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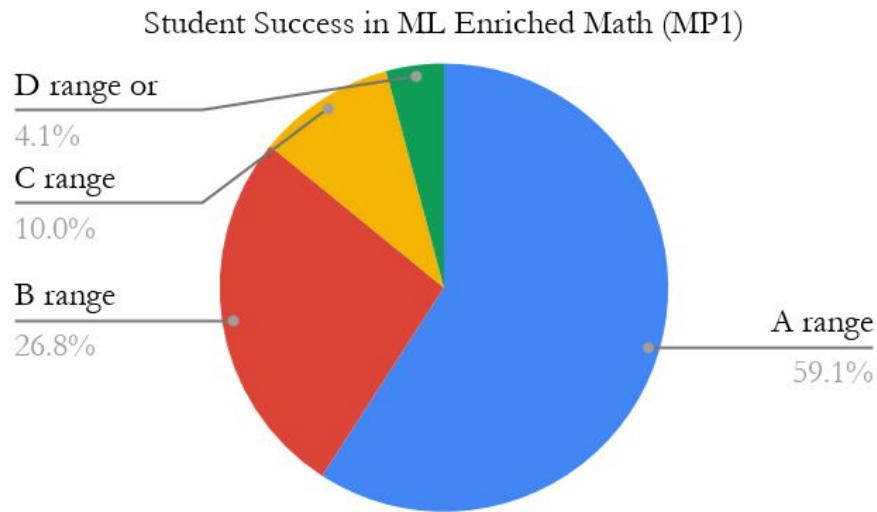
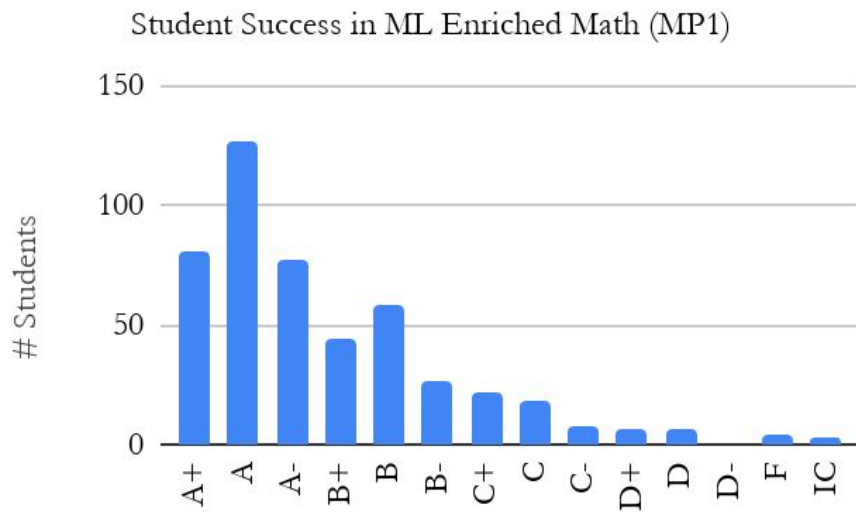
# MLSD Mathematics

Review of Current Programs,  
Enrollment, and Success  
January 2019

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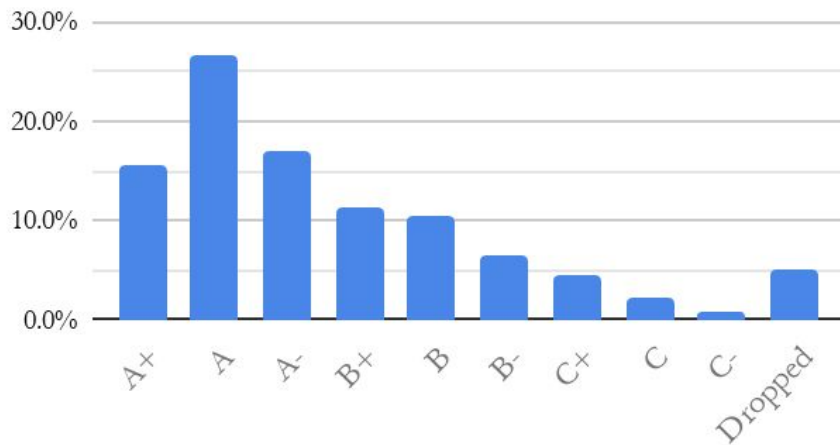
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# Enriched Mathematics - Marking Period 1 at MLHS

