Annual Plan for AG Services

Course: Grade 8 Accelerated Mathematics

In the middle grades, academically gifted students will receive differentiated instruction in the classroom setting. In Grade 8 Accelerated Math, the pacing of on-grade level material is accelerated; and students are introduced to NC Math 1 concepts. In addition to these instructional requirements, the classroom teacher will provide differentiation that will address how students process the curriculum and show their understanding.

Minimum Instructional Expectations for Grade 8 Accelerated Math:

Through independent practice, small group collaboration, or whole group discussions, students identified as academically gifted in the area of math will have the opportunity to show their understand through the use of the "Are You Ready for More" practice problems from the Open Up Resources instructional materials. In addition to pacing of the course and the expectation that students receive appropriately leveled practice (i.e., the "Are You Ready for More" questions), classroom teachers will provide differentiation that addresses how students process the curriculum and show their understanding.

Students may demonstrate mastery through, but not limited to the following instructional practices:
Interactive Journals/Writing, Artwork, Problem Solving Creations, Advanced Computation, Scavenger Hunt, Foldables, Games, Online websites/apps, Assessment tasks, Generating real-world data for analysis, Independent/small group investigation

Each middle school will have a summative Annual Plan available to parents that will document additional opportunities for math enrichment available at their child's school.

Course Pacing:

Unit 1: Rigid Transformations and Congruence

Overview:
Students will investigate rigid transformations including rotations, reflections, and translations to prove congruency.

Suggested Extensions:

- Complete the culminating activity, which is the last lesson in the unit
  - Students will use what they have learned about rigid transformations to create tessellations
- Use of Illustrative Math Tasks
  - Congruent Rectangles (8.G.2, 3)
  - Triangle Congruence with Coordinates (8.G.2, 3)
- Use of Desmos Task
  - Transformation Golf: Rigid Motion (8.G.2)

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Unit 2: Dilations, Similarity, and Introducing Slope

Overview:
Students will apply their knowledge of scale/scale factors to dilations, recognize similarity in figures on the coordinate plane, and introduce slope in the context of similar triangles.

Suggested Extensions:
- Use of Illustrative Math Tasks
  - Effects of Dilations on Length, Area and Angles (8.G.3)
- Use of Desmos Task
  - Put the Point on the Line (8.F.4)

Unit 3: Linear Relationships

Overview:
Students will deepen their understanding of slope using multiple representations, including the use of the slope formula, and recognize linear relationships as being proportional or non-proportional.

Suggested Extensions:
- Complete the culminating activity, which is the last lesson in the unit
  - Students will use what they have learned about linear relationships and recognize that there may be constraints based on the real-world situation
- Use of Illustrative Math Tasks
  - Heart Rate Monitoring (8.F.4)

Unit 4: Linear Equations and Linear Systems
Includes the following NC Math 1 Standard:
- **NC.M1.A-REI.6**

Overview:
Students will write and solve one-variable equations in context and interpret their solutions, and write and solve systems of equations in two variables by graphing, substitution, and elimination, and interpret their solutions in context.

Suggested Extensions:
- Complete the culminating activity, which is the last lesson in the unit
  - Students will use what they have learned about systems of linear equations to write, solve, and compare real-world situations.
- Use of Illustrative Mathematics Tasks
  - Cell Phone Plans (8.EE.8, M1.REI.6)

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Unit 5: Functions and Volume
Includes the following NC Math 1 Standards:

- **NC.M1.F-IF.1**
- **NC.M1.F-IF.2**

Overview:
Students will develop their understanding of a function as a relationship between two variables, and to find volumes of three-dimensional objects with circular bases or cross-sections.

Suggested Extensions:

- Complete the culminating activity, which is the last lesson in the unit
  - Students will expand their knowledge of functions by observing variability of dimensions affecting volume
- Use of Illustrative Math Tasks
  - Flower Vases (8.G.9)
  - Centerpiece (M1.G.GMD.3)

Unit 6: Associations in Data
Includes the following NC Math 1 Standard:

- **NC.M1.S-ID.7**

Overview:
Students will generate and manipulate bivariate data sets, determine the association of data in scatter plots, and generate and interpret the meaning of the equation of the line of best fit.

Suggested Extensions:

- Complete the culminating activity, which is the last lesson in the unit
  - Students will collect their own bivariate data, represent it in multiple forms, and interpret the data
- Use of Illustrative Mathematics Tasks
  - Laptop Battery Charge 2 (M1.S.ID.6, M1.F.IF.6)

Unit 7: Exponents and Scientific Notation

Overview:
Students will extend their knowledge of exponents to include integers and base 10 to write very large and very small numbers using scientific notation.

Suggested Extensions:

- Complete the culminating activity, which is the last lesson in the unit
  - Students will use what they have learned about scientific notation to make comparisons and to solve real-world problems
- Use of Illustrative Mathematics Tasks
  - Pennies to Heaven (8.EE.3, 4)

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Unit 8: Pythagorean Theorem and Irrational Numbers
Includes the following NC Math 1 Standard:

- **NC.M1.A-CED.4**

Overview:
Students will develop and apply their understanding of the Pythagorean Theorem, find the lengths of legs and hypotenuse of right triangles, and develop their understanding of irrational numbers.

Suggested Extensions:

- Complete the culminating activity, which is the last lesson in the unit
    - Students will use fractions and decimal expansions of real numbers to determine whether numbers are rational or irrational
- Use of Illustrative Math Tasks
    - Finding the Distance Between Points (8.G.8)
    - Comparing Rational and Irrational Numbers (8.NS.2)