

# **Algebra 2**

## **Chapter 1 Tools of Algebra**

### **1.1 Real numbers and number operations**

<http://learnzillion.com/lessons?utf8=%E2%9C%93&filters%5Bsubject%5D=math&query=real+numbers+>

<http://www.khanacademy.org/math/arithmetic/absolute-value/add-sub-negatives/v/number-line-3-exercise-example>

[http://www.khanacademy.org/math/arithmetic/order-of-operations/arithmetic\\_properties/v/commutative-law-of-addition](http://www.khanacademy.org/math/arithmetic/order-of-operations/arithmetic_properties/v/commutative-law-of-addition)

### **1.2 Algebraic expressions**

<http://learnzillion.com/lessons/1577-solve-multistep-problems-with-positive-and-negative-decimals-using-order-of-operations>

[http://www.khanacademy.org/math/arithmetic/order-of-operations/order\\_of\\_operations/v/introduction-to-order-of-operations](http://www.khanacademy.org/math/arithmetic/order-of-operations/order_of_operations/v/introduction-to-order-of-operations)

### **1.3 simplifying Algebraic Expressions**

<http://learnzillion.com/lessons/3411-simplify-algebraic-expressions-by-combining-like-terms-and-applying-the-distributive-property>

<http://www.khanacademy.org/math/algebra/introduction-to-algebra/manipulating-expressions/v/combining-like-terms>

### **1.4 Solving Linear equations - 1 and 2 step equations**

[http://www.khanacademy.org/math/algebra/solving-linear-equations-and-inequalities/equations\\_beginner/v/simple-equations](http://www.khanacademy.org/math/algebra/solving-linear-equations-and-inequalities/equations_beginner/v/simple-equations)

<http://www.khanacademy.org/math/algebra/solving-linear-equations-and-inequalities/basic-equation-practice/v/equations-3>

## **1.5 rewriting equations and Formulas- literal equations, isolate variable**

[http://www.khanacademy.org/math/algebra/solving-linear-equations-and-inequalities/equations\\_beginner/v/simple-equations](http://www.khanacademy.org/math/algebra/solving-linear-equations-and-inequalities/equations_beginner/v/simple-equations)

[http://www.khanacademy.org/math/algebra/solving-linear-equations-and-inequalities/solving\\_for\\_variable/v/solving-for-a-variable-2](http://www.khanacademy.org/math/algebra/solving-linear-equations-and-inequalities/solving_for_variable/v/solving-for-a-variable-2)

## **1.6 problem solving using algebraic models- word problems :age ,geometry, general**

<http://learnzillion.com/lessons?utf8=%E2%9C%93&filters%5Bsubject%5D=math&query=linear+word+problems>

[http://www.khanacademy.org/math/algebra/solving-linear-equations-and-inequalities/equations\\_beginner/v/application-problems-with-equation-in-one-variable](http://www.khanacademy.org/math/algebra/solving-linear-equations-and-inequalities/equations_beginner/v/application-problems-with-equation-in-one-variable)

[http://www.khanacademy.org/math/algebra/solving-linear-equations-and-inequalities/age\\_word\\_problems\\_tut/v/ex-1-age-word-problem](http://www.khanacademy.org/math/algebra/solving-linear-equations-and-inequalities/age_word_problems_tut/v/ex-1-age-word-problem)

## **Chapter 2 Linear Equations and Functions**

### **2.1 Functions and their graphs; domain, range, vertical line test**

<http://www.khanacademy.org/math/algebra/linear-equations-and-inequalities/coordinate-plane/v/descartes-and-cartesian-coordinates>

<http://learnzillion.com/lessons?utf8=%E2%9C%93&filters%5Bsubject%5D=math&query=vertical+line+test>

<http://learnzillion.com/lessons/2813-understand-functions-in-terms-of-inputs-and-outputs>

[http://www.khanacademy.org/math/algebra/algebra-functions/domain\\_and\\_range/v/relations-and-functions](http://www.khanacademy.org/math/algebra/algebra-functions/domain_and_range/v/relations-and-functions)

## **2.2 Linear Functions and Function Notation**

<http://learnzillion.com/lessons/1316-recognize-the-characteristics-of-a-linear-function>

[http://www.khanacademy.org/math/algebra/linear-equations-and-inequalities/graphing\\_solutions2/v/recognizing-linear-functions](http://www.khanacademy.org/math/algebra/linear-equations-and-inequalities/graphing_solutions2/v/recognizing-linear-functions)

## **2.3 Slope and Rate of Change**

<http://learnzillion.com/lessons/3462-find-the-slope-of-a-linear-function-using-two-points>

