equations algebraically using elimination and substitution methods.	**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. **A.13:** Solve systems of linear equations exactly and approximately, focusing on pairs of linear equations in two variables.	IAS specifies that students can solve systems of equations with elimination and substitution methods; explicitly includes cases with no solution and infinitely many solutions.
AI.SEI.3: Write a system of two linear equations in two variables that represents a real-world problem and solve the problem with and without technology. Interpret the solution and determine whether the solution is reasonable.	**A.5:** Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.	IAS is limited to linear equations.

Indiana Academic Standards (IAS) 2020	SREB Math Ready Standards (MRS)	Difference Between IAS 2020 and MRS
Algebra 1: Functions		
AI.F.1: Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. Understand that if f is a function and x is an element of its domain, then f(x) denotes the output of f corresponding to the input x. Understand the graph of f is the graph of the equation y = f(x) with points of the form (x, f(x)).	**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.	*No content differences identified.*
AI.F.4: 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.	**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. **F.9:** Write a function that describes a relationship between two quantities.	IAS includes the identification of the independent and dependent variables; does not include symmetry, end behavior, and periodicity.

Indiana Academic Standards (IAS) 2020	SREB Math Ready Standards (MRS)	Difference Between IAS 2020 and MRS
Algebra 1: Quadratic Equations		
AI.QE.1: Distinguish between situations that can be modeled with linear functions and with 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.	**F.2:** Compare properties of two functions each represented in a different way (algebraically, numerically in tables, or by verbal descriptions). **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. **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. **F.8:** Compare properties of two functions each represented in a different way (algebraically, numerically in tables, or by verbal descriptions). **F.12:** Distinguish between situations that can be modeled with linear functions and with exponential functions. **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).	IAS requires students to compare linear and exponential functions that model real-world situations using tables, graphs, and equations; does not require students to construct linear and exponential functions; does not require an understanding or exposure to arithmetic and geometric sequences.
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.	**F.15:** Interpret the parameters in a linear or exponential function in terms of a context.	IAS is limited to simple exponential functions.
AI.QE.4: 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.	**A.11:** Solve quadratic equations in one variable.	IAS specifies the possible solution methods for solving quadratic equations in one variable.

Indiana Academic Standards (IAS) 2020	SREB Math Ready Standards (MRS)	Difference Between IAS 2020 and CCSS
Algebra 1: Data Analysis and Statistics		
AI.DS.1: Understand 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.	**S.9:** Understand statistics as a process for making inferences about population parameters based on a random sample from that population. **S.10:** Recognize the purposes of and differences among sample surveys, experiments, and observational studies; explain how randomization relates to each.	*No content differences identified.*
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.	**S.6:** Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data. **S.7:** Compute (using technology) and interpret the correlation coefficient of a linear fit.	*No content differences identified.*
AI.DS.4: Distinguish between correlation and causation.	**S.8:** Distinguish between correlation and causation.	*No content differences identified.*
AI.DS.5: 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.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.	*No content differences identified.*

Indiana Academic Standards (IAS) 2020	SREB Math Ready Standards (MRS)	Difference Between IAS 2020 and MRS
Geometry: Quadrilaterals and Polygons		
G.QP.5: Compute perimeters and areas of polygons in the coordinate plane to solve real-world and other mathematical problems.	**G.2:** Use coordinates to compute perimeters of polygons and areas of triangles and rectangles.	*No content differences identified.*

Indiana Academic Standards (IAS) 2020	SREB Math Ready Standards (MRS)	Difference Between IAS 2020 and MRS
Geometry: Logic and Proofs		
G.LP.4: Understand that proof is the means used to demonstrate whether a statement is true or false mathematically. Develop geometric proofs, including those involving coordinate geometry, using two-column, paragraph, and flow chart formats.	**G.1:** Use coordinates to prove simple geometric theorems algebraically.	IAS extends to two-column proofs, paragraph proofs, and flow chart formats of proof; requires students to develop an understanding of the purpose of proof in mathematics.

Indiana Academic Standards (IAS) 2020	SREB Math Ready Standards (MRS)	Difference Between IAS 2020 and MRS
Geometry: Three-dimensional Solids		
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.	**G.4:** Use volume formulas for cylinders, pyramids, cones and spheres to solve problems. **G.5:** Apply concepts of density based on area and volume in modeling situations.	IAS includes surface area; includes prisms; emphasizes composite solids and includes algebraic expressions.
G.TS.5: Apply geometric methods to create and solve design problems.	**G.6** Apply geometric methods to create and solve design problems.	*No content differences identified.*

Indiana Academic Standards (IAS) 2020	SREB Math Ready Standards (MRS)	Difference Between IAS 2020 and MRS
Algebra 2: Polynomial, Rational, and Other Equations and Functions		
AII.PR.3: Solve real-world and other mathematical problems involving radical and rational equations. Give examples showing how extraneous solutions may arise.	**A.9:** Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.	IAS explicitly states real-world problems.

Indiana Academic Standards (IAS) 2020	SREB Math Ready Standards (MRS)	Difference Between IAS 2020 and MRS
Algebra 2: Systems of Equations		
AII.SE.1: Solve a system of equations consisting of a linear equation and a quadratic equation in two variables algebraically and graphically with and without technology.	**A.14:** Solve a simple system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically.	*No content differences identified.*

Indiana Academic Standards (IAS) 2020	SREB Math Ready Standards (MRS)	Difference Between IAS 2020 and MRS
Algebra 2: Functions		
AII.F.4: Explore and describe the effect on the graph of f(x) by replacing f(x) with f(x) + k, kf(x), f(kx), and f(x + k) for specific values of k (both positive and negative) with and without technology. Find the value of k given the graph of f(x) and the graph of f(x) + k, k f(x), f(kx), or f(x + k).	**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.	IAS omits identifying exponential functions as increasing or decreasing; omits classifying as growth or decay; omits recognition of even and odd functions.

Indiana Academic Standards (IAS) 2020	SREB Math Ready Standards (MRS)	Difference Between IAS 2020 and MRS
Analytical Algebra 2: Exponential and Logarithmic Functions & Linear Functions and Beyond		
AA.EL.1: Model real world situations involving geometric sequences and understand that they can be defined both recursively and with an explicit formula. **AA.LF.1:** Model real world situations involving arithmetic sequences and understand that they can be defined both recursively and with an explicit formula.	**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.	*No content differences identified.*

Indiana Academic Standards (IAS) 2020	SREB Math Ready Standards (MRS)	Difference Between IAS 2020 and MRS
Analytical Algebra 2: Data Analysis, Statistics, and Probability		
AA.DSP.2: Choose, create, and critique, with technology, mathematical models (linear, quadratic and exponential) for bivariate data sets. Use the models to interpolate and/or extrapolate, to answer questions, and to draw conclusions or make decisions, addressing limitations and long-term ramifications. Recognize when a change in model is needed. Interpret the correlation coefficient for linear models.	**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.	IAS extends to choose, create, and critique.
AA.DSP.3: Read, interpret, and make decisions about data summarized numerically using measures of center and spread, in tables, and in graphical displays (line graphs, bar graphs, scatterplots, and histograms), e.g., explain why the mean may not represent a typical salary; critique a graphical display by recognizing that the choice of scale can distort information.	**S.1:** Represent data with plots on the real number line (dot 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. **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).	*No content differences identified.*

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