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Apex learning answers algebra 1

Let’s say you just got back from an incredible Halloween trick-or-treat marathon, and you have much more candy than you could ever eat. You also have hungry friends who weren’t so lucky with their outings, so you decide to split up the candy after setting aside what you want. Algebra allows for you to express this situation mathematically so that you can quickly understand how the candy distribution has to go depending on how many needy friends come calling. Now, that is a pretty simple example, but algebra extends way beyond handing out candy. Quadratic equations and geometry make towering skyscrapers a reality. Linear equations help scientists and businesspeople alike understand connections and plan for the future. Variables allow the unknowns of all kinds of situations to be contextualized and understood. In short, without algebra, the world as we know it wouldn’t be possible, and Algebra 1 is the first step to understanding all that this diverse aspect of mathematics makes reality. What is Algebra 1? Algebra 1, or elementary algebra, is all about solving for variables in various equations and formulas. Where arithmetic handles simple expressions using +, -, x, and ÷ to find simple sums, differences, products, and quotients, Algebra 1 incorporates variables into those expressions and asks students to discover the missing number. For instance, instead of being asked to find the answer to 6 + 8, algebra students might have the equation 7x - 2 = 12 and be expected to determine what the variable “x” would equal. Depending on the types of variables and how they are distributed, you have different algebraic expressions like linear, quadratic, and exponential equations. Algebra 1 also incorporates elements of geometry to help determine the areas and volumes of different shapes and the like. All in all, Algebra 1 expands what you can do with math and starts to present more specialized approaches to solving real-world problems. Difference Between Algebra 1 and Algebra 2 As you might expect, Algebra 1 establishes a foundation for Algebra 2. In the first algebra class, you learn basic concepts and practice with the likes of exponents, simplifying equations, and plotting elementary equations. Algebra 2 takes all the concepts of Algebra 1 and applies them to more complex and involved topics. You’ll need the skills you learn in Algebra 1 to tackle a wider array of equations, functions, and concepts in addition to what you have already learned and practiced in the previous course. In short, you cannot hope to succeed in Algebra 2 if you do not grasp the bulk of Algebra 1, so make sure you take your studies seriously so that you set yourself up for future success. How to Learn Algebra 1 The leap from arithmetic to algebra can be daunting, but learning Algebra 1 doesn’t have to be scary. Apex Learning Virtual School's online courses offer guided instruction tailor-made to cover all the essential Algebra 1 concepts. With a combination of detailed lessons, practice problems, and progress checks, you’ll be able to take Algebra 1 at your own pace and feel confident that you are getting one of the best online learning experiences available. ALVS also offers Honors and Credit Recovery Algebra 1 courses in addition to the traditional course. It’s our goal to support every student throughout their virtual learning experience and academic career. Learn more about our teacher feedback, live help, student services, and success coaches before taking the next step. Algebra 1 Properties As you learn Algebra 1, you will discover the many rules that point to how mathematics works universally. These properties are consistently true and serve as the foundation for all math functions. Laws of Algebra 1 Before we dive into the more specialized lessons, let’s go over some fundamental laws of Algebra 1. These will help later functions make more sense and show you a glimpse of the logic at the core of this kind of math. Commutative Law of Addition The commutative law for addition simply states that the order of adding numbers does not matter. The sum will be the same no matter the order. In other words, a + b = b + a, where a and b represent any given numbers. This law is essential to algebra because it allows you to move numbers freely on a certain side of an equation without changing the math as you seek to solve for variables. 