<http://www.khanacademy.org/math/algebra/linear-equations-and-inequalities/slope-and-intercepts/v/slope-of-a-line>

## **2.4 Quick graphs of Linear Equations: graph lines in slope intercept form and using intercepts. Identify parallel and perpendicular lines.**

<http://learnzillion.com/lessons/251-write-the-equations-of-parallel-lines>

<http://learnzillion.com/lessons/252-write-the-equations-of-perpendicular-lines>

[http://www.khanacademy.org/math/algebra/linear-equations-and-inequalities/graphing\\_with\\_intercepts/v/graphing-using-x-and-y-intercepts](http://www.khanacademy.org/math/algebra/linear-equations-and-inequalities/graphing_with_intercepts/v/graphing-using-x-and-y-intercepts)

[http://www.khanacademy.org/math/algebra/linear-equations-and-inequalities/graphing\\_slope\\_intercept/v/graphing-a-line-in-slope-intercept-form](http://www.khanacademy.org/math/algebra/linear-equations-and-inequalities/graphing_slope_intercept/v/graphing-a-line-in-slope-intercept-form)

## **2.5 Writing Equations of Lines**

[http://www.khanacademy.org/math/algebra/linear-equations-and-inequalities/equation\\_of\\_a\\_line/v/linear-equations\\_in\\_slope-intercept\\_form](http://www.khanacademy.org/math/algebra/linear-equations-and-inequalities/equation_of_a_line/v/linear-equations_in_slope-intercept_form)

## **2.6 Direct Variation**

<http://learnzillion.com/lessons/2481-identify-direct-and-inverse-variation-by-looking-at-the-shape-of-graphs>

[http://www.khanacademy.org/math/algebra/algebra-functions/direct inverse variation/v/direct-and-inverse-variation](http://www.khanacademy.org/math/algebra/algebra-functions/direct-inverse-variation/v/direct-and-inverse-variation)

## Chapter 3 Systems of Linear Equations

### 3.1 solving linear systems by graphing

<http://learnzillion.com/lessons/1363-solve-a-system-of-a-quadratic-and-linear-equation-by-graphing-no-real-solutions>

<http://www.khanacademy.org/math/algebra/systems-of-eq-and-ineq/systems-through-examples/v/solving-linear-systems-by-graphing>

### 3.2 solving linear systems by substitution

<http://learnzillion.com/lessons/2444-solve-a-system-of-linear-equations-using-substitution>

<http://www.khanacademy.org/math/algebra/systems-of-eq-and-ineq/systems-with-substitution/v/solving-systems-by-substitution-1>

### 3.3 solving linear systems by linear combinations

<http://learnzillion.com/lessons/732-solve-simple-systems-of-equations-by-linear-combination-elimination>

<http://www.khanacademy.org/math/algebra/systems-of-eq-and-ineq/solving-systems-addition-elimination/v/solving-systems-by-elimination>

## Chapter 4

### 4.1 solving linear inequalities

[http://www.khanacademy.org/math/algebra/linear\\_inequalities/inequalities/v/inequalities-using-multiplication-and-division](http://www.khanacademy.org/math/algebra/linear_inequalities/inequalities/v/inequalities-using-multiplication-and-division)

[http://www.khanacademy.org/math/algebra/linear\\_inequalities/compound\\_absolute\\_value\\_inequalities/v/compund-inequalities](http://www.khanacademy.org/math/algebra/linear_inequalities/compound_absolute_value_inequalities/v/compund-inequalities)

[http://www.khanacademy.org/math/algebra/linear\\_inequalities/compound\\_absolute\\_value\\_in\\_equali/v/compound-inequalities](http://www.khanacademy.org/math/algebra/linear_inequalities/compound_absolute_value_in_equali/v/compound-inequalities)

#### **4.2 linear inequalities in two variables**

<http://learnzillion.com/lessons/2968-graphing-linear-inequalities-with-a-or-symbol>

#### **4.3 System of linear inequalities**

<http://learnzillion.com/lessons/3078-graph-systems-of-inequalities-by-shading-their-intersection>

<http://www.khanacademy.org/math/algebra/systems-of-eq-and-ineq/system-of-inequalities/v/testing-solutions-for-a-system-of-inequalities>

#### **4.4 solving absolute value equations**

<http://learnzillion.com/lessons/243-solve-absolute-value-equations>

<http://www.khanacademy.org/math/algebra/solving-linear-equations-and-inequalities/absolute-value-equations/v/absolute-value-equations>

#### **4.5 solving absolute value inequalities**

<http://learnzillion.com/lessons/244-solve-absolute-value-conjunction-inequalities>