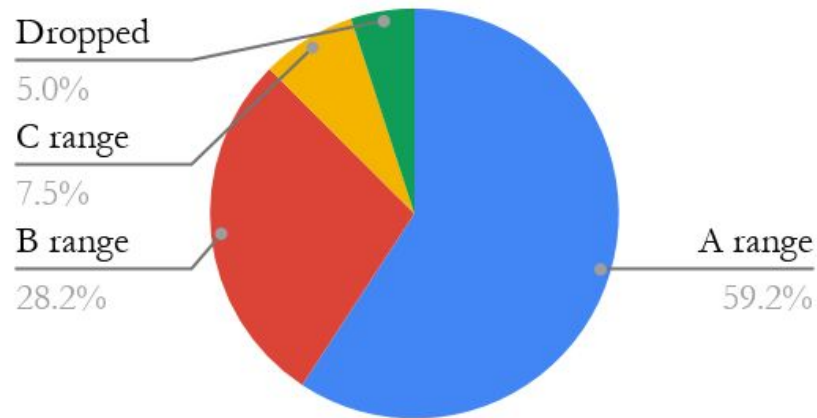


# Honors Mathematics - Marking Period 1 at MLHS

Student Success in ML Honors/AP Math (MP1)

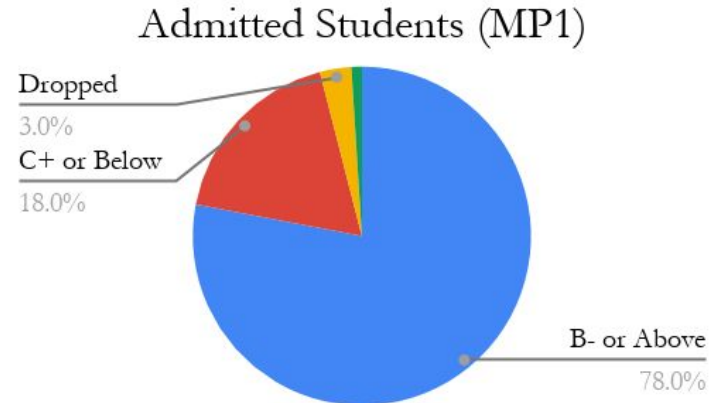


Student Success in ML Honors/AP Math (MP1)



# Placement into Honors Mathematics at MLHS

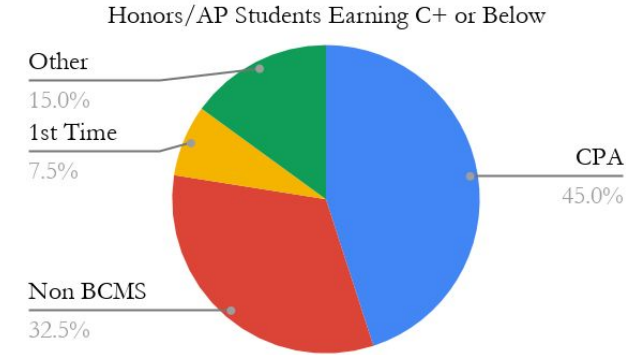
- **Teacher Recommendation**
- **Course Placement Applications (CPAs):**
  - Students may apply for admittance to an Honors/AP course.
  - These students must earn a grade of B- or higher on a diagnostic test.
  - **2018-2019 School Year:**
    - 108 CPAs
    - 90 Admitted



