Annual Plan for AG Services

Course: Grade 6 Accelerated Integration of Middle Grades Mathematics (AIMM)

In the middle grades, academically gifted students will receive differentiated instruction in the classroom setting. In Grade 6 AIMM, the pacing of on-grade level material is accelerated; and students receive instruction on some Grade 7 and 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 AIMM:

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:

Open Up Resources Unit #1: Area and Surface Area

Overview:
Students will explore area of parallelograms, triangles, and polygons using composing and decomposing shapes. Formulas for area will be developed. Surface area will also be explored through the use of "nets."

Suggested Extensions:

- Complete the culminating activity, which is the last lesson in the unit
  - Students will use what they have learned to design a tent (real life application) by applying strategies and formulas for finding area of polygons to find surface area
- Use of Illustrative Mathematics Tasks
  - Finding the Area of Polygons (6.G.1)
  - Nets for Pyramids and Prisms (6.G.4)

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Unit 2: Introducing Ratios

Overview:
Students will begin to explore the concept of ratios and equivalent ratios. The double number line diagrams, tape diagrams, and tables will be used to model this concept. Students will begin to investigate the term "per" as used to look at the cost of one (1) item at a certain rate and as used to describe constant speed.

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 problem involving units and rates by deciding what information is needed to solve the problem, and apply that knowledge to more complex problems
- Use of Illustrative Mathematics Tasks
  - Painting a Barn (6.RP.3, 6.G.1)
  - Price Per Pound and Pounds Per Dollar (6.RP.2)

Unit 3: Unit Rates and Percentages

Overview:
In this introduction to proportional relationships, students will expand upon the concepts and skills mastered in Unit 2 by investigating unit rates. The concept of percent and percentage will be developed with the use of tables, tape diagrams, and double number lines. Expressions will also be used. Students will identify proportional relationships and will reason about situations involving unit price, constant speed, and measurement conversion.

Suggested Extensions:
- Complete the culminating activity, which is the last lesson in the unit
  - Students will use what they have learned to apply understanding of unit rates and percentages to make predictions involving time and cost needed to paint a room
- Use of Illustrative Mathematics Tasks
  - Unit Conversions (6.RP.3d)

Unit 3b: Introducing Proportional Relationships (Grade 7, Unit 2)

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)

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Unit 4: Dividing Fractions

Overview:
Students will learn to make sense of division situations as they make connections between multiplication and division. Lessons in this unit require students to build an understanding of the "why" division thorough tape diagrams, equations, and expressions before learning the standard algorithm for dividing fractions. After learning the standard algorithm, students will apply this knowledge as they use fractions to find areas and volumes of rectangles, triangles, and prisms. This unit concludes with a real-world activity using multiplying and dividing fractions.

Suggested Extensions:
- Complete the culminating activity, which is the last lesson in the unit
  - Students will use what they have learned about multiplication and division of fractions to reason about real-world problems involving volume
- Use of Illustrative Mathematics Tasks
  - Traffic Jam (6.NS.1)
- Use of Open Middle: Challenging Problems Worth Solving
  - Fraction Quotient Closest to 4/11 (6.NS.1)

Unit 5: Arithmetic and Base Ten

Overview
Students will model operations with decimals, so they may eventually build algorithms to perform those operations and solve real-world problems. Learning in this unit will lead students to use calculations with decimals to solve problems with real-world meaning.

Suggested Extensions:
- Complete the culminating activity, which is the last lesson in the unit
  - Students will use what they have learned about decimal operations to find surface area and to reason about real-world problems
- Use of Illustrative Mathematics Tasks
  - How Many Staples (6.NS.2)
  - Batting Averages (6.NS.2)
  - Movie Tickets (6.NS.3)

Unit 5b: Proportional Relationships and Percentages (Grade 7, Unit 4)

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 6: Expressions and Equations

Overview
Students will represent relationships with tape diagrams and linear equations. They will use "hanger diagrams" to reason through solving linear equations and will make connections between tables, graphs, and linear equations. Students will write and evaluate expressions.

Suggested Extensions:
- Complete the culminating activity, which is the last lesson in the unit
  - Students will use graphs and equations to show relationships involving area, volume, and exponents
- Use of Solve Me Mobiles
  - Solve Me Puzzles (6.EE.3)

Unit 7: Rational Numbers

Overview
Students will build context in understanding positive and negative numbers. They will use number lines to plot points and to graph simple inequalities and interpret solutions in context. This learning will lead to the 7th grade unit in which students investigate operations with rational numbers.

Suggested Extensions:
- Use of Illustrative Math Tasks
  - Distance Between Points (6.NS.8)

Unit 7b: Rational Number Arithmetic (Grade 7, Unit 5)

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)

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Unit 8: Data Sets and Distributions

Overview:
The learning in this unit involves data collected as samples from populations. Students will make and interpret histograms, bar graphs, tables of frequency, and box plots. They will describe measures of center of these data sets. This will lead to 7th grade unit in which students will expand learning to probability of sample space and comparing populations by comparing samples from populations.

Suggested Extensions:
- Use of Illustrative Math Tasks
  - Is It Center or Is It Variability? (6.SP.2, 3)
- Average Number of Siblings (6.SP.2, 4, 5)
  - Use of TapIntoTeenMinds.com

Unit 8b: Probability and Sampling (Grade 7 Unit 8)

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 9a: 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)

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Unit 9b: 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 9c: 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)