<http://learnzillion.com/lessons/245-solve-absolute-value-disjunction-inequalities>

#### **4.6 absolute value functions**

<http://learnzillion.com/lessons/2897-graph-absolute-value-functions>

## **Chapter 5**

### **5.1 Graphing quadratic functions**

<http://www.khanacademy.org/math/algebra/multiplying-factoring-expression/multiplying-binomials/v/multiplying-binomials>

[http://www.khanacademy.org/math/algebra/quadratics/solving\\_graphing\\_quadratics/v/graphing-a-quadratic-function](http://www.khanacademy.org/math/algebra/quadratics/solving_graphing_quadratics/v/graphing-a-quadratic-function)

[http://www.khanacademy.org/math/algebra/quadratics/solving\\_graphing\\_quadratics/e/graphing\\_parabolas\\_0.5](http://www.khanacademy.org/math/algebra/quadratics/solving_graphing_quadratics/e/graphing_parabolas_0.5)

### **5.2 Graphing quadratic functions in vertex form**

[http://www.khanacademy.org/math/algebra/quadratics/solving\\_graphing\\_quadratics/v/graphing-a-parabola-in-vertex-form](http://www.khanacademy.org/math/algebra/quadratics/solving_graphing_quadratics/v/graphing-a-parabola-in-vertex-form)

### **5.3 Factoring $x^2 + bx + c$**

<http://www.khanacademy.org/math/algebra/multiplying-factoring-expression/factoring-quadratic-expressions/v/factoring-polynomials-1>

[http://www.khanacademy.org/math/algebra/quadratics/factoring\\_quadratics/v/Example%201:%20Solving%20a%20quadratic%20equation%20by%20factoring](http://www.khanacademy.org/math/algebra/quadratics/factoring_quadratics/v/Example%201:%20Solving%20a%20quadratic%20equation%20by%20factoring)

### **5.4 Factoring $ax^2 + bx + c$**

<http://www.khanacademy.org/math/algebra/multiplying-factoring-expression/factoring-by-grouping/v/factor-by-grouping-and-factoring-completely>

<http://www.khanacademy.org/math/algebra/multiplying-factoring-expression/factoring-by-grouping/v/factoring-trinomials-with-a-non-1-leading-coefficient-by-grouping>

[http://www.khanacademy.org/math/algebra/quadratics/factoring\\_quadratics/v/Example%201:%20Solving%20a%20quadratic%20equation%20by%20factoring](http://www.khanacademy.org/math/algebra/quadratics/factoring_quadratics/v/Example%201:%20Solving%20a%20quadratic%20equation%20by%20factoring)

## **5.5 Factoring using special patterns**

<http://www.khanacademy.org/math/algebra/multiplying-factoring-expression/factoring-special-products/v/factoring-special-products>

<http://www.khanacademy.org/math/algebra/multiplying-factoring-expression/factoring-special-products/v/factoring-difference-of-squares>

<http://www.khanacademy.org/math/algebra/multiplying-factoring-expression/factoring-special-products/v/factoring-perfect-square-trinomials>

## **5.6 Solving Quadratic Equations by Finding Square Roots**

<http://www.khanacademy.org/math/arithmetic/exponents-radicals/radical-radicals/v/simplifying-square-roots-1>

## **5.7 Complex Numbers**

[http://www.khanacademy.org/math/algebra/complex-numbers/imaginary\\_unit\\_i/v/introduction-to-i-and-imaginary-numbers](http://www.khanacademy.org/math/algebra/complex-numbers/imaginary_unit_i/v/introduction-to-i-and-imaginary-numbers)

[http://www.khanacademy.org/math/algebra/complex-numbers/imaginary\\_unit\\_i/v/imaginary-roots-of-negative-numbers](http://www.khanacademy.org/math/algebra/complex-numbers/imaginary_unit_i/v/imaginary-roots-of-negative-numbers)

[http://www.khanacademy.org/math/algebra/complex-numbers/complex\\_numbers/v/adding-complex-numbers](http://www.khanacademy.org/math/algebra/complex-numbers/complex_numbers/v/adding-complex-numbers)

[http://www.khanacademy.org/math/algebra/complex-numbers/complex\\_numbers/v/multiplying-complex-numbers](http://www.khanacademy.org/math/algebra/complex-numbers/complex_numbers/v/multiplying-complex-numbers)

[http://www.khanacademy.org/math/algebra/complex-numbers/complex\\_numbers/v/dividing-complex-numbers](http://www.khanacademy.org/math/algebra/complex-numbers/complex_numbers/v/dividing-complex-numbers)

