Enriched Mathematics - Marking Period 1 at MLHS

Student Success in ML Enriched Math (MP1)

- A grade: 150 students
- A- grade: 100 students
- B+ grade: 75 students
- B grade: 50 students
- B- grade: 25 students
- C+ grade: 10 students
- C grade: 5 students
- C- grade: 0 students
- D+ grade: 0 students
- D grade: 0 students
- D- grade: 0 students
- F grade: 0 students
- IC grade: 0 students

- D range: 4.1%
- C range: 10.0%
- B range: 26.8%
- A range: 59.1%
Honors Mathematics - Marking Period 1 at MLHS

Student Success in ML Honors/AP Math (MP1)

Dropped: 5.0%
C range: 7.5%
B range: 28.2%
A range: 59.2%
Placement into Honors Mathematics at MLHS

- Teacher Recommendation

- Course Placement Applications (CPAs):
  - Students may apply for admittance to an Honors/AP course.
  - These students must earn a grade of B- or higher on a diagnostic test.

- 2018–2019 School Year:
  - 108 CPAs
  - 90 Admitted
Honors Mathematics Students Earning C+ or Below

40 Honors students with Grades C+ or Below

- 18 students admitted due to a CPA.
- 3 students were recommended, but taking Honors or AP math for the first time.
- 13 students attended a middle school other than Briarcliff.
- 6 were students who were recommended for the course and have a background in Honors level math.
Gender Distribution in Honors Math Courses

Algebra 1AB: 40.0% F, 60.0% M
Geometry Hon: 50.0% F, 50.0% M
Algebra 2 Hon: 44.0% F, 56.0% M
Precalculus Hon: 33.0% M

AP Calculus AB: 42.0% F, 58.0% M
AP Calculus BC: 34.0% F, 66.0% M
Hon Multi-Var Calc: 50.0% M, 50.0% M

AP Statistics: 44.0% F, 56.0% M
AP CS Principles: 28.0% F, 72.0% M
AP Comp Sci A: 43.0% F, 57.0% M
Gender: Mountain Lakes vs. Nation

Mountain Lakes vs. Nation

Orange: ML  Green: Nation

% Female

AP Calc AB  AP Calc BC  AP Stat  AP CS
Gender Trends in AP Computer Science

- **Girls**
- **Boys**

<table>
<thead>
<tr>
<th>Year</th>
<th>Girls</th>
<th>Boys</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015-2016</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>2016-2017</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>2017-2018</td>
<td>15</td>
<td>20</td>
</tr>
<tr>
<td>2018-2019</td>
<td>20</td>
<td>25</td>
</tr>
</tbody>
</table>
STEAM Opportunities at MLSD

Wildwood Elementary School
- IAC Science Bee
- STEAM Challenges & Enrichment Lessons
- Cartoonist Workshop
- Math Marathon
- Math Olympiads Contests
- Destination Imagination

Briarcliff Middle School
- IAC Science Bee
- Robotics
- Art Class
- Workshop on the Arts
- Teen Arts Festival
- Math Contests: AMC 8, Math Counts, Math League, Math Olympiads
- Maker Space at ML Public Library
- Destination Imagination

Mountain Lakes High School
- Academy for Biotechnology
- Engineering/Architectural Drafting and Design Course
- Graphic Design, Web Design, Computer Science Courses
- Contests: AMC 10/12, Math League
- Destination Imagination
Questions
What about our Briarcliff Middle School Students?

- Middle School Programs Differ from High School Programs
  - Cognitive Development and Readiness
  - Acquisition of Learning Strategies
  - Comfort with Productive Struggle
  - Development of Grit
  - Emphasis on Social–Emotional Health and Well–Being
Jean Piaget - Stages of Development

- Sensorimotor Stage (Birth to 2 Years Old)
- Pre-Operational Stage (Ages 2-4)
- Concrete Operations (Ages 7-11)
- Formal Operations (Ages 11-15)
  - Cognition reaches final form.
  - No longer requires concrete objects to make rational judgements.
  - Capable of deductive and hypothetical reasoning.
  - Ability for abstract thinking is very similar to an adult.
Cognitive Development vs. Physical Development

- Do we expect children to all be the same height at age 12?
- How tall should a 12-year old be?

https://study.com/academy/answer/how-tall-should-a-12-year-old-be.html

- Boys and girls experience growth spurts around 10-13 years old.
- Boys generally grow in height until they are around 16 years old.
- Girls generally stop growing in height around 15 years old.
- A 12 year old boy should be between 4 1/2 and 5 1/4 feet tall.
- A 12 year old girl should be between 4 1/2 and 5 1/3 feet tall.
Lev Vygotsky - Zone of Proximal Development

