

NPSPD Middle & High School Curriculum

Department: Mathematics

Course: Algebra

Students will be able to Simplify and Rewrite Expressions (Fractions, Absolute Value, Radicals & Exponents, Scientific Notation, Distribute/Factor) so that they can efficiently work with different types of functions.

Promise Standards

- A. I can evaluate algebraic expressions with exponents, radicals, and absolute value and combine like terms and distribute.
- B. I can rewrite the product as a sum or a sum as a product
- C. I can simplify expressions with exponents
- D. I can simplify expressions with fractional exponents and radicals. (1)
- E. I can rewrite expressions to convert between standard, graphing, and factored forms in a quadratic

Essential Learning Targets

- ELT 1: I can simplify expressions by combining like terms (A.SSE.A.2)
- ELT 2: I can use structure to rewrite expressions (SSE.A.2, A.SSE.B.3)
- ELT 3: I can list the parts of an expression (terms, factors, coefficients. (SEE.A.1A)
- ELT 4: I can rewrite sums as products and products as sums (SSE.B.3A, A.APR.A.1, F.BF.A.1b)
- ELT 5: I can rewrite expressions using completing the square.

Students will be able to solve and understand Systems of Equations and Inequalities using a variety of methods (Tables, Graphs, Equal Values Method, Substitution, Elimination) to model and solve a situation with multiple unknowns.

Promise Standards

- A. I can solve a system of equations by substitution, elimination, and graphing. Elimination Method Example 2
- B. I can solve a system of exponential equations
- C. I can solve a system of inequalities by graphing
- D. I can solve systems algebraically that contain Quadratic Functions

Essential Learning Targets

- ELT 1: I can solve Systems of Equations using tables or graph (A.CED.A.3)
- ELT 2: I can solve Systems of Equations using equal values method (A.REI.C.6)
- ELT 3: I can solve Systems of Equations using substitution (A.REI.C.6)
- ELT 4: I can solve Systems of Equations using elimination (A.REI.C.6, A.REI.C.5)
- ELT 5: I can solve Systems of Inequalities by graphing (A.REI.D.12)
- LT 5: I can solve Systems of Inequalities by graphing (A.REI.D.12))
- ELT 7: I can interpret the solution for a system of equations (A.REI.C.7)

NPSD Middle & High School Curriculum

Students will be able to solve Equations and Inequalities (Linear, Radicals, Absolute Value, Specific Variable, Quadratics via Factoring/Completing the Square/Quadratic Formula).

Promise Standards

- A. I can solve linear equations and check my solution
- B. I can solve equations with multiplication and absolute value
- C. I can solve equations for a specific variable
- D. I can solve one variable inequalities
- E. I can solve linear and non-linear equations by rewriting, undoing, and looking inside
- F. I can determine how many solutions an equation has.
- G. I can factor quadratic expressions
- H. I can solve quadratic equations by factoring and using zero product property
- I. I can solve quadratics by completing the square or by using the quadratic formula
- J. I can solve quadratic equations in perfect square form

Essential Learning Targets

- ELT 1: I can solve linear equations and check my solution (A.REI.A.1)
- ELT 2: I can solve equations by distributing (A.REI.B.3, A.SSE.B.3)
- ELT 3: I can solve equations with absolute value (A.REI.B.3.1 CE)
- ELT 4: I can solve equations for a specific variable (A.CED.A.4, A.REI.B.3)
- ELT 5: I can solve one variable inequalities (A.REI.B.3)
- ELT 6: I can solve linear and non-linear equations by rewriting, undoing, and looking inside (A.SSE.A.1b)
- ELT 7: I can determine how many solutions an equation has (A.REI.C.6)
- ELT 8: I can solve quadratic equations by factoring and using zero product property (A.REI.B.4)
- ELT 9: I can solve quadratics by completing the square or by using the quadratic formula (A.REI.B.4)
- ELT 10: I can solve quadratic equations in perfect square form (A.REI.B.4)

Students will be able to Model with Equations & Inequalities (create Linear/Exponential/Quadratic Equations & Inequalities given a table, graph, situation).

