


 A1

Algebra 1 Standard Components

 Release Test
Questions 2008

Blue Print

| Component | Component Descriptions | Release Test Questions 2008 | Blue Print |
|-----------|--|--|------------|
| 1A 1.1.1 | Students use properties of numbers to demonstrate whether assertions are true or false. | #1, #2 | 1/2 |
| 1A 2.0.1* | Students understand and use such operations as taking the opposite. | #5, #6 | 4 |
| 1A 2.0.2* | Students understand and use such operations as finding the reciprocal. | | |
| 1A 2.0.3* | Students understand and use such operations as taking the root. | | |
| 1A 2.0.4* | Students understand and use such operations as raising to a fractional power. | | |
| 1A 2.0.5* | Students understand and use rules of exponents. | | |
| 1A 3.0.1 | Students solve equations involving absolute value. | #7 | 1 |
| 1A 3.0.2 | Students solve inequalities involving absolute value. | #8 | |
| 1A 4.0.1* | Students simplify expressions prior to solving linear equations in one variable. | #9, #10, #11 | 3 |
| 1A 4.0.2* | Students simplify expressions prior to solving linear inequalities in one variable. | | |
| 1A 5.0.1* | Students solve multi-step problems involving linear equations in one variable and provide justification for each step. | #12 ^w , #14 ^w , #15 ^w , #17 ^w , #18 ^w , #16 | 6 |
| 1A 5.0.2* | Students solve multi-step word problems involving linear equations in one variable and provide justification for each step. | | |
| 1A 5.0.3* | Students solve multi-step problems involving linear inequalities in one variable and provide justification for each step. | | |
| 1A 5.0.4* | Students solve multi-step word problems involving linear inequalities in one variable and provide justification for each step. | | |
| 1A 6.0.1* | Students graph linear equations. | #28, #30, #31 | 4 |
| 1A 6.0.2* | Student sketch the region defined by linear inequalities. | #27, #29 | |
| 1A 6.0.3* | Students compute the x- and y-intercepts. | #26, #32 | |
| 1A 6.0.4* | Students transform equations/inequalities into slope-intercept form. | | |
| 1A 7.0.1* | Students verify a point lies on a line given the equation of the line. | #33, #37 | 4 |
| 1A 7.0.2* | Students are able to derive linear equations using the point-slope formula. | #34, #35 ^w , #36 | |
| 1A 8.0.1 | Students understand the concept of parallel and perpendicular lines and how their slopes are related. | #38, #39 | 1 |
| 1A 8.0.2 | Students are able to find the equations of a line perpendicular to a given line that passes through a given point. | | |


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| 1A 9.0.1* | Students solve a system of two linear equations in two variables algebraically. | #41, #42, #43 ^w , #45 ^w , #46 | 4 |
| 1A 9.0.2* | Students interpret the solutions to systems of equations graphically. | #44 | |
| 1A 9.0.3* | Students are able to solve systems of linear inequalities. | | |
| 1A 9.0.4* | Students are able to sketch the solution sets to systems of linear inequalities. | #40 | |
| 1A 10.0.1* | Students add/subtract monomials and polynomials. | #48, #49 ^w | 3 |
| 1A 10.0.2* | Students multiply/divide monomials and polynomials. | #47 | |
| 1A 10.0.3* | Students solve multi-step problems, including word problems, using the techniques from 10.0.1 and 10.0.2. | #50, #51 ^w , #52 | |
| 1A 11.0.1 | Students apply basic factoring techniques to second-degree polynomials. | #54 | 2 |
| 1A 11.0.2 | Students apply basic factoring techniques to simple third-degree polynomials. | | |
| 1A 11.0.3 | Students apply basic factoring techniques including finding a common factor for all terms in a polynomial. | #53, #56 | |
| 1A 11.0.4 | Students apply basic factoring techniques including recognizing the difference of two squares. | #56 | |
| 1A 11.0.5 | Students apply basic factoring techniques including recognizing perfect squares of binomials. | #53, #55 | |
| 1A 12.0.1* | Students simplify fractions with polynomials in the numerator and denominator by factoring both and reducing them to the lowest terms. | #77, #78, #79, #80, #81 | 3 |
| 1A 13.0.1* | Students add/subtract rational expressions. | | 4 |
| 1A 13.0.2 | Students multiply/divide rational expressions. | #82, #83, #84, | |
| 1A 13.0.3* | Students add/subtract functions. | | |
| 1A 13.0.4* | Students multiply/divide functions. | | |
| 1A 13.0.5* | Students solve computationally challenging problems by using techniques 13.0.1 – 13.0.4. | #85 | |
| 1A 13.0.6* | Students solve conceptually challenging problems by using techniques 13.0.1 – 13.0.4. | | |
| 1A 14.0.1* | Students solve quadratic equations by factoring. | #57 ^w , #59, #61, #62 | 3 |
| 1A 14.0.2* | Students solve quadratic equations by completing the square. | #58, #60 ^w | |