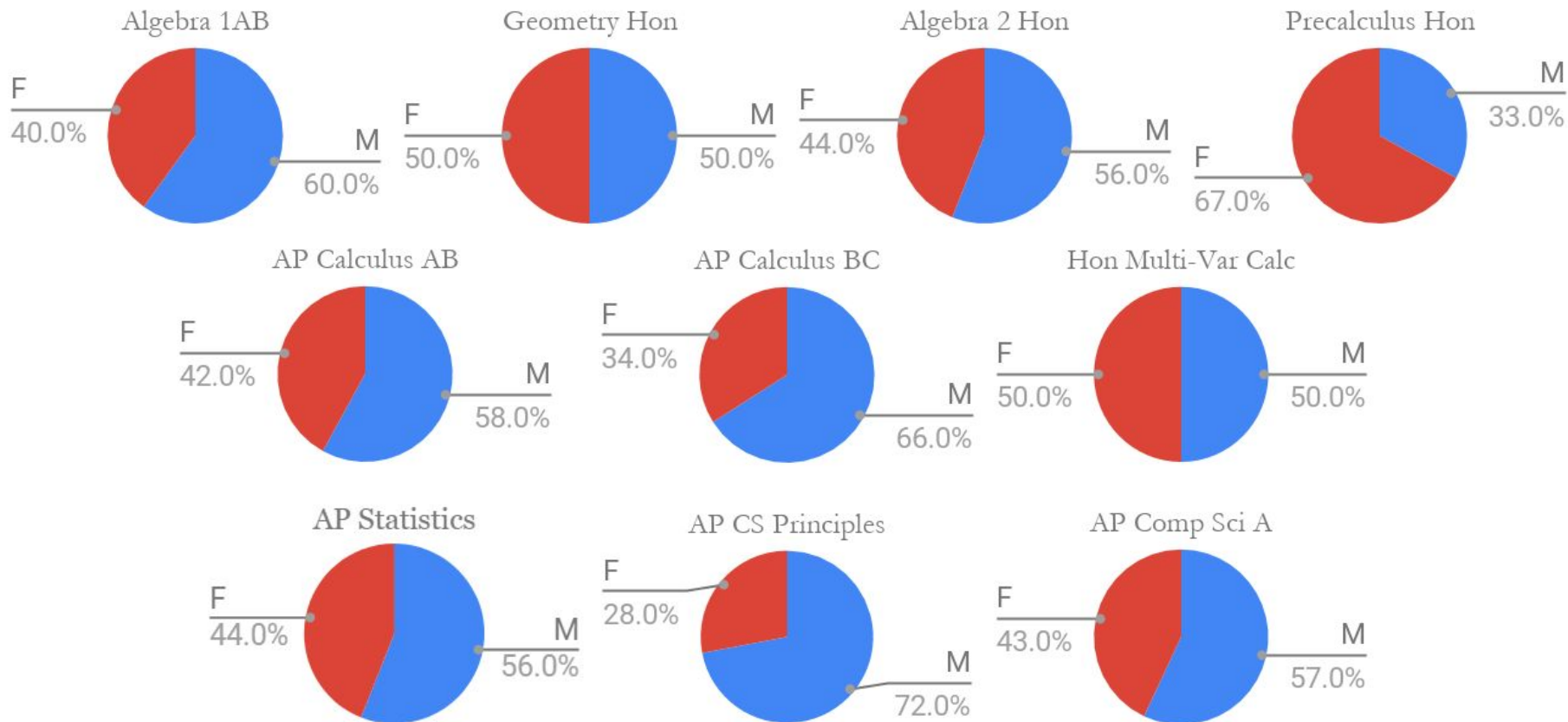
# Honors Mathematics Students Earning C+ or Below