- Each student operates within a range of ability.
- Learning is best facilitated by presenting challenges without overwhelming students.
- If the work is too difficult the student will not have the intellectual tools necessary to learn anything from attempting the work.
- Learning takes place when children are working within their zone of proximal development.
- The zone of proximal development describes tasks that a child has not yet learned but is capable of learning at a given time.
Briarcliff Middle School Mathematics

6th Grade
- Math 6

7th Grade
- Algebra 1A
- Algebra 1AB
- Geometry Hon

8th Grade
- Algebra Concepts
- Algebra 1B
- Geometry Hon

9th Grade
- Geometry
- Algebra 1
- Algebra 2 Hon
- Option 2 Coursework
Option 2: External Coursework at MLHS

- Option 2 Program Application (School Counseling Office)
- Option 2 Committee Review of Curriculum -> Approve or Deny
- Student Must Earn A– or Above in Course
- Student Must Earn B– or above on MLHS Assessment of Material
Is Calculus the Goal?

9th Grade: Algebra 1 → 10th Grade: Geometry → 11th Grade: Algebra 2 → 12th Grade: Precalculus

9th Grade: Algebra 1 → 10th Grade: Geometry → 11th Grade: Algebra 2 → 12th Grade: Precalculus → Calculus

9th Grade: Geometry → 10th Grade: Algebra 2 → 11th Grade: Precalculus → 12th Grade: Calculus

9th Grade: Algebra 2 → 10th Grade: Precalculus → 11th Grade: Calculus → 12th Grade: Elective

* These are the most common pathways, but there are many possibilities!
Mathematics Electives

Advanced:

- AP Calculus AB
- AP Calculus BC
- AP Statistics
- Honors Multi-Variable Calculus
- Honors Abstract & Linear Algebra

College Preparatory:

- Probability & Statistics
- Applications of Algebra w/ Financial Literacy
Questions
<table>
<thead>
<tr>
<th>Bernards Township</th>
<th>Millburn</th>
</tr>
</thead>
<tbody>
<tr>
<td>Berkeley Heights</td>
<td>Montgomery</td>
</tr>
<tr>
<td>Chatham</td>
<td>Mountain Lakes</td>
</tr>
<tr>
<td>Glen Rock</td>
<td>New Providence</td>
</tr>
<tr>
<td>Haddonfield</td>
<td>Princeton</td>
</tr>
<tr>
<td>Kinnelon</td>
<td>Ridgewood</td>
</tr>
<tr>
<td>Livingston</td>
<td>Summit</td>
</tr>
<tr>
<td>Madison</td>
<td>West Windsor-Plainsboro</td>
</tr>
<tr>
<td>Mendham Township</td>
<td>Westfield</td>
</tr>
</tbody>
</table>
Number of Course Offerings Per Grade

# Options Per Grade Level

- 1 Option
- 2 Options
- 3 Options
- 4 Options

# Similar Districts

<table>
<thead>
<tr>
<th>Grade</th>
<th>1 Option</th>
<th>2 Options</th>
<th>3 Options</th>
<th>4 Options</th>
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<tbody>
<tr>
<td>6th</td>
<td>ML</td>
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<td>7th</td>
<td>ML</td>
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</tr>
<tr>
<td>8th</td>
<td>ML</td>
<td></td>
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</table>
How is advanced mathematical ability addressed in 6th Grade?

Grade 6 Leveling vs. Acceleration

<table>
<thead>
<tr>
<th># Similar Districts</th>
<th>Leveled</th>
<th>Accelerated</th>
<th>Neither</th>
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<tbody>
<tr>
<td></td>
<td>6</td>
<td>8</td>
<td>0</td>
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</tbody>
</table>

ML
What percent of students are enrolled in a 7th-8th grade Algebra 1 to Geometry program?
What percent of students are enrolled in Prealgebra in 8th Grade?
How are Districts Determining Placement?

Commonly Used Placement Criteria

<table>
<thead>
<tr>
<th>Criteria</th>
<th># Similar Districts</th>
</tr>
</thead>
<tbody>
<tr>
<td>In-Home Test</td>
<td>8</td>
</tr>
<tr>
<td>MP Grades</td>
<td>6</td>
</tr>
<tr>
<td>PARCC</td>
<td>4</td>
</tr>
<tr>
<td>Teacher Rec</td>
<td>2</td>
</tr>
<tr>
<td>Benchmark Tests</td>
<td>2</td>
</tr>
<tr>
<td>MAP</td>
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</tr>
<tr>
<td>Study Skills</td>
<td>1</td>
</tr>
<tr>
<td>IOWA</td>
<td>1</td>
</tr>
</tbody>
</table>
Our Current 6th Grade End of Year Assessments

- OLSAT (G&T Identification)
- IOWA Algebra Readiness Assessment (Math Placement)
- Briarcliff Diagnostic Assessment (Math Placement)
- PARCC (Math) – State Requirement
- PARCC (ELA) – State Requirement
Avoid Overassessing our 11-year old Students

In an attempt to avoid over-assessing our students, we will:

● Eliminate the IOWA Algebra Readiness Assessment

● Administer the OLSAT to both 5th and 6th grade students in Spring 2019.

