

Advanced Math and Science Academy Charter School Accountability Plan

Advanced Math and Science Academy (AMSA)			
Type of Charter (Commonwealth or Horace Mann)	Commonwealth	Location	Marlborough
Regional or Non-Regional?	Regional	Districts in Region (if applicable)	Marlborough, Hudson, Clinton, and Maynard
Year Opened	2005	Year(s) Renewed (if applicable)	2010, 2015, 2020
Maximum Enrollment	966	Chartered Grade span	6-12
Mission Statement			
<p>The Advanced Math and Science Academy Charter School will create an atmosphere of celebration of knowledge where children of all backgrounds and abilities excel in all subjects, especially in math, science and technology, empowering them to succeed in the workplace of our modern high-tech world.</p>			

Key Design Elements (with parenthetical citations to pages from the charter application):

1. Celebrate academic knowledge and inspire an appreciation of learning. (p. 20 charter)
2. Implement an educational model that is highly structured, and each year consists of continuous, logically organized, and interconnected multi-year courses (Executive Summary) in which teachers introduce, and build upon, fundamental concepts and theories in math, science, computer science, and the humanities, preparing students for college and professional life. (p. 4, 5 charter)
3. Cultivate a generation of leaders (and collaborators), especially in math, science, and technology that requires full commitment from the school to ensure that every student is challenged at the maximum of their ability and current intellectual preparedness with the goal of further advancing this “maximum” level. (p. 24, charter)

The charter school commits to meeting Criteria 1 through 10 as outlined in the Charter School Performance Criteria.

Date of Preliminary Department Approval:	July 15, 2020
Date of Board Approval:	July 23, 2020
Date of Department Approval:	August 5, 2020

Objectives and Measures related to Mission and Key Design Elements (required):

Objective: AMSA will create an environment that celebrates knowledge and inspires an appreciation of learning.	
<p>Measure: 95% of all AMSA students in grades 6 through 11 will participate in the annual American Mathematics Competitions (AMC). The 95% of AMSA students in grades 6 through 11 participating in the annual AMC will reflect the demographics of all students in grades 6 through 11. (Participation in the AMC is optional for seniors.)</p>	<p>Data to be reported:</p> <ul style="list-style-type: none">• <i>Student participation in the annual AMC in comparison to demographics of student population.</i> <p>Data collection plan:</p> <ul style="list-style-type: none">• <i>Who is in charge of gathering, analyzing, and reporting the data? Math Department and Accountability Director</i>• <i>When will the data be collected? End of each school year</i>• <i>Where will the data be stored? Accountability folder</i>
<p>Measure: By the end of the charter term, 65% of all AMSA students will participate in an academic interest club, Student Government, Student Council, a National Honor Society, Student Mentor Program, Student Mediation Program, and/or competitive academic activity during or outside their regular school day. The 65% of all AMSA students participating in academic interest clubs and activities will reflect the demographics of all AMSA students.</p>	<p>Data to be reported:</p> <ul style="list-style-type: none">• <i>Student participation in academic interest clubs/programs in comparison to the demographics of the student population.</i> <p>Data collection plan:</p> <ul style="list-style-type: none">• <i>Who is in charge of gathering, analyzing, and reporting the data? Vice Principal, Deans, Dept Chairs, and Accountability Director</i>• <i>When will the data be collected? End of each school year</i>• <i>Where will the data be stored? Accountability folder</i>

Objective: AMSA's educational model will prepare students for college and professional life.

<p>Measure: Each year, 85% of all AMSA students will take at least one Advanced Placement course during their High School career.</p>	<p>Data to be reported:</p> <ul style="list-style-type: none">• <i>Student participation in AP courses</i> <p>Data collection plan:</p> <ul style="list-style-type: none">• <i>Who is in charge of gathering, analyzing, and reporting the data? Director of School Counseling and Accountability Director</i>• <i>When will the data be collected? End of each school year</i>• <i>Where will the data be stored? Accountability folder</i>
<p>Measure: Each school year, the number of Advanced Placement exams taken by AMSA students earning at least a score of "3" will exceed the state average by 15% and the national average by 20%.</p>	<p>Data to be reported:</p> <ul style="list-style-type: none">• <i>AP scores in comparison to state average and national average</i> <p>Data collection plan:</p> <ul style="list-style-type: none">• <i>Who is in charge of gathering, analyzing, and reporting the data? Director of School Counseling and Accountability Director</i>• <i>When will the data be collected? End of school year</i>• <i>Where will the data be stored? Accountability folder</i>
<p>Measure: By the end of the charter term, the School Counseling Department will have integrated into the curriculum, seminars for all high school students, that provide grade appropriate college admissions preparation, essay writing, and financial aid guidance, with a strong focus on mental health and wellness.</p>	<p>Data to be reported:</p> <ul style="list-style-type: none">• <i>School Counseling Department seminar rosters as the program expands to include all high school students (grades 9-12) by the end of the charter term.</i> <p>Data collection plan:</p> <ul style="list-style-type: none">• <i>Who is in charge of gathering, analyzing, and reporting the data? Director of School Counseling and Director of Accountability</i>• <i>When will the data be collected? End of each school year and at the end of this charter term</i>• <i>Where will the data be stored? Accountability folder</i>
<p>Measure: Each year, 98% of seniors will apply to a college or university and 100% of seniors who apply to a college or university will be accepted.</p>	<p>Data to be reported:</p> <ul style="list-style-type: none">• <i>Annual applications and acceptances</i> <p>Data collection plan:</p> <ul style="list-style-type: none">• <i>Who is in charge of gathering, analyzing, and reporting the data? Director of School Counseling and Director of Accountability</i>• <i>When will the data be collected? End of each school year and at the end of this charter term</i>• <i>Where will the data be stored? Accountability folder</i>

Objective: AMSA will challenge all students at the maximum of their ability and current intellectual preparedness with the goal of further advancing their “maximum” level.