40 Honors students with Grades C+ or Below

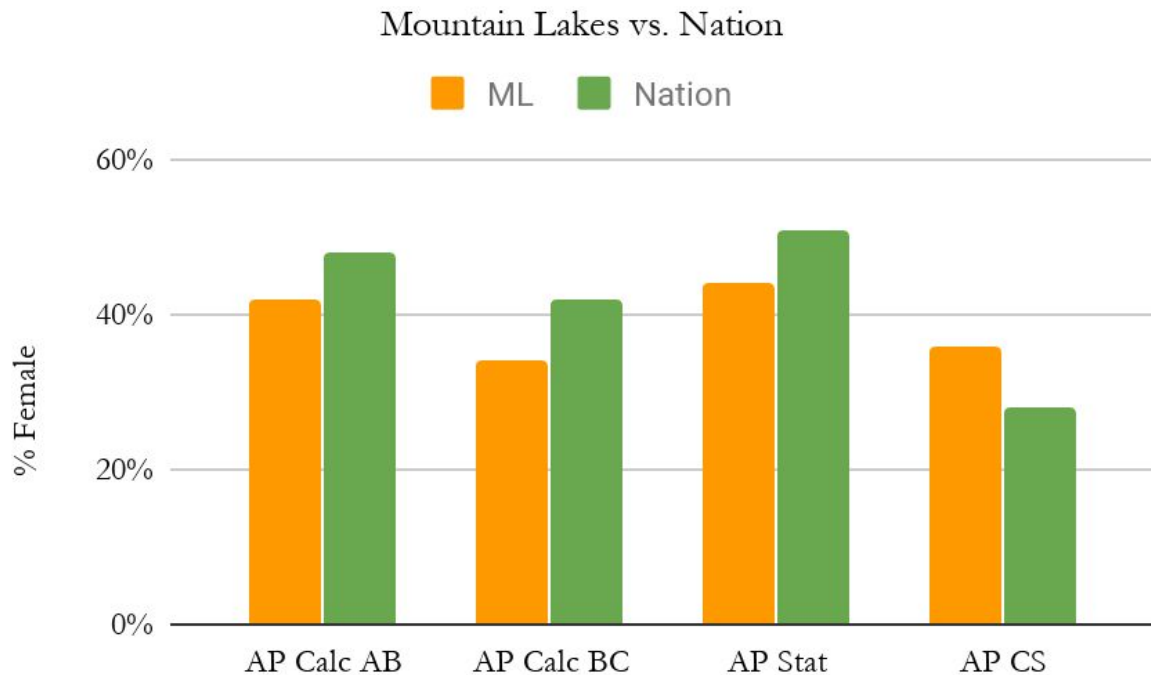
- 18 students admitted due to a CPA.
- 3 students were recommended, but taking Honors or AP math for the first time.
- 13 students attended a middle school other than Briarcliff.
- 6 were students who were recommended for the course and have a background in Honors level math.



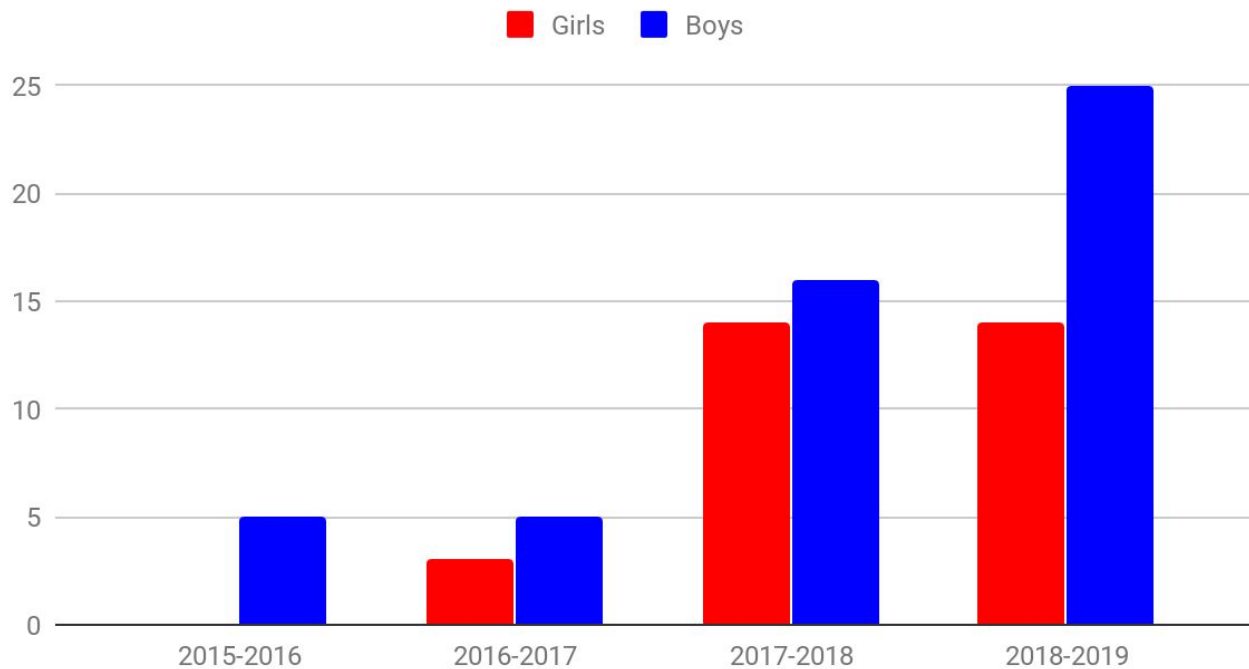
# Gender Distribution in Honors Math Courses