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| A1 15.0.1* | Students apply algebraic techniques to solve rate problems. | #87 ^w #89 ^w , #91 ^w | 4 |
| A1 15.0.2* | Students apply algebraic techniques to solve work problems. | #88 ^w | |
| A1 15.0.3* | Students apply algebraic techniques to solve percent mixture problems. | #86 ^w , #90 ^w | |
| A1 16.0.1 | Understand the concepts a function. | #92, #93 | ½ |
| A1 16.0.2 | Determine whether relation is a function. | | |
| A1 16.0.3 | Students give pertinent information about given relations and functions. | | |
| A1 17.0.1 | Students determine the domain of independent variables and the range of dependent variables defined by a graph. | #94, #95 | 1 |
| A1 17.0.2 | Students determine the domain of independent variables and the range of dependent variables for a set of ordered pairs. | | |
| A1 17.0.3 | Students determine the domain of independent variables and the range of dependent variables for a symbolic expression. | | |
| A1 18.0.1 | Determine whether a graph is a function. | #96 | ½ |
| A1 18.0.2 | Determine whether set of ordered pair is a function. | | |
| A1 18.0.3 | Determine whether a symbolic expression is a function. | | |
| A1 19.0.1* | Students know the quadratic formula | #63, #64 | 2 |
| A1 19.0.2* | Students are familiar with the proof of the quadratic formula by completing the square. | | |
| A1 20.0.1* | Students use the quadratic formula to find roots of a second-degree polynomial. | #66 | 3 |
| A1 20.0.2* | Students use the quadratic formula to solve quadratic equations. | #65, #67, #68 | |
| A1 21.0.1* | Students graph quadratic functions. | #70 | 3 |
| A1 21.0.2* | Students know that their roots are the x-intercepts. | #69, #71, #72 | |
| A1 22.0.1 | Students use the quadratic formula to determine whether the graph of a quadratic function will intersect the x-axis in zero, one, or two points. | #73 | 1 |
| A1 22.0.2 | Students use factoring techniques or both to determine whether the graph of a quadratic function will intersect the x-axis in zero, one, or two points. | | |
| A1 23.0.1* | Students apply quadratic equations to physical problems involving geometry concepts. | #75 ^w , #76 ^w | 3 |
| A1 23.0.2* | Students apply quadratic equations to physical problems, such as the motion of an object under the force of gravity. | #74 ^w | |


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| A1 24.1 | Students explain the difference between inductive and deductive reasoning and identify and provide examples of each. | #19 ^w | |
| A1 24.2 | Students identify the hypothesis and conclusion in logical deduction. | #20, #21 ^w | 1 |
| A1 24.3 | Students use counterexamples to show that an assertion is false and recognize that a single counterexample is sufficient to refute an assertion. | #22 ^w | |
| A1 25.1 | Students use properties of numbers to construct simple, valid arguments (direct and indirect) for, or formulate counterexamples to, claimed assertions. | #23 | |
| A1 25.2 | Students judge the validity of an argument according to whether the properties of the real number system and the order of operations have been applied correctly at each step. | #24 | 1 |
| A1 25.3 | Given a specific algebraic statement involving linear, quadratic, or absolute value expressions or equations or inequalities, students determine whether the statement is true sometimes, always, or never. | #25 | |