Measure:
100% of AMSA students in grade 6 (Class of 2027) and grade 7 (Class of 2026) who are identified as Lowest Performing based on their Next Generation MCAS scores in Math and ELA will advance to the level of Next Generation Passing or higher by the time they complete grade 10.

Data to be reported:

- *Track Math and ELA MCAS scores of the lowest performing from lower school through High School. Within the lowest performing cohort, the three student subgroups, Students with Disabilities, ELL, and Low Income, will be tracked independently.*

Data collection plan:

- *Who is in charge of gathering, analyzing, and reporting the data?
Principal and Accountability Director*
- *When will the data be collected?
End of school year*
- *Where will the data be stored?
Accountability folder*

Measure:
100% of AMSA students in grade 8 (Class of 2025, Class of 2026, and Class of 2027) who are identified as Lowest Performing based on their Next Generation MCAS scores in Science, Technology, and Engineering will advance to the level of Next Generation Passing or higher by the time they complete grade 10.

Data to be reported:

- *Track Science MCAS scores of the lowest performing students from grade 8 through High School. Within the lowest performing cohort, the three student subgroups, Students with Disabilities, ELL, and Low Income, will be tracked independently.*

Data collection plan:

- *Who is in charge of gathering, analyzing, and reporting the data?
Principal and Accountability Director*
- *When will the data be collected?
End of school year*
- *Where will the data be stored?
Accountability folder*

Measure:
By the end of the charter term, 20% of students in grades 10, 11, and 12 will be enrolled and actively participating in AMSA’s Science Research and/or Internship Program (*see Appendix A for details*). The 20% of students will reflect the demographics of all students.

Data to be reported:

- *Percentage of student participation in comparison to demographics of student population.*

Data collection plan:

- *Who is in charge of gathering, analyzing, and reporting the data?
Science Dept Chair, Outreach Manager, and Accountability Director*
- *When will the data be collected?
End of school year*
- *Where will the data be stored?
Accountability folder*

Objective and Measures related to Dissemination

Objective: AMSA will share its curriculum with other Massachusetts public schools and public charter schools over the course of the charter term.	
<p>Measure:</p> <p>Each year of the charter term, AMSA will participate in at least two educational exchange activities with the Massachusetts Public Charter School Association and their Northeast and Central Region affiliate.</p>	<p>Data to be reported:</p> <ul style="list-style-type: none">• <i>Participating schools, attendance numbers, and dates</i> <p>Data collection plan:</p> <ul style="list-style-type: none">• <i>Who is in charge of gathering, analyzing, and reporting the data?</i> <i>Executive Director, Director of Accountability</i>• <i>When will the data be collected?</i> <i>End of school year</i>• <i>Where will the data be stored?</i> <i>Accountability folder</i>
<p>Measure:</p> <p>AMSA is an active member of the Marlborough STEM Council, a collaborative educational initiative with Marlborough High School and the Assabet Valley Regional Technical High School. The goal is to encourage students to be “professional learners” within their community. Each school year, AMSA student members “adopt” a local elementary school, share curriculum, and personally deliver instruction.</p> <p>By the end of the charter term, AMSA will establish similar collaborative initiatives with our other three core towns, Maynard, Hudson, and Clinton.</p>	<p>Data to be reported:</p> <ul style="list-style-type: none">• <i>Participating schools and dates</i> <p>Data collection plan:</p> <ul style="list-style-type: none">• <i>Who is in charge of gathering, analyzing, and reporting the data?</i> <i>Community Outreach Manager and Accountability Director</i>• <i>When will the data be collected?</i> <i>End of school year</i>• <i>Where will the data be stored?</i> <i>Accountability folder</i>

Appendix A: AMSA Charter School Science Research Program

- Students participate in scientific research designed after graduate school science programs
- Students enter the program in the 10th grade and continue through 12th grade
- Current areas:
 - Molecular Biology
 - Geochemistry
 - Wildlife Management
 - Engineering
 - Astro Physics/Astronomy
 - Microscopy
 - Computer Science Data Science

Science Research Projects

- Determining where students are at with respect to understanding and skill levels therefore, reinforcing their passion and excitement about science
- Molecular Biology
 - Students are concentrated on studying a cancer marker gene in combination with a GFP reporter. They are employing various laboratory techniques like: transformation, plasmid design, oligonucleotide design, electrophoresis, PAGR, protein expression and purification
- Geochemistry
 - Students are mapping heavy metal contamination of the Assabet River using X-ray Fluorescence Spectrophotometry (XRF)
 - Differentiated program paths allow for reinforcement and practical application of chemistry skills
- Wildlife Management
 - Students are surveying the immediate area for wildlife diversity and mapping the data
- Engineering
 - Students are tackling and designing a product and developing a prototype using 3D printing
- Astro Physics/Astronomy
 - Students are using data from radio telescopes and plotting the complex orbits of planets with respect to other planets
- Microscopy
 - Students use microscopes to image and measure various things. They use our Scanning Electron Microscope to get exposure to technology not seen in high schools.
- CS Data Science
 - Students explore block chains as well as data structures and see how artificial intelligence can be used in data science.