

# **Middle School Gifted and Talented (G/T) Content Area Classes**



## **Gifted and Talented Mathematics Class Descriptions**

The Middle School Gifted and Talented (G/T) Mathematics Program is an accelerated and enriched sequence that provides opportunities for highly able students to increase the depth and breadth of the learning of mathematics by studying advanced-level concepts and skills in the middle school as they move into the high school curriculum. The content and subject matter have been developed to incorporate Maryland's State College and Career Readiness Standards for mathematics, which reflect current research in mathematics educational practices. The curriculum provides concepts at least two years accelerated above the general education curriculum, allowing students to complete algebra and geometry in middle school.

The Gifted and Talented curriculum provides students with many opportunities engage in high levels of mathematical rigor, building the conceptual understanding behind mathematical procedures for real-world application. Challenging projects and long-term assignments are frequently used as an integral part of the program in order to enable students to extend and apply the mathematics learned in the classroom.

Students participating in Gifted and Talented mathematics classes are expected to read technical matter on a regular basis in order to gather information about challenging mathematical concepts. Teachers frequently encourage students to search for answers to problems presented in the readings. Writing helps students clarify their own thinking and express their own ideas. Therefore, students are expected to use the readings to write explanations of concepts or justifications of their thinking in order to communicate mathematical ideas to others. Technology is integrated throughout the Gifted and Talented Mathematics Program in order to facilitate students' problem solving skills. Students learn to use scientific calculators, graphing calculators, virtual tool and manipulatives, spreadsheets, and applications to support their solutions and explanations.

Students entering the Gifted and Talented Mathematics Program as sixth graders and who continue in the G/T mathematics sequence in seventh and eighth grades have the opportunity to complete mathematics courses through Differential Equations in high school.

### **Grade Six - Pre-Algebra G/T**

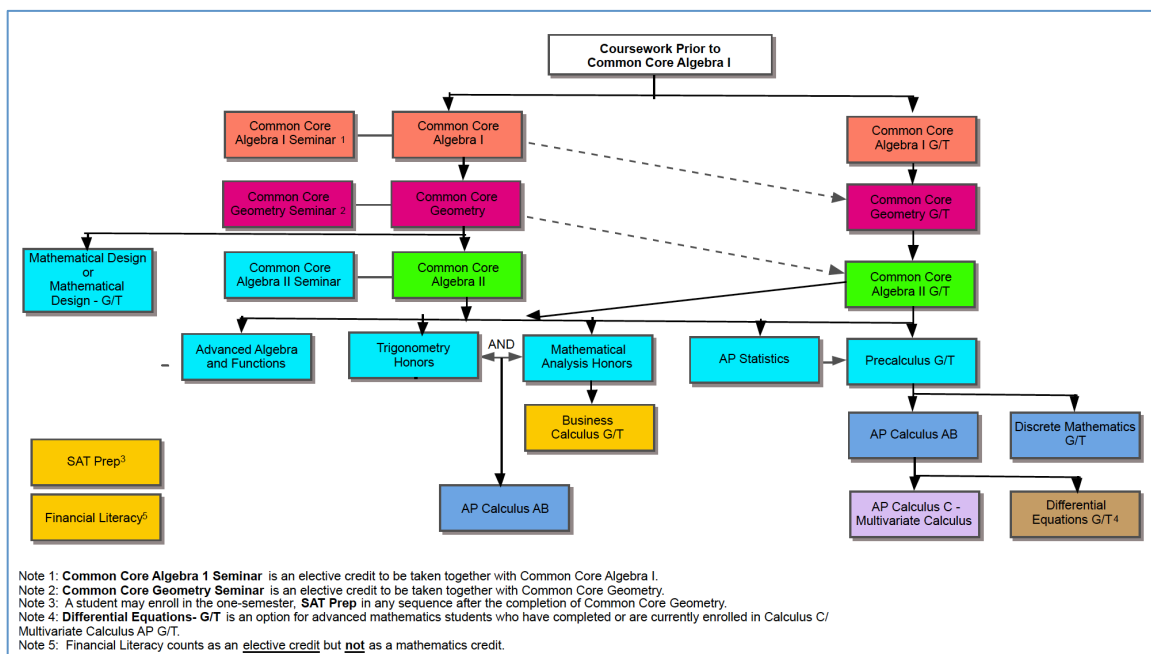
In this gifted-and-talented course, students will focus on the mastery of three critical areas: (1) formulating and reasoning about expressions and equations, including modeling an association in bivariate data with a linear equation, and solving linear equations and systems of linear equations; (2) grasping the concept of a function and using functions to describe quantitative relationships; and (3) analyzing two- and three-dimensional space and figures using distance, angle, similarity, and congruence, and understanding and applying the Pythagorean Theorem.