Promise Standards

- A. I can create a linear equation given a table, graph, or a situation (including finding slope).
- B. I can write equations/inequalities to solve word problems
- C. I can write equations for exponential situations
- D. I can find the slope and starting point of a relation and interpret them in the context of a situation. E. I can write equations for quadratics

Essential Learning Targets

- ELT 1: I can create Linear equations given a table, graph, or situation. (F.LE.2, A.CED.2, N.Q.A.1, N.Q.A.2)
- ELT 2: I can create Linear inequalities given a graph or situation. (A.CED.1)
- ELT 3: I can create Exponential equations given a table, graph, or situation. (F.LE.2)
- ELT 4: I can create Quadratic equations given a table, graph, or situation. (N.Q.A.2)
- ELT 5: I can interpret parameters of a linear equation (growth, start-point) (A.SSE.a.1B, HSS.ID.C.7)
- ELT 6: I can interpret parameters of an exponential equation (multiplier, initial value, horizontal asymptote) (A.SSE.a.1B)

NPSD Middle & High School Curriculum

Students will be able read and interpret function notations so that they can Evaluate and Define Functions.

Promise Standards

- A. I can evaluate Functions using function notation
- B. I can determine whether or not a relation is a function using its definition

Essential Learning Targets

- ELT 1: I can evaluate functions using function notation (F.IF.A.2)
- ELT 2: I can define a function (F.IF.A.1)
- ELT 3: I can determine whether or not a relation is a function (F.IF.A.1)

Students will be able to Investigate and Compare Properties of functions that model the world around them (build a table/graph, identify key points, describe shape/symmetry, interpret domain/range, list asymptotes).

Promise Standards

- A I can describe the key features of a graph including domain and range and explain the real life relationships it describes.
- B I can graph a function given its equation and label it's key features. (linear, step, exponential and describe the graph fully.
- C I can find x and y intercepts of a function
- D I can interpret quadratic equations (find x-intercepts, the vertex, and write rules for them given graphical information)
- E I can graph an inequality with two variables
- F I understand the connections between shifting and stretching graphs and their rules.

Essential Learning Targets

- ELT 1: I can build a table of coordinates from an function (F.IF.B.4)
- ELT 2: I can build a graph from a table (F.IF.B.4)
- ELT 3: I can describe the shape & symmetry of the graph (DON'T KNOW)
- ELT 4: I can identify key points including intercepts, max/mins, and/or vertex of the graph (F.IF.C.7a)
- ELT 5: I can determine the domain and range of a funtion (F.IF.B.5)
- ELT 6: I can identify the asymptotes of a graph (F.IF.C.7e)

Students will be able to identify/describe Arithmetic & Geometric Sequences, and write Explicit & Recursive Rules.

Promise Standards

- 1. I can identify and describe arithmetic and geometric sequences and their properties
- 2. I can write recursive and explicit rules for sequences and write out the sequences from rules.

Essential Learning Targets

- ELT 1: I can model arithmetic sequences with explicit rules. (F.BF.A.2, F.LE.A.2)
- ELT 2: I can model geometric sequences with explicit rules. (F.BF.A.2, F.LE.A.2)
- ELT 3: I can delineate between continuous functions & discrete sequences. (F.IF.A.3)
- ELT 4: I can interpret recursive rules and list its terms. ([F.BF.A.1a](#))

NPSD Middle & High School Curriculum

Students will be able to Interpret Data from various situations by Gathering data, Modeling it, Describing and using it to Calculate and Make Predictions.

Promise Standards

- A. I can describe an association including interpreting the correlation coefficient
- B. I can find the equation of a line of best fit or an LSRL and use it to make predictions
- C. I can find a residual and interpret a residual plot

Essential Learning Targets

- ELT 1: I can create an equation for a best fit line and/or LSRL (HSS.ID.B.6)
- ELT 2: I can use the LSRL to make predictions
- ELT 3: I can define and calculate a residual (HSS.ID.B.6)
- ELT 4: I can interpret a residual plot. (HSS.ID.B.6.B)
- ELT 5: I can interpret the correlation coefficient as a measure of strength (HSS.ID.C.8)
- Prerequisite: I can describe the association of bivariate data (strength, shape, direction, outliers) (8.SP.A.1)