Jasper City Schools
8th Grade Advanced Pre-Algebra Pacing Guide
08.14.2018

8th Grade – Advanced Pre-Algebra: Algebra standards will be worked in with the 8th Grade Pre-Algebra standards where they apply.

First Nine Weeks	Second Nine Weeks	Third Nine Weeks	Fourth Nine Weeks
3.) Explain why the sum or product of two rational numbers is rational; that the sum of a rational number and an irrational number is irrational; and that the product of a nonzero rational number and an irrational number is irrational [N-RN3} 4.) 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 [N-Q1} 5.) Define appropriate quantities for the purpose of descriptive modeling. [N-Q2] 6.) Choose a level of accuracy appropriate to limitations on measurement when reporting quantities [NQ-3]	1.) Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notion for radicals in terms of rational exponents. [N-RN1] 2.) Rewrite expressions involving radicals and rational exponents using the properties of exponents. [N-RN2] 13.) Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales. [A-CED2] 19.) Prove 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. [A-REI6}	8.) Use the structure of an expression to identify ways to rewrite it. [A-SSE2] 9.) Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression. * [A-SSE3] a. Factor a quadratic expression to reveal the zeros of the function it defines. [A-SSE3a] b. Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines. [A-SSE3b] c. Determine a quadratic equation when given its graph or roots. d. use the properties of exponents to transform expressions for exponential functions [A-SSE3c] 10.) Understand that polynomials form a system analogous to the integers; namely, they are closed under the operations of addition, subtraction, and multiplication; add,	11. (*) Understand that rational expressions form a system analogous to the rational numbers, closed under addition, subtraction, multiplication, and division by a nonzero rational expression; add, subtract, multiply, and divide rational expressions. [A-APR7] 21.) Solve a simple system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically. [A-REI7] 33.) Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). [F-IF9] 35.) Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between tow forms. * [F-BF2]

7.) Interpret expressions that represent a quantity in terms of its context. *[A-SSE1] a. Interpret parts of an expression such as terms, factors, and coefficients. [A-SSE1a] Example: interpret $P(1+r)^n$ as a product of *P* and a factor not depending on *P*. 12.) Create equations and inequalities in one variable, and use them to solve problems. Include equations arising from linear and quadratic functions and simple rational and exponential functions. [A-CED1] 16.) 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-REI3]	20.) Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables [A-REI6] 22.) Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane often forming a curve (which could be a line). [A-REI10] 23.)Explain why the x-coordinates of the points where the graphs of the equations y= *f(x)* and y = *g(x)*; find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where *f(x)* and/or *g(x*) are linear, polynomial, rational, absolute value, exponential, and logarithmic functions. * [A-REI11] 24.) 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	subtract, and multiply polynomials. [A-APRI] 14.) 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-CED3] 18.) Solve quadratic equations in one variable. [A-REI4] a. Use the method of completing the square to transform any quadratic equation in x into an equation of the form $(x-p)^2 = q$ that has the same solutions. Derive the quadratic formula from this form. [A-REI4a] b. Solve quadratic equations by inspection (e.g., for x = 49), taking square roots, completing the square and the quadratic formula, and factoring as appropriate to the initial form of the equation. [A-REI4b] 34.) Write a function that describes a relationship between two quantities. * [F-BF1] a. Determine an explicit expression, a recursive process, or steps for calculation from a context. [F-BF1a] b. Combine standard function types using arithmetic operations. [F-BF1b] 37.) Distinguish between situations that can be modeled with linear	38.) 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). [F-LE2] 39.) Observe, using graphs and tables, that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function. [F-LE3] 41.) Represent data with plots on the real number line (dot plots, histograms, and box plots0. [S-1D1] 42.) 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-ID2] 43.) Interpret differences in shape center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers). [S-ID3] 44.) Summarize categorical data for two categories in two-way frequency tables. Interpret relative frequencies in the context of the data (including joint, marginal, and

	corresponding half-planes [A-REI12] 25.) 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. 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*. The graph of *f* is the graph of the equation *y*=f*(x)*. [F-FIF1] 26.) Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context. [F-IF2] 27.) Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers. [F-FIF3] 29.) Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. * [F-IFS] 30.) Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified	functions and with exponential functions. [F-LE1] a. Prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals. [F-LE1a] b. Recognize situations in which one quantity changes at a constant rate per unit interval relative to another. [F-LE1b] c. Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another. [F-LE1c]	conditional relative frequencies). Recognize possible associations and trends in the data. [S-ID5] 45.) Represent data on two quantitative variables on a scatter plot, and describe how the variables are related. [S-ID6] a. Fit a function to the data; use functions fitted to data to solve problems in the context of the data. *Uses given functions or choose a function suggested by the context. Emphasize linear, quadratic, and exponential models. [S-ID6a]* b. Informally assess the fit of a function by plotting and analyzing residuals. [S-ID6b] c. Fit a linear function for a scatter plot that suggests a linear association. [S-ID6c] 46.) Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data. [S-ID7] 47.) Understand that two events A and B are independent if the probability of A and B occurring together is the product of their probabilities, and use this characterization to determine if they are independent. [S-CP2]

	interval. Estimate the rate of change from a graph. * [F-IF6]		

Power Standards

***** Power standards are indicated with an asterisk *****

These standards are those that are essential for student grade-level success.