Indiana Academic Standards Analytical Algebra II Crosswalk

2018 Standard Language	2020 Standard Language	Suggested Changes
Analytical Algebra II		
Data Analysis, Statistics, and Probability		
AA.DSP.1: Make inferences and justify conclusions from sample surveys, experiments, and observational studies. Recognize the purposes of and differences among sample surveys, experiments, and observational studies; explain how randomization and possible sources of bias relate to each.	AA.DSP.1: Make inferences and justify conclusions from sample surveys, experiments, and observational studies. Recognize the purposes of and differences among sample surveys, experiments, and observational studies; explain how randomization and possible sources of bias relate to each.	No change
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.	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.	No change
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,	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,	No change

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.	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.	
AA.DSP.4: Analyze and compare univariate data of two or more different data sets using measures of center (mean, median, and mode), shape, and spread (range, interquartile range, standard deviation, percentiles, and variance) making use of technology. Understand the effects of outliers on the statistical summary of the data.	AA.DSP.4: Analyze and compare univariate data of two or more different data sets using measures of center (mean, median, and mode), shape, and spread (range, interquartile range, standard deviation, percentiles, and variance) making use of technology. Understand the effects of outliers on the statistical summary of the data.	No change
AA.DSP.5: Record multiple observations (or simulated samples) of random events and construct empirical models of the probability distributions. Construct a theoretical model and apply the law of large numbers to show the relationship between the two models.	AA.DSP.5: Record multiple observations (or simulated samples) of random events and construct empirical models of the probability distributions. Construct a theoretical model and apply the law of large numbers to show the relationship between the two models.	No change
AA.DSP.6: Evaluate the validity of claims based on empirical probabilities and theoretical probabilities, including those derived from dependent and independent events. Draw conclusions and make decisions in various probabilistic contexts. Make	AA.DSP.6: Evaluate the validity of claims based on empirical probabilities and theoretical probabilities, including those derived from dependent and independent events. Draw conclusions and make decisions in various probabilistic contexts. Make	No change

use of different representations of data including two-way tables and tree diagrams.	use of different representations of data including two-way tables and tree diagrams.	
AA.DSP.7: Determine the nature and number of elements in a finite sample space to model the outcomes of real-world events using the multiplication counting principle, permutations, and combinations.	AA.DSP.7: Determine the nature and number of elements in a finite sample space to model the outcomes of real-world events using the Fundamental Counting Principle, permutations, and combinations.	Language change Changed "Multiplication counting principle" to "Fundamental Counting Principle"

Linear Functions and Beyond		
AA.LF.1: Model real world situations involving arithmetic 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.	No change
AA.LF.2: Find partial sums of arithmetic series that model real world situations. Understand and apply partial sums of arithmetic series written in sigma notation.	AA.LF.2: Find partial sums of arithmetic series that model real world situations.	Language change Removed "Understand and apply partial sums of arithmetic series written in sigma notation"
AA.LF.3: Recognize functional relationships in real world contexts. Translate fluently among multiple representations (graphs, tables, equations, and verbal descriptions).	AA.LF.3: Recognize functional relationships in real world contexts. Translate fluently among multiple representations (graphs, tables, equations, and verbal descriptions).	No change
AA.LF.4: Within real world contexts, understand composition of functions and combine functions by composition.	AA.LF.4: Within real world contexts, understand composition of functions and combine functions by composition.	No change

AA.LF.5: Describe the effect on the graph of f(x) by replacing f(x) with f(x) + k, k f(x), f(kx), and f(x + k) for specific values of k (both positive and negative) with 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). Identify and analyze transformations within a real world context.	AA.LF.5: Explore and describe the effect on the graph of f(x) by replacing f(x) with f(x) + k, k f(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).	Language change Added "and without" Removed "Identify and analyze transformations within a real world context"
AA.LF.6: Solve a system of equations and/or inequalities consisting of a linear equation and a quadratic equation in two variables algebraically and graphically with technology (e.g., find the points of intersection between the line y = –3x and the parabola $y = x^2 - 6x - 5$).	AA.LF.6: Represent and solve real-world problems using a system of equations and/or inequalities consisting of a linear equation and a quadratic equation in two variables with technology.	Language change Added "Represent" Removed "algebraically" Removed example
AA.LF.7: Represent real-world problems using a system of linear equations and/or inequalities in two or three variables. Solve such systems graphically or with matrices, as appropriate to the system, with technology. Interpret the solution and determine whether it is reasonable.	AA.LF.7: Represent real-world problems using a system of linear equations and/or inequalities in two or three variables. Solve such systems graphically or with matrices, as appropriate to the system, with technology. Interpret the solution and determine whether it is reasonable.	No change
Quadratic and Other Polynomial Functions		
AA.QP.1: Represent real-world problems that can be modeled with quadratic functions using tables, graphs, and equations;	AA.QP.1: Represent real-world problems that can be modeled with quadratic functions using tables, graphs,	No change

translate fluently among these representations. Solve such problems with technology. Interpret the solutions and determine whether they are reasonable.	and equations; translate fluently among these representations. Solve such problems with technology. Interpret the solutions and determine whether they are reasonable.	
AA.QP.2: Rewrite quadratic functions into the form $y = a(x - h)^2 + k$ using a variety of strategies and graph these functions with technology. Understand that different forms of an equation can provide different information. Identify and interpret within a given context intercepts, zeros, domain and range, and lines of symmetry.	AA.QP.2: Understand that different forms of a quadratic equation can provide different information. Identify and interpret within a given context the vertex, intercepts, zeros, domain and range, and lines of symmetry.	Language change Removed "Rewrite quadratic functions into the form $y = a(x - h)^2 + k$ using a variety of strategies and graph these functions with technology"
AA.QP.3: Use the discriminant to determine the number and type of solutions of a quadratic equation in one variable with real coefficients. Know there is an imaginary number, i, such that $i^2 = -1$, and understand the relationship to non-real complex roots.		Removed standard
AA.QP.4: Represent real-world problems that can be modeled with polynomial functions using graphs and equations. Solve such problems with technology. Interpret the solutions and determine whether they are reasonable.	AA.QP.3: Represent real-world problems that can be modeled with polynomial functions using graphs and equations. Solve such problems with technology. Interpret the solutions and determine whether they are reasonable.	Indicator change No change in language

