

## CHECKLIST FOR ALGEBRA I - CHECKS FOR UNDERSTANDING

	DATE	CHECKS FOR UNDERSTANDING
		<b>Standard 1 - Mathematical Processes</b>
		3102.1.1 <input type="checkbox"/> Develop meaning for mathematical vocabulary.
		3102.1.2 <input type="checkbox"/> Use the terminology of mathematics correctly.
		3102.1.3 Understand and use mathematical symbols, notation, and common mathematical abbreviations correctly.
		3102.1.4 <input type="checkbox"/> Write a rule with variables that expresses a pattern.
		3102.1.5 Use formulas, equations, and inequalities to solve real-world problems including time/rate/distance, percent increase/decrease, ratio/proportion, and mixture problems.
		3102.1.6 Use a variety of strategies to estimate and compute solutions, including real-world problems.
		3102.1.7 <input type="checkbox"/> Identify missing or irrelevant information in problems.
		3102.1.8 <input type="checkbox"/> Recognize and perform multiple steps in problem solving when necessary.
		3102.1.9 Identify and use properties of the real numbers (including commutative, associative, distributive, inverse, identity element, closure, reflexive, symmetric, transitive, operation properties of equality).
		3102.1.10 Use algebraic properties to develop a valid mathematical argument.
		3102.1.11 Use manipulatives to model algebraic concepts.
		3102.1.12 Create and work flexibly among representations of relations (including verbal, equations, tables, mappings,
		3102.1.13 Change from one representation of a relation to another representation, for example, change from a verbal description to a graph.
		3102.1.14 Apply graphical transformations that occur when changes are made to coefficients and constants in functions.
		3102.1.15 Apply arithmetic concepts in algebraic contexts.
		3102.1.16 Understand and express the meaning of the slope and y-intercept of linear functions in real-world contexts.
		3102.1.17 Connect the study of algebra to the historical development of algebra.
		3102.1.18 Translate syntax of technology to appropriate mathematical notation.
		3102.1.19 Recognize and practice appropriate use of technology in representations and in problem solving.
		3102.1.20 Estimate solutions to evaluate the reasonableness of results and to check technological computation.
		<b>Standard 2 - Number &amp; Operations</b>
		3102.2.1 <input type="checkbox"/> Recognize and use like terms to simplify expressions.
		3102.2.2 <input type="checkbox"/> Apply the order of operations to simplify and evaluate algebraic expressions.
		3102.2.3 Operate with and simplify radicals (index 2, 3, n) and radical expressions including rational numbers and variables in the radicand.
		3102.2.4 <input type="checkbox"/> Operate efficiently with both rational and irrational numbers.

		3102.2.5 □ Perform operations with numbers in scientific notation (multiply, divide, powers).
		3102.2.6 □ Use appropriate technologies to apply scientific notation to real-world problems.
		3102.2.7 □ Identify the subsets in the real number system and understand their relationships.
		3102.2.8 Use multiple strategies to approximate the value of an irrational number including irrational square roots and including location on the real number line.
		<b>Standard 3 - Algebra</b>
		3102.3.1 □ Recognize and extend arithmetic and geometric sequences.
		3102.3.2 □ Explore patterns including Pascal's Triangle and the Fibonacci sequence.
		3102.3.3 Justify correct results of algebraic procedures using extension of properties of real numbers to algebraic
		3102.3.4 Simplify expressions using exponent rules including negative exponents and zero exponents.
		3102.3.5 □ Add, subtract, and multiply polynomials including squaring a binomial.
		3102.3.6 □ Find the quotient of a polynomial and a monomial.
		3102.3.7 □ Use various models (including area models) to represent products of polynomials.
		3102.3.8 □ Find the GCF of the terms in a polynomial.
		3102.3.9 □ Find two binomial factors of a quadratic expression.
		3102.3.10 Add, subtract, multiply, and divide rational expressions and simplify results.
		3102.3.11 Solve multi-step linear equations with one variable.
		3102.3.12 Recognize and articulate when an equation has no solution, a single solution, or all real numbers as solutions.
		3102.3.13 Solve multi-step linear inequalities with one variable and graph the solution on a number line.
		3102.3.14 Solve absolute value equations and inequalities (including compound inequalities) with one variable and graph their solutions on a number line.
		3102.3.15 Determine domain and range of a relation and articulate restrictions imposed either by the operations or by the real life situation that the function represents.
		3102.3.16 Determine if a relation is a function from its graph or from a set of ordered pairs.
		3102.3.17 Recognize "families" of functions.
		3102.3.18 Analyze the characteristics of graphs of basic linear relations and linear functions including constant function, direct variation, identity function, vertical lines, absolute value of linear functions. Use technology where appropriate.
		3102.3.19 Explore the characteristics of graphs of various nonlinear relations and functions including inverse variation, quadratic, and square root function. Use technology where appropriate.
		3102.3.20 Understand that a linear equation has a constant rate of change called slope and represent slope in various forms.
		3102.3.22 Express the equation of a line in standard form, slope-intercept, and point-slope form.
		3102.3.23 Determine the graph of a linear equation including those that depict contextual situations.