### **Grade Seven - Algebra I G/T**

In this gifted-and-talented course, students will focus on the mastery of five critical areas: (1) developing understanding and investigating relationships between quantities and reasoning with equations; (2) developing understanding and applying linear and exponential relationships; (3) investigating trends and modeling with descriptive statistics; (4) performing arithmetic operations on polynomial expressions, solving equations, inequalities, and systems of equations; and (5) using properties of rational and irrational numbers to develop an understanding of quadratic functions.

## Grade Eight - Geometry G/T

In this gifted-and-talented course, students will develop an understanding of transformational, Euclidean, and coordinate geometry with extensive real-world application. Students will study logic, inductive and deductive reasoning, geometric definitions, postulates, and the proofs of theorems. Other topics include an introduction to trigonometry and vectors. Course requirements are rigorous with an emphasis on mathematical reasoning and communication. This course prepares students for the ninth-grade Algebra II G/T class.



## G/T ENGLISH CLASS DESCRIPTION

Students who participate in G/T English extend the Common Core English Language Arts curriculum by working at an accelerated pace, reading and analyzing challenging and complex literature and literary nonfiction independently, writing a variety of interpretive and analytical pieces, and conducting independent research.

Highly able and high achieving students typically grasp concepts more quickly than their grade-level peers; hence, through *compacting*, teachers streamline skills and concepts when students exhibit strong evidence of early mastery. Such evidence supports the teacher's decision to extend the curriculum, providing opportunities for in-depth studies and written communication at an independent, application level.

Students are directly involved in the structure and direction of academic discourse in the classroom, routinely applying high-level thinking skills and synthesizing materials. Moreover, an introduction to the structure and components of Advanced Placement (AP)-style tasks furthers the development of critical reading, writing, and thinking skills.

Through a shared inquiry approach to literature discussion, teachers encourage students not only to search for answers to fundamental questions raised by texts but to pose their own original questions. Consequently, students consider historical, social, and political textual connections; analyze ideas; consider opposing ideas; weigh the merits of opposing arguments; and modify their initial opinions as the textual evidence demands. Finally, students transfer what they have learned when analyzing challenging "cold" texts, which are being read for the first time.

By extending and refining knowledge, creative productions and investigations enable students to apply what they know about literary content and composition to the development of original works. Students participating in G/T English are expected to apply advanced-level writing and research skills as they generate these creative productions and investigations.

### Sample Differentiated Tasks for G/T English

1. Analyze how the textual structure reflects the author's craft (Suggestions: "Hurt Hawks" by Robinson Jeffers, "Concrete Cat" by Dorthi Charles, or "in Just-" by E.E. Cummings).
2. Analyze how a quote relates to plot or theme (Suggestion: Quotes that appear in the beginning of *Watership Down* chapters).
3. Draft and present a duo interpretation (Suggestion: Students choose two main characters from *Watership Down* and present from each character's point of view).
4. Read a criticism of a Poe selection or *And Then There Were None* by Agatha Christie to determine how the criticism brings an understanding of the author's purpose or style.
5. Memorize a short work or an excerpt that exhibits a particular mood and present to illustrate an understanding of how a writer creates mystery or suspense. (Suggestion: "The Highwayman" by Alfred Noyes; "The Raven" or "Annabel Lee" by Edgar Allan Poe).
6. Analyze the textual structure of a myth and an essay that deals with the same topic to determine how the two reinforce meaning (Suggestions: "Orpheus, The Great Musician" retold by Olivia Coolidge (*Holt*) and "The Power of Music" by Nadja).
7. Given a selection of text, respond in writing to an analysis question using textual support in a suggested 35-minute time limit. Teachers will use a holistic scoring guide.
8. Justify the actions of Daedalus or Icarus in "The Fight of Icarus," *or* Support or refute the following statement: Daedalus or Icarus displays the trait of hubris.)