## **5.8 Completing the Square**

[http://www.khanacademy.org/math/algebra/quadratics/completing\\_the\\_square/v/solving-quadratic-equations-by-completing-the-square](http://www.khanacademy.org/math/algebra/quadratics/completing_the_square/v/solving-quadratic-equations-by-completing-the-square)

## **5.9 Quadratic Formula and the Discriminant**

[http://www.khanacademy.org/math/algebra/quadratics/quadratic\\_formula/v/using-the-quadratic-formula](http://www.khanacademy.org/math/algebra/quadratics/quadratic_formula/v/using-the-quadratic-formula)

[http://www.khanacademy.org/math/algebra/quadratics/quadratic\\_formula/v/discriminant-of-quadratic-equations](http://www.khanacademy.org/math/algebra/quadratics/quadratic_formula/v/discriminant-of-quadratic-equations)

# **Chapter 6**

## **6.1 Properties of Exponents**

<http://www.khanacademy.org/math/algebra/exponent-equations/exponent-properties-algebra/v/exponent-properties-1>

<http://www.khanacademy.org/math/algebra/exponent-equations/exponent-properties-algebra/v/exponent-properties-2>

<http://www.khanacademy.org/math/algebra/exponent-equations/exponent-properties-algebra/v/exponent-properties-3>

<http://www.khanacademy.org/math/algebra/exponent-equations/exponent-properties-algebra/v/negative-and-positive-exponents>

## **6.2 Polynomial Functions and Their Graphs**

[http://www.khanacademy.org/math/trigonometry/polynomial\\_and\\_rational/polynomial-end-behavior/v/polynomial-end-behavior](http://www.khanacademy.org/math/trigonometry/polynomial_and_rational/polynomial-end-behavior/v/polynomial-end-behavior)

[http://www.khanacademy.org/math/trigonometry/polynomial\\_and\\_rational/polynomial-end-behavior/v/polynomial-end-behavior-exercise-example](http://www.khanacademy.org/math/trigonometry/polynomial_and_rational/polynomial-end-behavior/v/polynomial-end-behavior-exercise-example)

## **6.3 Adding and Subtracting Polynomials**

[http://www.khanacademy.org/math/trigonometry/polynomial\\_and\\_rational/polynomial\\_tutorial/v/addition-and-subtraction-of-polynomials](http://www.khanacademy.org/math/trigonometry/polynomial_and_rational/polynomial_tutorial/v/addition-and-subtraction-of-polynomials)

## **6.4 Multiplying and Dividing Polynomials**

<http://www.khanacademy.org/math/algebra/multiplying-factoring-expression/multiplying-binomials/v/multiplying-binomials>

[http://www.khanacademy.org/math/trigonometry/polynomial\\_and\\_rational/polynomial\\_tutorial/v/multiplying-polynomials](http://www.khanacademy.org/math/trigonometry/polynomial_and_rational/polynomial_tutorial/v/multiplying-polynomials)

[http://www.khanacademy.org/math/trigonometry/polynomial\\_and\\_rational/dividing\\_polynomials/v/diving-polynomials-1](http://www.khanacademy.org/math/trigonometry/polynomial_and_rational/dividing_polynomials/v/diving-polynomials-1)

[http://www.khanacademy.org/math/trigonometry/polynomial\\_and\\_rational/synthetic-division/v/synthetic-division](http://www.khanacademy.org/math/trigonometry/polynomial_and_rational/synthetic-division/v/synthetic-division)

## **6.5 Factoring Cubic Polynomials**

[http://www.khanacademy.org/math/trigonometry/polynomial\\_and\\_rational/factoring-higher-degree-polynomials/v/factoring-sum-of-cubes](http://www.khanacademy.org/math/trigonometry/polynomial_and_rational/factoring-higher-degree-polynomials/v/factoring-sum-of-cubes)

[http://www.khanacademy.org/math/trigonometry/polynomial\\_and\\_rational/factoring-higher-degree-polynomials/v/factoring-5th-degree-polynomial-to-find-real-zeros](http://www.khanacademy.org/math/trigonometry/polynomial_and_rational/factoring-higher-degree-polynomials/v/factoring-5th-degree-polynomial-to-find-real-zeros)

<http://www.khanacademy.org/math/algebra/multiplying-factoring-expression/factoring-by-grouping/v/factoring-trinomials-by-grouping-1>

## **6.6 Polynomials of Greater Degree**

<http://www.khanacademy.org/math/algebra/multiplying-factoring-expression/factoring-special-products/v/factoring-to-produce-difference-of-squares>

# **Chapter 7**

## **7.1 nth Roots and Rational Exponents**

<http://www.khanacademy.org/math/algebra/exponent-equations/simplifying-radical-expressions/v/radical-equivalent-to-rational-exponents-2>