		3102.3.24 Interpret the changes in the slope-intercept form and graph of a linear equation by looking at different parameters, $m$ and $b$ in the slope-intercept form.
		3102.3.25 Find function values using $f(x)$ notation or graphs.
		3102.3.26 Graph linear inequalities on the coordinate plane and identify regions of the graph containing ordered pairs in the solution.
		3102.3.27 Determine the number of solutions for a system of linear equations (0, 1, or infinitely many solutions).
		3102.3.28 Solve systems of linear equations graphically, algebraically, and with technology.
		3102.3.29 Solve contextual problems involving systems of linear equations or inequalities and interpret solutions in context.
		3102.3.30 Solve quadratic equations using multiple methods: factoring, graphing, quadratic formula, or square root principle.
		3102.3.31 Determine the number of real solutions for a quadratic equation including using the discriminant and its graph.
		3102.3.32 Recognize the connection among factors, solutions (roots), zeros of related functions, and $x$ -intercepts in equations that arise from quadratic functions.
		3102.3.33 Recognize data that can be modeled by an exponential function.
		3102.3.34 Graph exponential functions in the form $y = a(bx)$ where $b \neq 0$ .
		3102.3.35 Apply growth/decay and simple/compound interest formulas to solve contextual problems.
		<b>Standard 4 - Geometry &amp; Measurement</b>
		3102.4.1 Using algebraic expressions solve for measures in geometric figures as well as for perimeter, area, and volume.
		3102.4.2 Use the Pythagorean Theorem to find the missing measure in a right triangle including those from contextual situations.
		3102.4.3 Understand horizontal/vertical distance in a coordinate system as absolute value of the difference between coordinates; develop the distance formula for a coordinate plane using the Pythagorean Theorem.
		3102.4.4 <input type="checkbox"/> Develop the midpoint formula for segments on a number line or in the coordinate plane.
		3102.4.5 Use dimensional analysis to convert rates and measurements both within a system and between systems and check the appropriateness of the solution.
		<b>Standard 5 - Data Analysis, Statistics, &amp; Probability</b>
		3102.5.1 <input type="checkbox"/> Identify patterns or trends in data.
		3102.5.2 <input type="checkbox"/> Develop a meaning for and identify outliers in a data set and verify.
		3102.5.3 When a set of data is changed, identify effects on measures of central tendency, range, and inter-quartile range.
		3102.5.4 <input type="checkbox"/> Explore quartiles, deciles, and percentiles of a distribution.

		3102.5.5 Construct and interpret various forms of data representations, (including line graphs, bar graphs, circle graphs, histograms, scatter-plots, box-and-whiskers, stem-and-leaf, and frequency tables).
		3102.5.6 <input type="checkbox"/> Draw qualitative graphs of functions and describe a general trend or shape.
		3102.5.7 <input type="checkbox"/> Compare two data sets using graphs and descriptive statistics.
		3102.5.8 Examine real-world graphical relationship (including scatter-plots) to determine type of relationship (linear or nonlinear) and any association (positive, negative or none) between the variables of the data set.
		3102.5.9 Determine an equation for a line that fits real-world linear data; interpret the meaning of the slope and y-intercept in context of the data.
		3102.5.10 Using technology with a set of contextual linear data to examine the line of best fit; determine and interpret the correlation coefficient.
		3102.5.11 Use an equation that fits data to make a prediction.
		3102.5.12 Use techniques (Venn Diagrams, tree diagrams, or counting procedures) to identify the possible outcomes of an experiment or sample space and compute the probability of an event.
		3102.5.13 Determine the complement of an event and the probability of that complement.
		3102.5.14 Determine if two events are independent or dependent.
		3102.5.15 Explore joint and conditional probability.
		3102.5.16 Identify situations for which the Law of Large Numbers applies.
		3102.5.17 Perform simulations to estimate probabilities.
		3102.5.18 Make informed decisions about practical situations using probability concepts.















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