3 + 5 = 5 + 3 12x + 8y = 8y + 12x Associative Law of Addition When you’re adding three or more numbers, the grouping of the numbers does not affect the final sum. For instance, for any three numbers a, b, and c, (a + b) + c = a + (b + c). Similar to the commutative property, this law allows you to move numbers around more freely, specifically by grouping new numbers together. This will allow you to isolate variables as you try to figure them out. (4 + 6) + 3 = 4 + (6 + 3) (15 + 2x) + 7x = 15 + (2x + 7x) Associative Law of Multiplication Similar to the associative law for addition, this law states that when multiplying three or more numbers, the grouping of the numbers does not affect the product's result. In equation form, this looks like (a X b) X c = a X (b X c). Like before, this law allows you to regroup numbers when performing multiplication without changing the final product. This will also help when you need to reorient equations to better solve for variables. (2 * 5) * 3 = 2 * (5 * 3) (7 * 4x) * 2x = 7 * (4x * 2x) Distributive Law of Multiplication over Addition This one is a little more complicated. The distributive law of multiplication over addition indicates that when you multiply any number by the sum of two other numbers, you will get the same product if you multiply the number by each of the two numbers individually and then add the results. In other words, for any numbers a, b, and c, a X (b + c) = (a X b) + (a X c). You’ll need this law for simplifying algebraic expressions and for performing any calculations that deal with both addition and multiplication. 2 X (3 + 4) = (2 X 3) + (2 X 4) 5 X (6x + 9y) = (5 X 6x) + (5 X 9y) Distributive Law of Multiplication over Subtraction The distributive law of multiplication over subtraction states that when you multiply a number by the difference of two other numbers, it is the same as multiplying the number to each of the two numbers and then subtracting the results. In other words, for any numbers a, b, and c, a * (b - c) = (a * b) - (a * c). You’ll use this when simplifying expressions and solving problems involving both subtraction and addition. 8 * (3 - 2) = (8 * 3) - (8 * 2) 15 * (7x - 4x2) = (15 * 7x) - (15 * 4x2) Fundamentals of Algebra 1: Course Overview There’s a lot to learn in Algebra 1. Here is Apex Learning Virtual School’s Algebra 1 course breakdown to serve as a guide for what to expect. 1. Foundations of Algebra We’ll start with some basic terms and concepts as a foundation for later lessons. Rational and Irrational Numbers Algebraic Properties and Expressions Solving Linear Equations Foundations of Algebra Wrap-Up 2. Solving Equations and Inequalities Once you have the basics down, we’ll review more complex applications of those ideas. Solving Multistep Linear Equations Solving Linear Inequalities Literal Equations Measurement and Units Performance Task: Problem Solving with Inequalities Solving Equations and Inequalities Wrap-Up 3. Functions This unit will dive deeper into the functionality of algebra, and you will work on more intricate graphs. Domain and RangeIdentifying Functions Graphs and Functions Adding and Subtracting FunctionsFunctions Wrap-Up 4. Linear Equations We’ll go into detail about the different forms of linear equations, identifying the slope and intercepts, and graph these equations and inequalities. Slope Slope-Intercept Equation of a Line Point-Slope Equation of a LineParallel and Perpendicular LinesLinear Inequalities Linear Equations Wrap-Up 5. Systems of Linear Equations This section will cover how you can find a solution (or not!) to two linear equations using multiple approaches, such as graphing, substitution, and elimination. Two-Variable Systems: Graphing Two-Variable Systems: SubstitutionTwo-Variable Systems: Elimination Two-Variable Systems of Inequalities Systems of Linear Equations Wrap-Up 6. Exponents and Exponential Function We’ll see the exponential fun we can have when solving exponential equations, graphing them, and seeing their growth in real-world applications. ExponentsExponential FunctionsGraphs of Exponential FunctionsExponents and Exponential Functions Wrap-Up 7. Sequences and Functions We’ll look for patterns and logic with sequences. Arithmetic Sequences Geometric SequencesUnderstanding Number SequencesExponential and Linear GrowthSequences and Functions Wrap-Up 8. Semester 1 Exam Put what you have learned to the test and prepare for what comes next. 9. Polynomials We’ll introduce polynomials and play with multiple variables at a time. What Is a Polynomial?Adding and Subtracting PolynomialsMultiplying BinomialsMultiplying Polynomials Polynomials Wrap-Up 10. Factoring Polynomials Expand on polynomials and explore how factoring affects variables. GCF and Factoring by GroupingFactoring x2 + bx + cFactoring ax2 + bx + cSpecial CasesGraphing Factored Form PolynomialsFactoring Polynomials Wrap-Up 11. Quadratic Equations and Functions Quadratic equations open new possibilities for how we can model real-life scenarios with mathematics. . Solving Quadratic EquationsCompleting the SquareThe Quadratic FormulaGraphs of Quadratic Functions Nonlinear Systems of EquationsLinear, Quadratic, and Exponential FunctionsPerformance Task: Pricing for Profit Quadratic Equations and Functions Wrap-Up 12. Transformations of Functions Here you'll see how flexible functions can be. InversesParent FunctionsShifting FunctionsStretching and Compressing FunctionsTransformations of Parent FunctionsTransformations of Functions Wrap-Up 13. Descriptive Statistics Put the numbers to work and see what they can show you. Measures of Center and SpreadDot Plots, Box Plots, and HistogramsDescribing DistributionsTwo-Way Frequency Tables Descriptive Statistics Wrap-Up 14. Data and Mathematical Modeling