

# Algebra 2

## Number and Quantity NQ

### **A Extend and use the relationship between rational exponents and radicals.** NQ.A

- 1 Extend the system of powers and roots to include rational exponents. NQ.A.1
  - 2 Create and recognize equivalent expressions involving radical and exponential forms of expressions. NQ.A.2
  - 3 Add, subtract, multiply and divide radical expressions. NQ.A.3
  - 4 Solve equations involving rational exponents and/or radicals and identify situations where extraneous solutions may result. NQ.A.4
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### **B Use complex numbers.** NQ.B

- 1 Represent complex numbers. NQ.B.1
  - 2 Add, subtract, multiply and divide complex numbers. NQ.B.2
  - 3 Know and apply the Fundamental Theorem of Algebra. NQ.B.3
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## Seeing Structure in Expressions SSE

### **A Define and use logarithms.** SSE.A

- 1 Develop the definition of logarithms based on properties of exponents. SSE.A.1
  - 2 Use the inverse relationship between exponents and logarithms to solve exponential and logarithmic equations. SSE.A.2
  - 3 Use properties of logarithms to solve equations or find equivalent expressions. SSE.A.3
  - 4 Understand why logarithmic scales are used, and use them to solve problems. SSE.A.4
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## Reasoning with Equations and Inequalities REI

### **A Solve equations and inequalities.** REI.A

- 1 Create and solve equations and inequalities, including those that involve absolute value. REI.A.1
  - 2 Solve rational equations where numerators and denominators are polynomials and where extraneous solutions may result. REI.A.2
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### **B Solve general systems of equations and inequalities.** REI.B

- 1 Create and solve systems of equations that may include non-linear equations and inequalities. REI.B.1
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## Arithmetic with Polynomials and Rational Expressions APRE

### **A Perform operations on polynomials and rational expressions.** APRE.A

- 1 Extend the knowledge of factoring to include factors with complex coefficients. APRE.A.1
  - 2 Understand the Remainder Theorem and use it to solve problems. APRE.A.2
  - 3 Find the least common multiple of two or more polynomials. APRE.A.3
  - 4 Add, subtract, multiply and divide rational expressions. APRE.A.4
  - 5 Identify zeros of polynomials when suitable factorizations are available, and use the zeros to sketch the function defined by the polynomial. APRE.A.5
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## Interpreting Functions IF

### **A Use and interpret functions.** IF.A

- 1 Identify and interpret key characteristics of functions represented graphically, with tables and with algebraic symbolism to solve problems. IF.A.1
  - 2 Translate between equivalent forms of functions. IF.A.2
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## Building Functions BF

### **A Create new functions from existing functions.** BF.A

- 1 Create new functions by applying the four arithmetic operations and composition of functions (modifying the domain and range as necessary). BF.A.1
  - 2 Derive inverses of functions, and compose the inverse with the original function to show that the functions are inverses. BF.A.2
  - 3 Describe the effects of transformations algebraically and graphically, creating vertical and horizontal translations, vertical and horizontal reflections and dilations (expansions/compressions) for linear, quadratic, cubic, square and cube root, absolute value, exponential and logarithmic functions. BF.A.3
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## Modeling M

### **A Use functions to model real-world problems.** M.A

- 1 Create functions and use them to solve applications of quadratic and exponential function model problems. M.A.1
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## Data and Statistical Analysis DSA

### A Make inferences and justify conclusions. DSA.A

- 1 Analyze how random sampling could be used to make inferences about population parameters. DSA.A.1
  - 2 Determine whether a specified model is consistent with a given data set. DSA.A.2
  - 3 Describe and explain the purposes, relationship to randomization and differences among sample surveys, experiments and observational studies. DSA.A.3
  - 4 Use data from a sample to estimate characteristics of the population and recognize the meaning of the margin of error in these estimates. DSA.A.4
  - 5 Describe and explain how the relative sizes of a sample and the population affect the margin of error of predictions. DSA.A.5
  - 6 Analyze decisions and strategies using probability concepts. DSA.A.6
  - 7 Evaluate reports based on data. DSA.A.7
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### B Fit a data set to a normal distribution. DSA.B

- 1 Know and use the characteristics of normally distributed data sets; predict what percentage of the data will be above or below a given value that is a multiple of standard deviations above or below the mean. DSA.B.1
- 2 Fit a data set to a distribution using its mean and standard deviation to determine whether the data is approximately normally distributed. DSA.B.2