

## **Albuquerque Academy**

### **Outline of Material Covered on the Sixth Grade Entrance Exam**

We are often asked what information is included in our sixth grade entrance exam. In order to respond to these questions we are providing the following information.

First, it is important to be aware that this list contains topics identified by the New Mexico state math standards as grade-appropriate material.

Second, we consider it very important that you realize that there is no expectation that all students will have covered all the material. We understand that different schools cover the curriculum in different sequences; however, as we have studied the scores on these tests over the 15 years we have been writing and administering them, we have found a remarkable consistency among the scores from the first testing date to the last.

Last, we want applicants and their families to understand that the math test serves a number of purposes for the Academy and that this test is not the only admission criteria. The writing sample, teacher recommendations, standardized test scores, and school records all are considered in the admission process. Motivation and character are important parts as well. That being said, families need to be aware the math test also serves as a guide for us to be able to initially identify those students who may have been exposed to higher level material or who are more mathematically talented. There will be some questions and concepts on this test that we know many fifth graders will not have seen. However, in recognition of the high quality of some of the math programs in the city, as well as natural talent, we also recognize that some students will have learned some of these ideas, and we need to be able to identify those students.

The basic material covered on the test will normally include:

- Adding up to three digit numbers
- Subtracting using borrowing
- Multiplying up to four digit numbers by two digit numbers
- Division by up to two digit numbers
- Adding and subtracting fractions with unlike denominators
- Using mixed numbers
- Using negatives
- Basic operation with decimals

Other material may include correct use of place value; rounding; proportions; correct use of units of time; correct change in money problems; the concept of an average; reading information from a chart or graph; least common multiple, and greatest common factors.

The test normally is a combination of both written arithmetic problems, problems requiring translation of words into arithmetic problems, problems requiring the interpretation of information presented graphically, and problems which require more analysis and possible multiple steps to get an answer. We may devise problems that involve made-up concepts to guarantee that students have not seen the concept before and to get a better sense of their analysis skills and ability to work and reason mathematically. You should also keep in mind that while scores on this test are normally lower than what many students are used to, the percentage score is not as critical as where the student's score falls in regard to the average score of all fifth grade students who take the test and the overall range of the scores.

The two most important factors for the students taking the test are that they show their work and their ability to think mathematically. Perfect answers with no work mean very little to us; wrong answers showing good insight may receive substantial partial credit.

## Math Entrance Exam Descriptions

**7th grade exam** — Students are not allowed to use calculators on this test.

The seventh grade entrance exam may include, but is not limited to, the following topics:

- Properties of Equality (i.e. Substitution Property, Addition Property, Distributive Property, etc.)
- Order of Operations
- Properties of Real Numbers
- Simplifying Numerical Expressions
- Fractions
- Decimals
- Addition, Subtraction, Multiplication & Division of Integers, Fractions and Decimals
- Geometry (Area, Perimeter, etc.)

**8th and 9th grade exams** — Students are not allowed to use calculators on this test.

The eighth and ninth grade exams may include, but are not limited to, the following topics:

- Properties of Equality (i.e. Substitution Property, Addition Property, Distributive Property, etc.)
- Order of Operations
- Properties of Real Numbers
- Simplifying Numerical Expressions
- Fractions
- Decimals
- Addition, Subtraction, Multiplication & Division of Integers, Fractions and Decimals
- Geometry (Area, Perimeter, etc.)
- Absolute Value Expressions
- Simplifying and Evaluating Variable Expressions
- Solving Linear Equations & Inequalities
- Graphing and Equations of Lines
- Word Problems

**Algebra I exam** — Students are not allowed to use calculators on this test.

The Algebra I entrance exam may include, but is not limited to, the following topics:

- Properties of Equality (i.e. Substitution Property, Addition Property, Distributive Property, etc.)
- Order of Operations
- Properties of Real Numbers
- Simplifying Numerical Expressions
- Fractions
- Decimals
- Addition, Subtraction, Multiplication & Division of Integers, Fractions and Decimals
- Geometry (Area, Perimeter, etc.)
- Absolute Value Expressions and Equations
- Simplifying and Evaluating Variable Expressions
- Solving Linear Equations & Inequalities
- Graphing and Equations of Lines
- Word Problems
- Systems of Linear Equations
- Factoring Polynomials
- Solving Quadratic Equations

**Geometry Exam** — Students are not allowed to use calculators on this test.

The Geometry entrance exam may include, but is not limited to, the following topics:

- Topics on the Algebra I exam plus material covered in a high school geometry course.
- Points, lines, planes and angles
- Deductive reasoning
- Parallel lines and planes
- Congruent triangles
- Quadrilaterals
- Inequalities in Geometry
- Similar polygons
- Right triangles
- Circles
- Areas of plane figures
- Areas and volumes of solids
- Coordinate geometry

Note: The material on this test is geometry-based, but to do some of the problems, a student should have command of the topics covered in an Algebra I course, too. **Students will be asked to write/complete geometry proofs on this test.**

**Algebra II exam** — Students are not allowed to use calculators on this test.

The Algebra II entrance exam may include, but is not limited to, the following topics:

- Topics on the Algebra I and Geometry exams, plus material covered in a high school Algebra II course.
- Exponents and radicals
- Polynomials and factoring
- Simplifying expressions
- Solving (linear, quadratic, radical, exponential, logarithmic and trigonometric) equations
- Solving linear and quadratic inequalities
- Solving systems of equations
- Functions and function notation
- Graphs of linear and quadratic functions
- Composition of functions
- Complex numbers