9. Analyze how a quote relates to plot or theme in a literary work (Suggestion: Panel discussion or debate defending or opposing the types of leadership as defined in specific lines from a text.)
10. Analyze how *Frankenstein* reflects Romanticism and Gothic literature.
11. Make connections between the text and referenced works. (Suggestion: *Frankenstein* with the Prometheus myth, *Paradise Lost* and “Rime of the Ancient Mariner”).
12. Compare and contrast two authors’ treatment of the same theme. (Suggestion: “The Bet” by Anton Chekhov and “The Road Less Traveled” by Robert Frost).
13. Evaluate the effectiveness of one reading the speech "Ain't I am Woman" compared to listening to someone, other than the author, "deliver" the speech.
14. Analyze Dr. King’s use of rhetorical devices to determine the speaker’s most effective rhetorical devices in the “I Have a Dream” speech.
15. Present claims and findings, emphasizing salient points in a focused, coherent manner with relevant evidence, sound valid reasoning, and well-chosen details; use appropriate eye contact, adequate volume, and clear pronunciation.

## **G/T SOCIAL STUDIES CLASS DESCRIPTION**

The middle school social studies curriculum is an enriched program that provides teachers with opportunities for differentiation in both a prescribed manner and through decisions based on proven curricular strategies. Below is a brief description of the content for each grade, as well as an overview of how these courses are enriched through both content and strategies.

### **Grades Six and Seven -- G/T Geography and World Cultures**

This two-year program provides opportunities for students to develop an understanding of geographic skills and concepts, of human and physical geography of various regions of the world, of the ancient history of these regions, and of regional geographic and cultural issues. In Grade Six, the regional units are: *Sub-Saharan Africa, North Africa and the Middle East, and Asia*. In Grade Seven the units are *Western Europe, Eastern Europe & Russia, Latin America, and Canada, and the Geography of the United States*.

Students are encouraged to gain an understanding and appreciation of other cultures, and to use geographic reasoning and historical thinking skills to solve problems. The content and subject matter have been developed to incorporate the Maryland State Curriculum for Social Studies, the Maryland College and Career Readiness Standards for Literacy in History/Social Studies, the College, Career, and Civic Life framework for social studies, and national standards documents that reflect current research in social studies educational practices.

### **Grade Eight G/T United States History**

In Grade Eight students study United States history during the time period from approximately 1754 to 1877. Students gain an understanding of the forces, people, and events that shaped the United States as a nation and an appreciation of the multicultural character of American society past and present. Students are encouraged to gain an understanding and appreciation of United States History through the application of historical reasoning and thinking skills to investigate the past. The content and subject matter have been developed to incorporate the Maryland State Curriculum for Social Studies, the Maryland College and Career Readiness Standards for Literacy in History/Social Studies, the College, Career, and Civic Life framework for social studies, and national standards documents that reflect current research in social studies educational practices.