# Gender: Mountain Lakes vs. Nation



# Gender Trends in AP Computer Science





# 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?

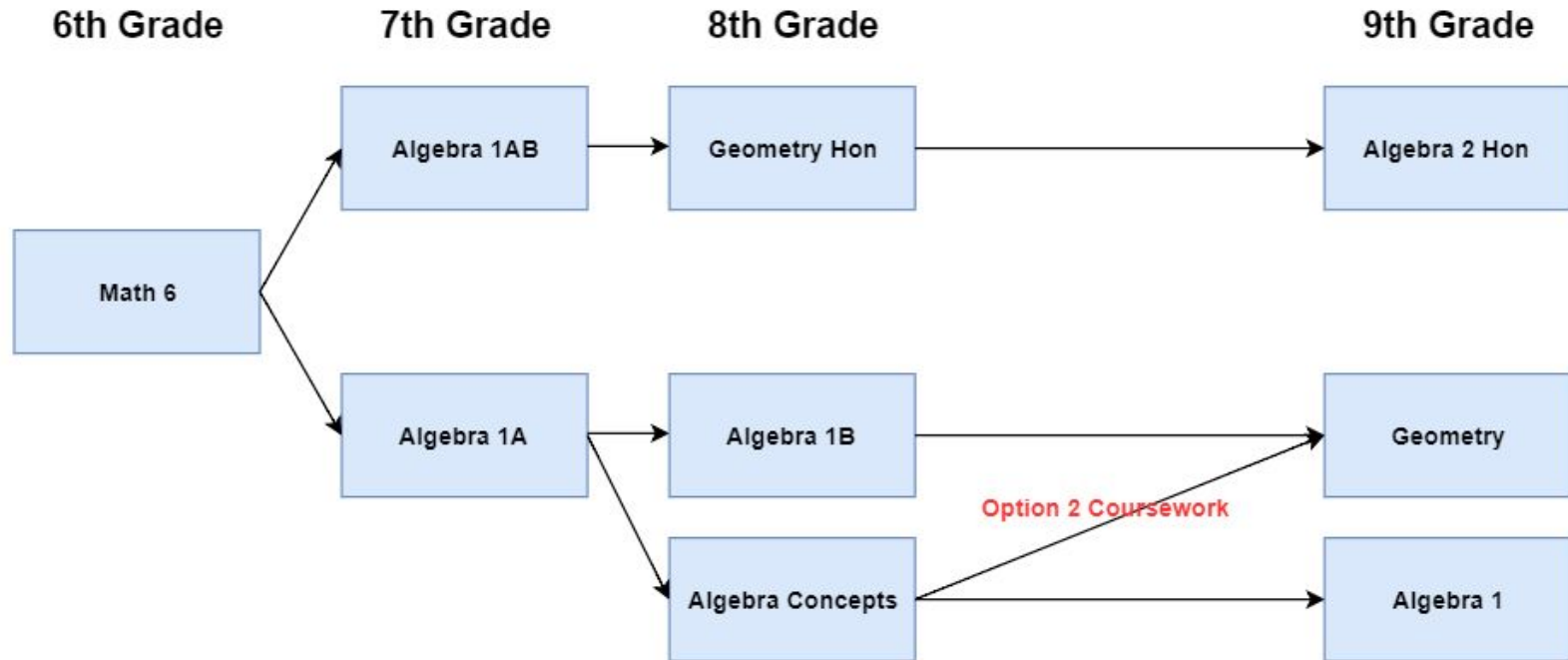
<https://study.com/academy/answer/how-tall-should-a-12-year-old-be.html>