Work to visualize more intricate algebraic functions. Two-Variable Data and ScatterplotsFitting Linear Models to DataNonlinear ModelsData and Mathematical Modeling Wrap-Up 15. Semester Two Exam It all comes to this. See how much you have learned with one final task. Helpful Formulas in Algebra 1 Below, you’ll find a handy list of common formulas you will use throughout Algebra 1. Take a moment to familiarize yourself with them. Don’t worry, though, we’ll be covering these more later. (a + b)2 = a2 + 2ab + b2(a - b)2 = a2 - 2ab + b2(a + b)(a - b) = a2 - b2(x + a)(x + b) = x2 + x(a + b) + ab(a + b)3 = a3 + 3a2b + 3ab2 + b3(a - b)3 = a3 - 3a2b + 3ab2 - b3a3 + b3 = (a + b)(a2 - ab + b2)a3 - b3 = (a - b)(a2 + ab + b2)(a + b + c)2 = a2 + b2 + c2 + 2ab + 2bc + 2ac am. an = am + nam/an = am - n(am)n = am*n(ab)m = am. bma0 = 1a-m = 1/am Standard Form: ax + by = cSlope Intercept Form: y = mx + bTwo-Point Form: y−y1=m(x−x1)Intercept Form: x/a + y/b = 1Vertical Line through (p, q): x = pHorizontal Line through (p, q): y = q Quadratic Equation Formulas Standard form: ax2 + bx + c = 0Vertex form: a (x - h)2 + k = 0Factored form: (x-a)(x-b)=0 Mean = (Sum of Observations) ÷ (Total Numbers of Observations) Mean of Grouped Data = Σfi/N Median when 'n' is odd: [(n + 1)/2]th term (“n” being the total number of values) Median when 'n' is even: [(n/2)th term + ((n/2) + 1)th term]/2 Range = Maximum - Minimum Frequently Asked Questions About Algebra 1 What grade level is Algebra 1? Algebra 1 is traditionally offered in the 9th grade; however, some gifted programs offer the course to 8th grade students as well. Since ALVS is a virtual school, students can work at their own pace — if a parent or student feels that they’re ready for Algebra 1, they can enroll. Is Algebra 1 or 2 harder? Since Algebra 2 builds on all the foundational concepts of Algebra 1 and then deepens and expands on them, Algebra 2 is considered to be more challenging than Algebra 1. However, if you develop a strong understanding of the concepts in Algebra 1, you can approach Algebra 2 with the proper skills that will make the learning curve much more manageable. We encourage you to take our Algebra 1 Tutorial course before enrolling in Algebra 2 to gauge your skills. What are the basic principles taught in Algebra 1? In Algebra 1, students learn fundamental principles like solving equations, working with variables and expressions, understanding properties of real numbers, graphing linear equations, and exploring basic concepts related to polynomials, exponents, and quadratic equations. The course also covers word problems, basic geometry, and the introduction of exponential and radical functions. What are the prerequisites required before starting Algebra 1? Before starting Algebra 1, students need to have a firm grip on basic arithmetic concepts like addition, subtraction, multiplication, and division. New algebra students should also have a solid understanding of decimals, fractions, and basic geometry concepts like area and perimeter. Ready to take the next step and enroll in Algebra 1? Our online application process is designed to make enrollment as stress-free as possible. Take the next step toward your academic success today — browse our catalog to learn more about course offerings or contact us at 1.855.550.2547 to speak to an admissions advisor. × Welcome to Answers! Register now for your free account Already have an account? Log in Registered users can: Ask and Answer Questions Earn Points Create a Study Guide Customize Your Profile No thanks, continue to site Use Mathleaks to get learning-focused solutions and answers to Algebra 1 math, either 8th grade Algebra 1 or 9th grade Algebra 1, for the most commonly used textbooks from publishers such as Houghton Mifflin Harcourt, Big Ideas Learning, CPM, McGraw Hill, and Pearson. Getting helpful and educational math answers and solutions to high school Algebra 1 exercises could be the key to understanding Algebra.If we haven’t covered your textbook yet, use Mathleaks’ own eCourses as an Algebra 1 textbook online. Our original content can be used as a stand-alone curriculum, or as a supplement to your textbook with exercises, answers, hints, solutions, and tests. Everything is all in one place – study smarter, not harder, with Mathleaks solutions! To gain access to the solutions either download our app for free on Google Play or the iTunes App Store, or visit our online eCourses. Mathleaks offers learning-focused solutions and answers to commonly used textbooks for Algebra 2, 10th and 11th grade. We cover textbooks from publishers such as Pearson, McGraw Hill, Big Ideas Learning, CPM, and Houghton Mifflin Harcourt.Licensed math educators from the United States have assisted in the development of Mathleaks’ own digital eCourses and curriculum for Algebra 2. Integrated with our textbook solutions, our original content can be used as a stand-alone curriculum or as a supplement to your Algebra 2 textbook. To gain access to the solutions either download our app for free on Google Play or the iTunes App Store, or visit our online eCourses.