

## MATH

A student's math experience at the Middle School is guided by 5 self-reflective questions:

- 1) Am I willing to make mistakes and ask questions in order to learn?
- 2) When I solve a problem, do I understand the "why" behind each step?
- 3) Is there more than one way to solve the problem, and if so, how do I decide which strategy to use?
- 4) How can I show or explain my work in a way that others can understand?
- 5) Is my answer reasonable? Is there a way to know if I'm right?

These questions are posted in each math classroom and are designed to encourage students to be active thinkers rather than passive recipients. To assist students in making connections between algebraic and graphical solutions, we use both handheld TI-84 graphing calculators and the online graphing calculator at [desmos.com](https://www.desmos.com).

7th graders use the *Grade 7 Accelerated* math program by Open Up Resources and selected complementary lessons from the Desmos Classroom 7th grade and 8th grade math programs.

7th grade topics include:

- Rigid Transformations
- Scaled Drawings
- Similarity
- Slope
- Writing and Solving Equations
- Inequalities
- Expressions and Equations
- Linear Relationships and Functions
- Volume of 3 dimensional shapes
- Exponents and Scientific Notation

8th graders use Paul Foerster's *Algebra I* published by Addison-Wesley

8th grade topics include:

- Multiplying and factoring polynomials
- Graphing and solving quadratic equations
- Solving and graphing linear equations and inequalities
- Solving and graphing systems of linear equations and inequalities
- Linear regressions
- Probability and fundamental counting principle
- Properties of exponents
- Rational expressions and equations
- Radical expressions and equations

All students have the opportunity to participate in the Math Olympiads during class, and we also offer a math club that meets weekly after school. In addition, we invite the Girls' Angle math organization to run two Girls' Math Collaboration after-school events every year (typically in between athletic seasons). All eighth grade students participate in The Stock Market Game, sponsored by The SIFMA Foundation, as part of a mini-unit on financial literacy.

BB&N's Middle School program includes advanced classes that cover the same topics as the standard classes, but in greater depth and complexity. Enrollment in both seventh and eighth grade is based on multiple factors. These factors include numerical measures such as scores on common assessments and semester grades. They also include holistic measures such as the teacher's assessment of productive classroom participation, homework and study habits, mastery of prerequisite skills, curiosity, and comfort with uncertainty. Final authority for placement rests with the Math Department. However, we remain flexible in our decision-making process. If appropriate, we will change a student's placement during the school year, or between school years.

On rare occasions, it is appropriate for a student to accelerate through the math curriculum. This is only done between eighth and ninth grade with the approval of the Math Department. It involves self-directed summer study of school-provided materials followed by an exam before the start of the ninth grade year. Students interested in pursuing other summer math programs should discuss their plans with the math department. This will allow us to help select a course of study that is best for the student and least likely to create conflicts with our curriculum.