MATHEMATICS CURRICULUM

Mathematics are necessary because intelligence today is no longer natural but mathematical, and without development and education in mathematics it is impossible to understand or take any part in the special forms of progress characteristic of our times.

Dr. Maria Montessori, *From Childhood to Adolescence*, Appendix A, "Erdkinder"

From ancient times mathematics has been the language societies use to build models of the physical creation they inhabit. The Renaissance dramatically facilitated this model-building enterprise through developments in algebra, in particular by laying the foundation for modern algebraic notation. Today this approach—the mathematical model—is the dominant lens through which we see our world. It underlies our scientific discoveries and technological marvels, the "special forms of progress characteristic of our times."

The Adolescent Community mathematics program bridges the gap from elementary mathematics (arithmetic) to algebra. Students first lay a foundation by mastering pre-algebra topics (typically in seventh grade) and then build on it an initial understanding of algebra (typically in eighth grade), which in turn provides the foundation for more advanced studies in high school. Using the Saxon series of math texts, students build their knowledge of the subjects bit by bit, mastering both the concepts and the notation of algebra. This rich series of texts provides good resources both for students who benefit from a slower pace or who have gaps in their mathematical backgrounds and for students who have the desire and capability to move at a faster pace. Where possible the program enriches bookwork through discussion of the history of mathematics, through connection of math to other subjects, and through application of math to farming and microeconomy projects.

Students in seventh grade typically work through Saxon *Algebra 1/2*, a prealgebra text. Major topics (some of which appear in review lessons) include the arithmetic of whole numbers, fractions, decimals, and negative numbers; basic concepts of geometry, statistics, and probability; roots and exponents; scientific notation; and linearity (the central concept in prealgebra) in the form of rates, ratios, proportions, percents, equations, graphs, and problems on topics like interest, markdown, and commission.

Students in eighth grade typically work through Saxon *Algebra 1*. Major topics (in addition to review of prealgebra topics) include manipulation and simplification of algebraic expressions (especially polynomials and rational expressions); solution of linear, quadratic, and rational equations; graphs of equations and inequalities; solution of simultaneous equations; functions; direct and inverse variation; and more advanced topics in exponents, geometry and statistics than appear in prealgebra.