Annual Plan for AG Services

Course: Grade 7 Accelerated Mathematics

In the middle grades, academically gifted students will receive differentiated instruction in the classroom setting. In Grade 7 Accelerated Math, the pacing of on-grade level material is accelerated; and students receive instruction on some Grade 8 standards (as indicated below). 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 6 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: Area and Surface Area

Overview:
Students will study scaled copies of pictures and plane figures and apply what they have learned to scale drawings. This provides geometric preparation for later work on proportional relationships as well as grade 8 work on dilations and similarity.

Suggested Extensions:

- Complete the culminating activity, which is the last lesson in the unit
  - Students will use what they have learned about scale to represent life-sized objects to draw a scaled model of a floor plan
- Use of Illustrative Mathematics Tasks
  - Rescaling Washington Park (7.G.1)

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Unit 2: Introducing Proportional Relationships

Overview:
Students will continue their learning with proportional relationships by using multiple representations (tables, equations, and graphs)

Suggested Extensions:
- Complete the culminating activity, which is the last lesson in the unit
  - Students will use what they have learned to solve a real-world water conservation problem involving proportional relationships
- Use of Illustrative Mathematics Tasks
  - Gym Membership Plans (7.RP.2a, c)
- Use of EngageNY Tasks
  - Ratios of Scale Drawings (7.RP.2b, 7.G.1)

Unit 3: Measuring Circles

Overview:
Students will understand the proportional relationship between a circle's diameter and circumference and apply the properties of circumference and area to solve problems.

Suggested Extensions:
- Complete the culminating activity, which is the last lesson in the unit
  - Students will use what they have learned about properties of circles, including circumference and area, and scaling to solve real-world problems
- Use of Illustrative Mathematics Task
  - Eight Circles (7.G.4)
- Use of STEM Learning
  - Square and Circle Inquiry (7.G.4, 7.RP.3)

Unit 4: Proportional Relationships and Percentages

Overview:
Students will extend their knowledge and understanding of ratios, scale factors, unit rates, and proportional relationships, using them to solve multi-step problems involving fractions and percentages in real-world context.

Suggested Extensions:
- Complete the culminating activity, which is the last lesson in the unit
  - Students will use what they have learned to find real-world examples and solve problems involving percent increase and decrease
- Use of Illustrative Mathematics Tasks
  - Anna in D.C. (7.RP.3, 7.EE.3)
- Use of Yummy Math
  - Wow! Everything Must be Free (7.RP.3)

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Unit 4b: Exponents and Scientific Notation (Grade 8, Unit 7)

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)

Unit 5: Rational Number Arithmetic

Overview:
Students will extend their knowledge of addition/subtraction of rational numbers to multiplication and division, solve algebraic equations involving rational numbers, and use rational numbers in a real-world context.

Suggested Extensions:
- Complete the culminating activity, which is the last lesson in the unit
  - Students will use what they have learned about rational numbers and percentages involving various aspects of the stock market
- Use of Illustrative Math Tasks
  - Drill Rig (7.NS.2, 3)
- Use of Jeopardy Labs
  - Real Number Operations (7.NS.2, 3)

Unit 6: Expressions, Equations, and Inequalities

Overview:
Students will write and solve expressions, equations, and inequalities involving rational numbers and variables

Suggested Extensions:
- Use of Illustrative Mathematics Tasks
  - Fishing Adventures 2 (7.EE.4)

Unit 7: Angles, Triangles, and Prisms

Overview:
Students will study and apply angle relationships, determine necessary lengths needed to form polygons, and solve problems involving cross-sections, surface area and volume of rectangular prisms and pyramids

Suggested Extensions:
- Complete the culminating activity, which is the last lesson in the unit
  - Students will use what they have learned about triangles and polyhedra to build triangular prisms and calculate their surface area and volume
- Use of Illustrative Mathematics Tasks
  - Cube Ninjas! (7.G.3)

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Unit 8: Probability and Sampling

Overview:
Students will design and use simulations to determine the probability of certain outcomes and understand that long-run relative frequency is related to the expected outcome. Students will learn to represent sample space using tables, tree diagrams, and lists.

Suggested Extensions:
- Complete the culminating activity, which is the last lesson in the unit
  - Students will use what they have learned to analyze and compare real-world situations based on data they have collected by a random sample, calculate important measures, and determine whether the populations are meaningfully different
- Use of TapIntoTeenMinds.com
  - Three Act Math Doritos Roulette (7.SP.7)

Unit 9: Rigid Transformations and Congruence (Grade 8, Unit 1)

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)

Unit 10: Dilations, Similarity, and Introducing Slope (Grade 8, Unit 2)

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 11: Linear Relationships (Grade 8, Unit 3)

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)