<http://www.khanacademy.org/math/algebra/exponent-equations/simplifying-radical-expressions/v/radical-expressions-with-higher-roots>

## **7.2 Properties of Rational Exponents**

<http://www.khanacademy.org/math/algebra/exponent-equations/simplifying-radical-expressions/v/how-to-rationalize-a-denominator>

<http://www.khanacademy.org/math/algebra/exponent-equations/simplifying-radical-expressions/v/simplifying-cube-roots>

## **7.3 Solving Radical Equations**

[http://www.khanacademy.org/math/algebra/exponent-equations/radical\\_equations/v/solving-radical-equations](http://www.khanacademy.org/math/algebra/exponent-equations/radical_equations/v/solving-radical-equations)

[http://www.khanacademy.org/math/algebra/exponent-equations/radical\\_equations/v/solving-radical-equations-3](http://www.khanacademy.org/math/algebra/exponent-equations/radical_equations/v/solving-radical-equations-3)

## **7.4 Function Operations and Composition of functions**

<http://www.khanacademy.org/math/algebra/algebra-functions/eval-function-expressions/v/evaluating-composite-functions-example-1>

<http://www.khanacademy.org/math/algebra/algebra-functions/eval-function-expressions/v/sum-of-functions>

<http://www.khanacademy.org/math/algebra/algebra-functions/eval-function-expressions/v/difference-of-functions>

## **7.5 Inverse functions**

[http://www.khanacademy.org/math/algebra/algebra-functions/function\\_inverses/v/introduction-to-function-inverses](http://www.khanacademy.org/math/algebra/algebra-functions/function_inverses/v/introduction-to-function-inverses)

[http://www.khanacademy.org/math/algebra/algebra-functions/function\\_inverses/v/function-inverse-example-1](http://www.khanacademy.org/math/algebra/algebra-functions/function_inverses/v/function-inverse-example-1)

[http://www.khanacademy.org/math/algebra/algebra-functions/function\\_inverses/v/function-inverses-example-2](http://www.khanacademy.org/math/algebra/algebra-functions/function_inverses/v/function-inverses-example-2)

## **Chapter 8 Exponential and Logarithmic Functions**

### **8.1 Exponential Growth**

<http://www.khanacademy.org/private/college-math-algebra2-trig/equations-inequal-accuplacer/v/exponential-growth-functions>

### **8.2 Exponential Decay**

<http://www.khanacademy.org/science/chemistry/radioactive-decay/v/types-of-decay>

<http://www.khanacademy.org/science/chemistry/radioactive-decay/v/introduction-to-exponential-decay>

### **8.4 Logarithms and Logarithmic Functions**

[http://www.khanacademy.org/math/algebra/logarithms-tutorial/logarithm\\_basics/v/logarithms](http://www.khanacademy.org/math/algebra/logarithms-tutorial/logarithm_basics/v/logarithms)

[http://www.khanacademy.org/math/algebra/logarithms-tutorial/logarithm\\_basics/v/logarithmic-equations-2](http://www.khanacademy.org/math/algebra/logarithms-tutorial/logarithm_basics/v/logarithmic-equations-2)

### **8.5 Properties of Logarithms**

[http://www.khanacademy.org/math/algebra/logarithms-tutorial/logarithm\\_properties/v/introduction-to-logarithm-properties](http://www.khanacademy.org/math/algebra/logarithms-tutorial/logarithm_properties/v/introduction-to-logarithm-properties)

[http://www.khanacademy.org/math/algebra/logarithms-tutorial/logarithm\\_properties/v/sum-of-logarithms-with-same-base](http://www.khanacademy.org/math/algebra/logarithms-tutorial/logarithm_properties/v/sum-of-logarithms-with-same-base)

[http://www.khanacademy.org/math/algebra/logarithms-tutorial/logarithm\\_properties/v/logarithm-of-a-power](http://www.khanacademy.org/math/algebra/logarithms-tutorial/logarithm_properties/v/logarithm-of-a-power)

[http://www.khanacademy.org/math/algebra/logarithms-tutorial/logarithm\\_properties/v/introduction-to-logarithm-properties--part-2](http://www.khanacademy.org/math/algebra/logarithms-tutorial/logarithm_properties/v/introduction-to-logarithm-properties--part-2)

### **8.6 Solving Exponential and Logarithmic Functions**

[http://www.khanacademy.org/math/algebra/logarithms-tutorial/logarithm\\_properties/v/solving-logarithmic-equations\\_DUP\\_1](http://www.khanacademy.org/math/algebra/logarithms-tutorial/logarithm_properties/v/solving-logarithmic-equations_DUP_1)

