

# Algebra 1 MYP

## *Expressions Reporting Standard*

B1 A.APR.A.1 Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication: add, subtract, and multiply polynomials.

C2 A.SSE.A.1.a Interpret parts of an expression, such as terms, factors, and coefficients.

C3 A.SSE.A.2 Use the structure of an expression to identify ways to rewrite it.

A4 A.SSE.B.3.a Factor a quadratic expression to reveal the zeros of the function it defines.

B5 F.LE.A.1.b Recognize situations in which one quantity changes at a constant rate per unit interval relative to another.

B6 F.IF.A.3 Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers.

D7 N.Q.A.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.

A8 N.RN.A.2 Rewrite expressions involving radicals and rational exponents using the properties of exponents.

D9 S.ID.C.7 Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.

## *Equations and Inequalities Reporting Standard*

A10 A.CED.A.1 Create equations and inequalities in one variable and use them to solve problems.

D11 A.CED.A.3 Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context.

A12 A.CED.A.4 Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations.

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C13 A.REI.A.1 Explain each step in solving a simple equation as following from the equality of numbers asserted after previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.

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A14 A.REI.A.3 Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.

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A15 A.REI.B.4.b Solve quadratic equations by inspection, taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them at  $a \pm bi$  for real numbers  $a$  and  $b$ .

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A16 N.RN.A.1 Explain the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents.

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A17 N.RN.B.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.

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### *Graphing Reporting Standard*

A18 A.CED.A.2 Create equations in two or more variables to represent relationships between quantities: graph equations on coordinate axes with labels and scales.

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B19 A.REI.C.6 Solve systems of linear equations exactly and approximately, focusing on pairs of linear equations in two variables.

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B20 A.REI.D.10 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).

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C21 A.REI.D.12 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.

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A22 F.IF.B.4 For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship.

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A23 F.IF.B.6 Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph.

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C24 F.IF.C.7.a Graph linear and quadratic functions and show intercepts, maxima, and minima.

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C25 F.IF.C.7.e Graph exponential functions, showing intercepts and end behavior.

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C26 S.ID.B.6 .c Fit a linear function for a scatter plot that suggests a linear association.

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### *Interpreting Functions Reporting Standard*

C27 F.IF.A.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.

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If  $f$  is a function and  $x$  is an element of its domain, then  $f(x)$  denotes the output of corresponding to the input  $x$ . The graph of  $f$  is the graph of the equation  $y = f(x)$ .

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A28 F.IF.A.2 Use function notation, evaluate functions for input in their domains, and interpret statements that use function notation in terms of a context.

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D29 F.IF.B.5 Relate the domain of a function to its graph and where applicable, to the quantitative relationship it describes.

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A30 F.IF.C.8.b Use the properties of exponents to interpret expressions for exponential functions.

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C31 F.IF.C.9 Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).

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### *Building Functions Reporting Standard*

C32 F.BF.A.1 Write a function that describes a relationship between two quantities.

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C33 F.BF.A.2 Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.

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B34 F.BF.B.3 Identify the effect on the graph of replacing  $f(x)$  by  $f(x) + k$ ,  $kf(x)$ ,  $f(kx)$ , and  $f(x+k)$  for specific values of  $k$  (both positive and negative); find the value of  $k$  given the graphs.

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C35 F.LE.A.2 Construct linear and exponential functions, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).

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C36 S.ID.B.6.a Fit a function to the data: use functions fitted to data to solve problems in the context of the data. Use given functions or choose a function suggested by the context. Emphasize linear, quadratic, and exponential models.

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