● In subsequent years, G&T Identification will take place at the end of 2nd grade and the end of 5th grade -- not 6th grade.
What Does this Mean for 7th-8th Grade Algebra 1 and Geometry Honors Math Placement?

The following criteria will be used within a 28-Point Rubric, on which a student must earn 20+ points to be eligible for this program:

- Benchmark Assessments (8 Points)
- 6th Grade PARCC Scores (10 points)
- Briarcliff Diagnostic Assessment of 7th Grade NJSLS (10 Points)
## Rubric: Benchmark Assessments (8 Points)

<table>
<thead>
<tr>
<th>Grade</th>
<th>95+%</th>
<th>90-94%</th>
<th>85-89%</th>
<th>80-84%</th>
<th>&lt;80%</th>
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</thead>
<tbody>
<tr>
<td>MP1 Quarterly</td>
<td>2</td>
<td>1.5</td>
<td>1</td>
<td>0.5</td>
<td>0</td>
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<tr>
<td>MP2 Quarterly</td>
<td>2</td>
<td>1.5</td>
<td>1</td>
<td>0.5</td>
<td>0</td>
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<tr>
<td>MP3 Quarterly</td>
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<td>1.5</td>
<td>1</td>
<td>0.5</td>
<td>0</td>
</tr>
<tr>
<td>MP4 Quarterly</td>
<td>2</td>
<td>1.5</td>
<td>1</td>
<td>0.5</td>
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</tbody>
</table>
## Rubric: 6th Grade PARCC Scores (10 Points)

<table>
<thead>
<tr>
<th>6th Grade PARCC</th>
<th>800+</th>
<th>795-799</th>
<th>790-794</th>
<th>785-789</th>
<th>780-784</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rubric Points</td>
<td>10</td>
<td>9</td>
<td>8</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>6th Grade PARCC</td>
<td>775-779</td>
<td>770-774</td>
<td>765-769</td>
<td>760-764</td>
<td>&lt;760</td>
</tr>
<tr>
<td>Rubric Points</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>0</td>
</tr>
</tbody>
</table>
Rubric: Briarcliff Diagnostic Assessment of 7th Grade NJSLS (10 Points)

<table>
<thead>
<tr>
<th>BDA Score</th>
<th>90+%</th>
<th>85-89%</th>
<th>80-84%</th>
<th>75-79%</th>
<th>70-74%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rubric Points</td>
<td>10</td>
<td>9</td>
<td>8</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>BDA Score</td>
<td>65-69%</td>
<td>60-64%</td>
<td>55-59%</td>
<td>50-54%</td>
<td>0-49%</td>
</tr>
<tr>
<td>Rubric Points</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>0</td>
</tr>
</tbody>
</table>
More about the Briarcliff Diagnostic Assessment of 7th Grade NJSLS

- 7th Grade NJSLS are extensions of 6th Grade NJSLS.
- 7th Grade NJSLS are not explicitly taught in 6th Grade Math class.
- Exposure to 7th Grade NJSLS is available through challenge work.
- This assessment is meant to identify students far beyond typical academic growth.
- Extremely advanced students are expected to earn high scores.
- Less advanced students may not earn high scores.
- This is Okay! It is expected and completely normal!
What if my child wants to prepare?

- **NJSLS for Mathematics:**
  [https://www.nj.gov/education/cccs/2016/math/](https://www.nj.gov/education/cccs/2016/math/)

- **MLSD In-Class Access to 7th Grade NJSLS:**
  Mrs. Lombardi’s “Finished Early” Board

- **MLSD Online Resources for Mathematics (IXL):**
  (Your child has an account)
  [https://www.ixl.com/](https://www.ixl.com/)

- **PARCC Practice Tests:**

- **Free Online Support in Mathematics:**
  [https://www.khanacademy.org/math/](https://www.khanacademy.org/math/)
Briarcliff Library Math Curriculum Corner

Curriculum Binder:
- Curriculum Maps
- Grade Level NJSLS

Textbooks:
- 6th Grade Math
- Algebra 1
- Geometry Honors

Computer Stations:
- Links to Online Resources
Please remember....

- Admittance into our accelerated Algebra 1AB to Geometry Honors Program does not mean the student is required to enroll in these courses.
- The most important things to keep in mind in the learning of mathematics are cognitive development and readiness.
- Students who advance before they are cognitively ready may wind up falling behind or experiencing major struggles in their future mathematics coursework.
Thank you for listening!

Questions