[http://www.khanacademy.org/math/algebra/logarithms-tutorial/logarithm\\_properties/v/solving-logarithmic-equations](http://www.khanacademy.org/math/algebra/logarithms-tutorial/logarithm_properties/v/solving-logarithmic-equations)

[http://www.khanacademy.org/math/trigonometry/exponential\\_and\\_logarithmic\\_func/log\\_functions/v/comparing-exponential-logarithmic-functions](http://www.khanacademy.org/math/trigonometry/exponential_and_logarithmic_func/log_functions/v/comparing-exponential-logarithmic-functions)

## Chapter 9: Rational Equations and Functions

### 9.1 Inverse and Joint Variations

[http://www.khanacademy.org/math/algebra/algebra-functions/direct\\_inverse\\_variation/v/direct-and-inverse-variation](http://www.khanacademy.org/math/algebra/algebra-functions/direct_inverse_variation/v/direct-and-inverse-variation)

[http://www.khanacademy.org/math/algebra/algebra-functions/direct\\_inverse\\_variation/v/direct-inverse-and-joint-variation](http://www.khanacademy.org/math/algebra/algebra-functions/direct_inverse_variation/v/direct-inverse-and-joint-variation)

### 9.3 Simplifying and Multiplying Rational Expressions

<http://www.khanacademy.org/math/algebra-a2/rational-expressions/simplifying-rational-alg/v/simplifying-rational-expressions-introduction>

<http://www.khanacademy.org/math/algebra-a2/rational-expressions/simplifying-rational-alg/v/simplifying-rational-expressions-3>

<http://www.khanacademy.org/math/algebra-a2/rational-expressions/multi-div-rational-exp/v/multiplying-and-simplifying-rational-expressions>

<http://www.khanacademy.org/math/algebra-a2/rational-expressions/multi-div-rational-exp/v/multiplying-and-dividing-rational-expressions-2>

### 9.4 Dividing Rational Expressions

<http://www.khanacademy.org/math/algebra-a2/rational-expressions/multi-div-rational-exp/v/multiplying-and-dividing-rational-expressions-3>

## **9.5 Adding and Subtracting Rational Expressions**

[http://www.khanacademy.org/math/algebra-a2/rational-expressions/rational\\_expressions/v/adding-and-subtracting-rational-expressions-2](http://www.khanacademy.org/math/algebra-a2/rational-expressions/rational_expressions/v/adding-and-subtracting-rational-expressions-2)

[http://www.khanacademy.org/math/algebra-a2/rational-expressions/rational\\_expressions/v/adding-and-subtracting-rational-expressions-2](http://www.khanacademy.org/math/algebra-a2/rational-expressions/rational_expressions/v/adding-and-subtracting-rational-expressions-2)

## **9.6 Solving Rational Expressions**

<http://www.khanacademy.org/math/algebra-a2/rational-expressions/solving-rational-equations/v/rational-equations>

<http://www.khanacademy.org/math/algebra-a2/rational-expressions/solving-rational-equations/v/solving-rational-equations-2>

<http://www.khanacademy.org/math/algebra-a2/rational-expressions/solving-rational-equations/v/solving-rational-equations-3>

# **Chapter 10: Statistics and Probability**

## **1.7/1.8 Analyzing Data/Frequency Distributions/Histograms/Box and Whisker**

<http://www.khanacademy.org/test-prep/college-arithmetic/stat-brushups/v/statistics-intro--mean--median-and-mode>

<http://www.khanacademy.org/math/probability/descriptive-statistics/Box-and-whisker%20plots/v/box-and-whisker-plots>

<http://www.khanacademy.org/test-prep/college-arithmetic/interpret-data-brushups/v/histograms>

## **2.7 Scatter Plots**

<http://www.khanacademy.org/math/cc-eighth-grade-math/cc-8th-data/cc-8th-scatter-plots/v/constructing-scatter-plot-exercise-example>

<http://www.khanacademy.org/math/cc-eighth-grade-math/cc-8th-data/cc-8th-scatter-plots/v/constructing-scatter-plot>

### **10.3 Transformations of Data**

[http://www.khanacademy.org/math/probability/descriptive-statistics/central\\_tendency/e/interpreting-and-comparing-data-distributions](http://www.khanacademy.org/math/probability/descriptive-statistics/central_tendency/e/interpreting-and-comparing-data-distributions)

### **10.4 Fundamental Counting Principle and Permutations**

[http://www.khanacademy.org/math/probability/probability-and-combinatorics-topic/permutations\\_and\\_combinations/v/permutations](http://www.khanacademy.org/math/probability/probability-and-combinatorics-topic/permutations_and_combinations/v/permutations)