### **Differentiation Through the Use of Specific Objectives**

Specific gifted and talented objectives for social studies are included in the curriculum framework for grades 6-8. Each specific G/T objective is designed to promote higher order thinking and problem solving. Below are examples from each grade level:

- *Explain how human settlement patterns in West African Kingdoms related to the physical geography and climate of the region.* (Grade 6 GT Geography and World Cultures)
- *Prioritize and justify the reasons for the fall of the Roman Empire, and its impact on the creation of the Byzantine Empire.* (Grade 7 GT Geography and World Cultures)
- *Explain and justify whether the work of a historian is more like that of a reporter or a detective.* (Grade 8 GT U.S. History)

### **Differentiation Through Guided Problem Solving: G/T Investigations for Social Studies**

HCPSS provides resources and training for teachers to engage students in research investigations grounded in the content of that particular unit. These investigations are based on broad questions that are to be used as springboards for classroom research and problem-solving activities. G/T social studies teachers are expected to complete a minimum of two of these investigations per year. These investigations model high school Advanced Placement writing prompts and National History Day® research expectations. HCPSS has also developed a three-year plan to prepare GT social studies students for the Howard County History Day Competition. Most middle schools participate in either grade 7 or grade 8.

## **G/T SCIENCE CLASS DESCRIPTION**

In *A Framework for K-12 Science Education*, the overarching goal of science education is that “all students have some appreciation of the beauty and wonder of science; possess sufficient knowledge of science and engineering to engage in public discussions on related issues; are careful consumers of scientific and technological information related to their everyday lives; are able to continue to learn about science outside school; and have the skills to enter careers of their choice, including careers in science, engineering, and technology.”

The Howard County Public School System science program is grounded in this vision of science education. Throughout the middle school science program, the core ideas and crosscutting concepts of science are taught in conjunction with the practices of science in order to help students develop a deeper and richer scientific literacy that positions them for success in further science study and application of scientific understandings.

### **Grade 6 Science G/T**

The sixth grade is an important time of transition for students as they adjust to the move from elementary to middle school. In middle school science, students continue to develop their familiarity with the practices of science including the development and implementation of well-designed investigations. Learning in grade 6 focuses to core ideas from the Earth and Space Sciences. Using differentiated G/T objectives, G/T science classes increase in the depth and complexity of the topics being studied, commensurate with the learning needs of highly able or high achieving science students. The Essential Curriculum for Grade Six Science includes four units. They are as follows:

- Investigating Weather
- Investigating Geologic Processes
- Investigating Earth Systems
- Investigating the Solar System.

In addition, for G/T science classes, emphasis is placed on learning how to conduct scientific research in the G/T science research project that is developed over the course of the year. This project in grade 6 is teacher-directed and a foundation for the two-year independent project in grades 7 and 8.

### **Grade 7 Science G/T**

Seventh grade students continue to construct their science understanding through the practices of science. Designing, conducting, and communicating about scientific investigations remains a major point of emphasis. The expectation is that students will continue to apply the concepts of independent and dependent variables, controlled variables, and hypotheses. Students will have many opportunities to collect, organize, analyze, and present data. Because the focus in seventh grade is on living organisms, the data they collect will be related to the biological world. The Essential Curriculum for Grade Seven Science includes five units. They are as follows:

- Investigating the Nature of Living Things
- Investigating Human Biology
- Investigating Genetics
- Investigating Evidence of Change
- Investigating Ecology.



Emphasis is placed on the G/T science research project and the differentiated G/T objectives. The result is an increase in the depth and complexity of the topics being studied, commensurate with the learning needs of highly able or high achieving science students. Students who participate in G/T science begin work on their independent scientific research projects. These projects will be completed in eighth grade.

### **Grade 8 Science G/T**

Eighth grade students continue to develop in the application of science practices learned in sixth and seventh grade, including identifying and implementing elements of well-designed investigations. The expectation is that students will continue to apply the concepts of independent and dependent variables, controlled variables, and hypotheses. Students will have many opportunities to collect, organize, analyze, and present data. Because the focus in eighth grade is on physical science, the data they will collect will be related to the physical world around them. The Essential Curriculum for Grade Eight Science includes four units. They are as follows:

- Investigating Forces and Motion
- Investigating Energy and Waves
- Investigating Basic Chemistry
- Investigating Advanced Chemistry.

Emphasis is placed on the G/T science research unit and the differentiated G/T objectives. The result is an increase in the depth and complexity of the topics being studied, commensurate with the learning needs of highly able or high achieving science students. Students who participate in G/T science complete work on their independent scientific research projects. Their research will be presented to a public audience.