AA.QP.5: Graph polynomial functions that model a real-world situation with technology. Identify, describe, and interpret key features in the context of the situation, such as intercepts, zeros, domain and range, end behavior, maxima and minima, and lines of symmetry.	AA.QP.4 Graph polynomial functions that model a real-world situation with technology. Identify, describe, and interpret key features in the context of the situation, such as intercepts, zeros, domain and range, end behavior, maxima and minima, and lines of symmetry.	Indicator change No change in language
Exponential and Logarithmic Functions		
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.EL.1: Model real world situations involving geometric sequences and understand that they can be defined both recursively and with an explicit formula.	No change
AA.EL.2: Find partial sums of geometric series that model real world situations. Understand and apply partial sums of geometric series written in sigma notation.	AA.EL.2: Find partial sums of geometric series that model real world situations.	Language change Removed "Understand and apply partial sums of geometric series written in sigma notation".
AA.EL.3: Represent real-world problems using exponential functions in one or two variables and solve such problems with technology. Interpret the solutions and determine whether they are reasonable.	AA.EL.3: Represent real-world problems using exponential functions in one or two variables and solve such problems with technology. Interpret the solutions and determine whether they are reasonable.	No change
AA.EL.4: Graph exponential functions that model real-world situations with technology. Identify, describe, and interpret	AA.EL.4: Graph exponential functions that model real-world situations with technology. Identify, describe, and interpret	No change

key features, such as intercepts, zeros, domain, range, asymptotic and end behavior.	key features, such as intercepts, zeros, domain, range, asymptotic and end behavior.	
AA.EL.5: Given real-world contexts, identify the percent rate of change in exponential functions written as equations, such as $y = (1.02)^t$, $y = (0.97)^t$, $y = (1.01)^{(12t)}$, $y = (1.2)^{t/10}$, and classify them as representing exponential growth or decay. Analyze growth and decay using absolute and relative change and make comparisons using absolute and relative difference.	AA.EL.5: Given real-world contexts, identify the percent rate of change in exponential functions. Classify them as representing exponential growth or decay.	Language change Removed "written as equations" Removed example Removed last sentence to create new 2020 AA.EL.6
	AA.EL.6: Analyze growth and decay using absolute and relative change and make comparisons using absolute and relative difference.	New standard
AA.EL.6: Use the properties of exponents to transform expressions for exponential functions in a given real-world context. (e.g., the expression 1.15^t can be rewritten as $(1.15^{1/12})^{12t} \approx 1.012^{12t}$ to reveal the approximate equivalent monthly interest rate if the annual rate is 15%).		Removed standard
AA.EL.7: Know that the inverse of an exponential function is a logarithmic function. Represent exponential and logarithmic functions that	AA.EL.7: Know that the inverse of an exponential function is a logarithmic function. Represent exponential and logarithmic functions that model real-world	No change

model real-world situations using graphing technology and describe their inverse relationship. Use the inverse relationship between exponential functions and logarithms to evaluate expressions and solve equations in one variable.	situations using graphing technology and describe their inverse relationship. Use the inverse relationship between exponential functions and logarithms to evaluate expressions and solve equations in one variable.	

Rational, Radical, and Other Functions

AA.R.1: Represent and solve real-world problems that can be modeled with rational functions (including direct, inverse, and joint variation) using tables, graphs, and equations; translate among these representations. Graph rational functions with technology. Identify, describe, and interpret features, such as intercepts, zeros, asymptotes, domain and range, and end behavior.	AA.R.1: Represent and solve real-world problems that can be modeled with rational functions using tables, graphs, and equations. Graph rational functions with technology. Identify, describe, and interpret features, such as intercepts, zeros, asymptotes, domain and range, and end behavior.	Language change

Removed " (including direct, inverse, and joint variation)".

Removed "translate among these representations" |
| AA.R.2: Represent and solve real-world problems that can be modeled with radical functions using tables, graphs, and equations; translate among these representations. Graph radical functions with technology. Identify, describe, and interpret features, such as intercepts, zeros, asymptotes, domain and range, and end behavior. | AA.R.2: Represent and solve real-world problems that can be modeled with radical functions using tables, graphs, and equations. Graph radical functions with technology. Identify, describe, and interpret features, such as intercepts, zeros, asymptotes, domain and range, and end behavior. | Language change

Removed "translate among these representations" |

AA.R.3: Represent and solve real-world problems that can be modeled with piecewise-defined functions (including step functions and absolute value functions) using tables, graphs, and equations; translate among these representations. Graph piecewise-defined functions with technology. Identify, describe, and interpret features, such as intercepts, zeros, asymptotes, domain and range, and end behavior.	AA.R.3: Graph real-world functions including polynomial, rational, square root, step functions, absolute value functions, and piecewise-defined functions with technology. Identify and describe features, such as intercepts, domain and range, end behavior, asymptotic behavior, and/or lines of symmetry.	Language change

Changed "Represent and solve" to "Graph" |
| AA.R.4: Translate expressions between radical and exponent form and simplify them using the laws of exponents. Understand that, while they name the same expression, one form may be more advantageous than another given the context. | | Removed standard |