[http://www.khanacademy.org/math/probability/probability-and-combinatorics-topic/permutations\\_and\\_combinations/v/permutations-and-combinations-2](http://www.khanacademy.org/math/probability/probability-and-combinatorics-topic/permutations_and_combinations/v/permutations-and-combinations-2)

### **10.5 Combinations**

[http://www.khanacademy.org/math/probability/probability-and-combinatorics-topic/permutations\\_and\\_combinations/v/combinations](http://www.khanacademy.org/math/probability/probability-and-combinatorics-topic/permutations_and_combinations/v/combinations)

### **10.6 Introduction to Probability**

[http://www.khanacademy.org/math/probability/probability-and-combinatorics-topic/probability\\_combinatorics/v/events-and-outcomes-3](http://www.khanacademy.org/math/probability/probability-and-combinatorics-topic/probability_combinatorics/v/events-and-outcomes-3)

[http://www.khanacademy.org/math/probability/independent-dependent-probability/basic\\_probability/v/probability-space-exercise-example](http://www.khanacademy.org/math/probability/independent-dependent-probability/basic_probability/v/probability-space-exercise-example)

### **10.7 Probability of Compound Events**

[http://www.khanacademy.org/math/probability/independent-dependent-probability/addition\\_rule\\_probability/v/probability-with-playing-cards-and-venn-diagrams](http://www.khanacademy.org/math/probability/independent-dependent-probability/addition_rule_probability/v/probability-with-playing-cards-and-venn-diagrams)

[http://www.khanacademy.org/math/probability/independent-dependent-probability/independent\\_events/v/events-and-outcomes-2](http://www.khanacademy.org/math/probability/independent-dependent-probability/independent_events/v/events-and-outcomes-2)

### **10.8 Probability of Dependent and Independent Events**

[http://www.khanacademy.org/math/probability/independent-dependent-probability/dependent\\_probability/v/introduction-to-dependent-probability](http://www.khanacademy.org/math/probability/independent-dependent-probability/dependent_probability/v/introduction-to-dependent-probability)

[http://www.khanacademy.org/math/probability/independent-dependent-probability/dependent\\_probability/v/independent-events-1](http://www.khanacademy.org/math/probability/independent-dependent-probability/dependent_probability/v/independent-events-1)

[http://www.khanacademy.org/math/probability/independent-dependent-probability/dependent\\_probability/v/dependent-probability-example-1](http://www.khanacademy.org/math/probability/independent-dependent-probability/dependent_probability/v/dependent-probability-example-1)

## Chapter 11: Discrete Mathematics

### 11.1 Matrix Operations

[http://www.khanacademy.org/math/algebra2/algebra-matrices/Basic\\_matrix\\_operations/v/introduction-to-the-matrix](http://www.khanacademy.org/math/algebra2/algebra-matrices/Basic_matrix_operations/v/introduction-to-the-matrix)

[http://www.khanacademy.org/math/algebra2/algebra-matrices/Basic\\_matrix\\_operations/v/scalar-multiplication](http://www.khanacademy.org/math/algebra2/algebra-matrices/Basic_matrix_operations/v/scalar-multiplication)

[http://www.khanacademy.org/math/algebra2/algebra-matrices/Basic\\_matrix\\_operations/v/matrix-addition-and-subtraction-1](http://www.khanacademy.org/math/algebra2/algebra-matrices/Basic_matrix_operations/v/matrix-addition-and-subtraction-1)

### 11.2 Multiplying Matrices

[http://www.khanacademy.org/math/algebra2/algebra-matrices/matrix\\_multiplication/v/matrix-multiplication-intro](http://www.khanacademy.org/math/algebra2/algebra-matrices/matrix_multiplication/v/matrix-multiplication-intro)

[http://www.khanacademy.org/math/algebra2/algebra-matrices/matrix\\_multiplication/v/multiplying-a-matrix-by-a-matrix](http://www.khanacademy.org/math/algebra2/algebra-matrices/matrix_multiplication/v/multiplying-a-matrix-by-a-matrix)

### 11 Extension: Determinants and Cramer's Rule

[http://www.khanacademy.org/math/algebra2/algebra-matrices/inverting\\_matrices/v/finding-the-determinant-of-a-2x2-matrix](http://www.khanacademy.org/math/algebra2/algebra-matrices/inverting_matrices/v/finding-the-determinant-of-a-2x2-matrix)

