

Missouri End-of-Course Assessment Achievement Level Descriptors

Algebra I

Achievement Levels

Advanced: Students performing at the Advanced level on the Missouri Algebra I End-of-Course Assessment demonstrate a thorough understanding of important college and career ready mathematical content and concepts. They demonstrate these skills in number and quantity, algebra, functions, and statistics and probability. In addition to demonstrating, understanding, and applying the skills at the Proficient level, students scoring at the Advanced level carry out strategies to solve non-routine problems with high precision and fluency.

Scale Score Cut: 225-250

Proficient: Students performing at the Proficient level on the Missouri Algebra I End-of-Course Assessment demonstrate sufficient understanding of important college and career ready mathematical content and concepts. They demonstrate these skills in number and quantity, algebra, functions, and statistics and probability. In addition to demonstrating, understanding, and applying the skills at the Basic level, students scoring at the Proficient level carry out strategies to solve problems with sufficient precision and fluency.

Scale Score Cut: 200-224

Basic: Students performing at the Basic level on the Missouri Algebra I End-of-Course Assessment demonstrate partial understanding of important college and career ready mathematical content and concepts. They demonstrate these skills in number and quantity, algebra, functions, and statistics and probability. In addition to demonstrating, understanding, and applying the skills at the Below Basic level, students scoring at the Basic level carry out strategies to solve routine problems with partial precision and fluency.

Scale Score Cut: 188-199

Below Basic: Students performing at the Below Basic level on the Missouri Algebra I End-of-Course Assessment demonstrate limited understanding of important college and career ready mathematical content and concepts. They demonstrate these skills in number and quantity, algebra, functions, and statistics and probability. In addition, students scoring at the Below Basic level carry out strategies to solve simple problems with limited precision and fluency.

Scale Score Cut: 100-187

Achievement Descriptors

Advanced

Scale Score Cut: 225-250

In addition to understanding and applying the skills at the Proficient level, students at this level:

- ✓ Differentiate when the rules of rational exponents can and cannot be used to rewrite an expression
- ✓ Demonstrate that the sums or products of a rational number and an irrational number are irrational
- ✓ Formulate equivalent forms of expressions and interpret parts of the expression to solve problems and make generalizations
- ✓ Rewrite, solve, and interpret the zeros of a quadratic expression with rational coefficients by factoring and completing the square
- ✓ Add, subtract, and multiply multivariable polynomials of any degree
- ✓ Infer and explain that polynomials form a system similar to integers or rational numbers
- ✓ Solve a formula for any variable in the formula
- ✓ Use a variety of methods to solve equations and inequalities
- ✓ Describe complex features of a graph such as, symmetries, and end behavior
- ✓ Identify the domain and range of a given function in any form
- ✓ Interpret the solution(s) of systems of linear equations and inequalities in the context given.
- ✓ Determine the value of x for a given function when $f(x)$ is known
- ✓ Translate between explicit and recursive forms of a function
- ✓ Interpret data to explain mathematically why a data value is an outlier

Proficient

Scale Score Cut: 200-224

In addition to understanding and applying the skills at the Basic level, students at this level:

- ✓ Apply and use algebraic manipulations to rewrite expressions with rational exponents and extend all the properties of exponents to rational exponents
- ✓ Understand that the sums or products of a rational number and an irrational number are irrational
- ✓ Recognize, use, and interpret the structure of an expression to rewrite the expression
- ✓ Rewrite a quadratic expression with integral coefficients by factoring or completing the square
- ✓ Add, subtract, and multiply multivariable polynomials of which each monomial is degree 2 or less
- ✓ Write and solve multi-step linear equations and inequalities
- ✓ Solve quadratic equations in one variable
- ✓ Graph polynomial, absolute value, and exponential functions on a coordinate plane
- ✓ Interpret quadratic functions and their key features in context
- ✓ Recognize that the graph of a line, curve, or region represents the solution set of an equation, inequality, or system
- ✓ Identify the domain and range of a function given a set of ordered pairs or a linear, quadratic, cubic, or absolute value function
- ✓ Analyze and compare a linear function to another type of function
- ✓ Represent, graph and solve systems of linear equations and inequalities
- ✓ Write an explicit or recursive function to model a relationship
- ✓ Use appropriate statistics including standard deviation to interpret and explain differences in correlation (strong, weak) and shape (normal, skewed) of two or more data sets, including the effects of outliers
- ✓ Select appropriate graphical representations of data

Basic

Scale Score Cut: 188-199

In addition to understanding and applying the skills at the Below Basic level, students at this level:

- ✓ Use algebraic manipulations and extend integral exponent rules to simplify expressions with rational exponents
- ✓ Perform operations on rational and irrational numbers
- ✓ Interpret parts of an expression
- ✓ Factor a quadratic equation with a leading coefficient of 1
- ✓ Add, subtract, and multiply single-variable polynomials of degree 2 or less
- ✓ Use symbolic algebra to represent and solve one- and two-step linear inequalities and simple quadratic equations in one variable
- ✓ Graph linear equations and inequalities and simple quadratic equations on a coordinate plane
- ✓ Interpret linear functions given in a context and identify the appropriate graph given key features
- ✓ Recognize that the graph of a linear or quadratic equation represents the solution set of the equation
- ✓ Distinguish between functions and nonfunctions and identify the domain and range of a function given a graph
- ✓ Graph linear and quadratic functions and compare two of the same type of functions represented in different ways
- ✓ Graph and estimate the solutions of systems of equations and linear inequalities on a coordinate plane
- ✓ Identify an explicit or recursive function
- ✓ Describe the differences in the center and spread of two data sets in a familiar context
- ✓ Evaluate a function given in function notation for a given value

Below Basic

Scale Score Cut: 100-187

Students at this level:

- ✓ Use algebraic manipulations to rewrite expressions with unit fraction exponents in radical form and vice versa
- ✓ Identify rational and irrational numbers
- ✓ Identify parts of an expression.
- ✓ Use symbolic algebra to solve one- and two-step linear equations in one variable
- ✓ Graph a simple linear equation in two variables on a coordinate plane
- ✓ Compare the properties of two linear functions represented graphically
- ✓ Determine measures of center and describe a data set in terms of center and spread