### 11.4 An Introduction to Sequences and Series

[http://www.khanacademy.org/math/precalculus/seq\\_induction/seq\\_and\\_series/v/explicit-and-recursive-definitions-of-sequences](http://www.khanacademy.org/math/precalculus/seq_induction/seq_and_series/v/explicit-and-recursive-definitions-of-sequences)

## **11.5 Arithmetic Sequences and Series**

[http://www.khanacademy.org/math/precalculus/seq\\_induction/seq\\_and\\_series/v/arithmetic-sequences](http://www.khanacademy.org/math/precalculus/seq_induction/seq_and_series/v/arithmetic-sequences)

[http://www.khanacademy.org/math/precalculus/seq\\_induction/seq\\_and\\_series/v/series-as-sum-of-sequence](http://www.khanacademy.org/math/precalculus/seq_induction/seq_and_series/v/series-as-sum-of-sequence)

## **11.6 Geometric Sequence and Series**

[http://www.khanacademy.org/math/precalculus/seq\\_induction/precalc-geometric-sequences/v/geometric-sequences--introduction](http://www.khanacademy.org/math/precalculus/seq_induction/precalc-geometric-sequences/v/geometric-sequences--introduction)

[http://www.khanacademy.org/math/precalculus/seq\\_induction/precalc-geometric-sequences/v/geometric-sequences](http://www.khanacademy.org/math/precalculus/seq_induction/precalc-geometric-sequences/v/geometric-sequences)

## **11.7 Infinite Geometric Series**

[http://www.khanacademy.org/math/precalculus/seq\\_induction/infinite-geometric-series/v/infinite-geometric-series](http://www.khanacademy.org/math/precalculus/seq_induction/infinite-geometric-series/v/infinite-geometric-series)

# **Chapter 13 Conic Sections**

## **Introduction to Conic Sections**

[http://www.khanacademy.org/math/algebra2/conics\\_precalc/conic\\_section\\_intro/v/introduction-to-conic-sections](http://www.khanacademy.org/math/algebra2/conics_precalc/conic_section_intro/v/introduction-to-conic-sections)

## **13.1 Distance and midpoint formulas**

<http://www.khanacademy.org/math/algebra/linear-equations-and-inequalitie/more-analytic-geometry/v/distance-formula>

<http://www.khanacademy.org/math/algebra/linear-equations-and-inequalitie/more-analytic-geometry/v/midpoint-formula>

## **13.2 Parabolas**

[http://www.khanacademy.org/math/algebra2/conics\\_precalc/parabolas\\_precalc/v/parabola-intuition-example-1](http://www.khanacademy.org/math/algebra2/conics_precalc/parabolas_precalc/v/parabola-intuition-example-1)

[http://www.khanacademy.org/math/algebra2/conics\\_precalc/parabolas\\_precalc/v/parabola-focus-and-directrix-1](http://www.khanacademy.org/math/algebra2/conics_precalc/parabolas_precalc/v/parabola-focus-and-directrix-1)

## **13.3 Circles**

[http://www.khanacademy.org/math/algebra2/conics\\_precalc/circles-tutorial-precalc/v/radius-and-center-for-a-circle-equation-in-standard-form](http://www.khanacademy.org/math/algebra2/conics_precalc/circles-tutorial-precalc/v/radius-and-center-for-a-circle-equation-in-standard-form)

## **13.4 Ellipses**

[http://www.khanacademy.org/math/algebra2/conics\\_precalc/ellipses-precalc/v/conic-sections--intro-to-ellipses](http://www.khanacademy.org/math/algebra2/conics_precalc/ellipses-precalc/v/conic-sections--intro-to-ellipses)

[http://www.khanacademy.org/math/algebra2/conics\\_precalc/ellipses-precalc/v/foci-of-an-ellipse](http://www.khanacademy.org/math/algebra2/conics_precalc/ellipses-precalc/v/foci-of-an-ellipse)

## **13.5 Hyperbolas**

[http://www.khanacademy.org/math/algebra2/conics\\_precalc/hyperbolas-precalc/v/conic-sections--intro-to-hyperbolas](http://www.khanacademy.org/math/algebra2/conics_precalc/hyperbolas-precalc/v/conic-sections--intro-to-hyperbolas)

[http://www.khanacademy.org/math/algebra2/conics\\_precalc/hyperbolas-precalc/v/conic-sections--hyperbolas-2](http://www.khanacademy.org/math/algebra2/conics_precalc/hyperbolas-precalc/v/conic-sections--hyperbolas-2)

[http://www.khanacademy.org/math/algebra2/conics\\_precalc/hyperbolas-precalc/v/foci-of-a-hyperbola](http://www.khanacademy.org/math/algebra2/conics_precalc/hyperbolas-precalc/v/foci-of-a-hyperbola)