- 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  $4 \frac{1}{2}$  and  $5 \frac{1}{4}$  feet tall.
- A 12 year old girl should be between  $4 \frac{1}{2}$  and  $5 \frac{1}{3}$  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

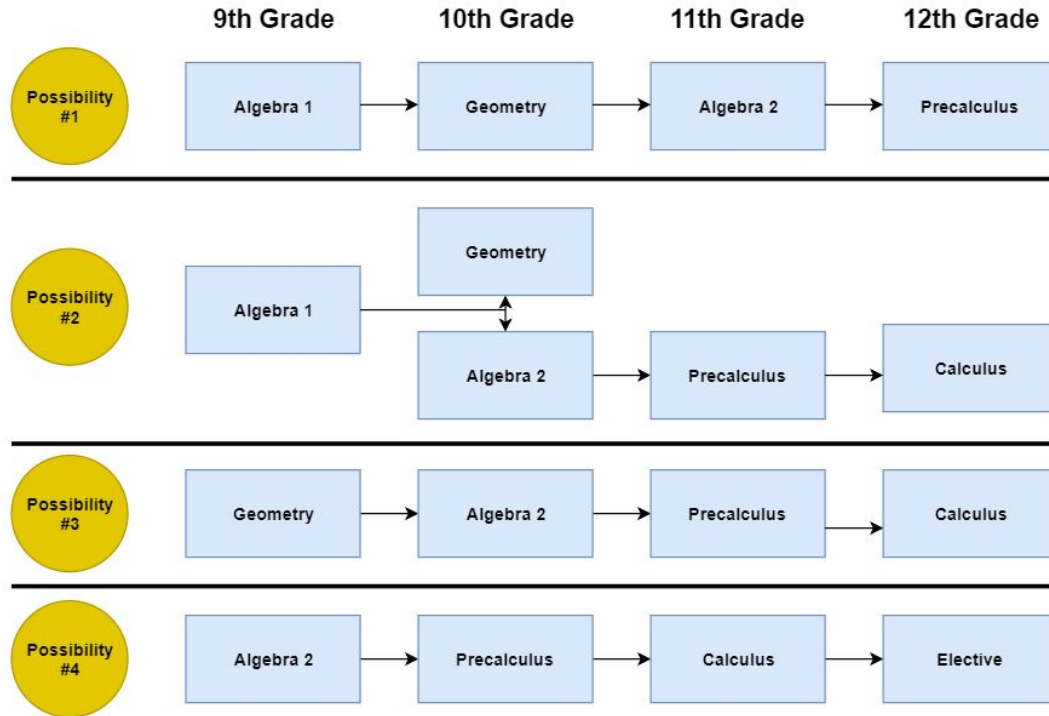


# Option 2: External Coursework at MLHS

- 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?



\* 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



# Survey of Similar Districts

Bernards Township

Berkeley Heights

Chatham

Glen Rock

Haddonfield

Kinnelon

Livingston

Madison

Mendham Township

Millburn

Montgomery

Mountain Lakes

New Providence

Princeton

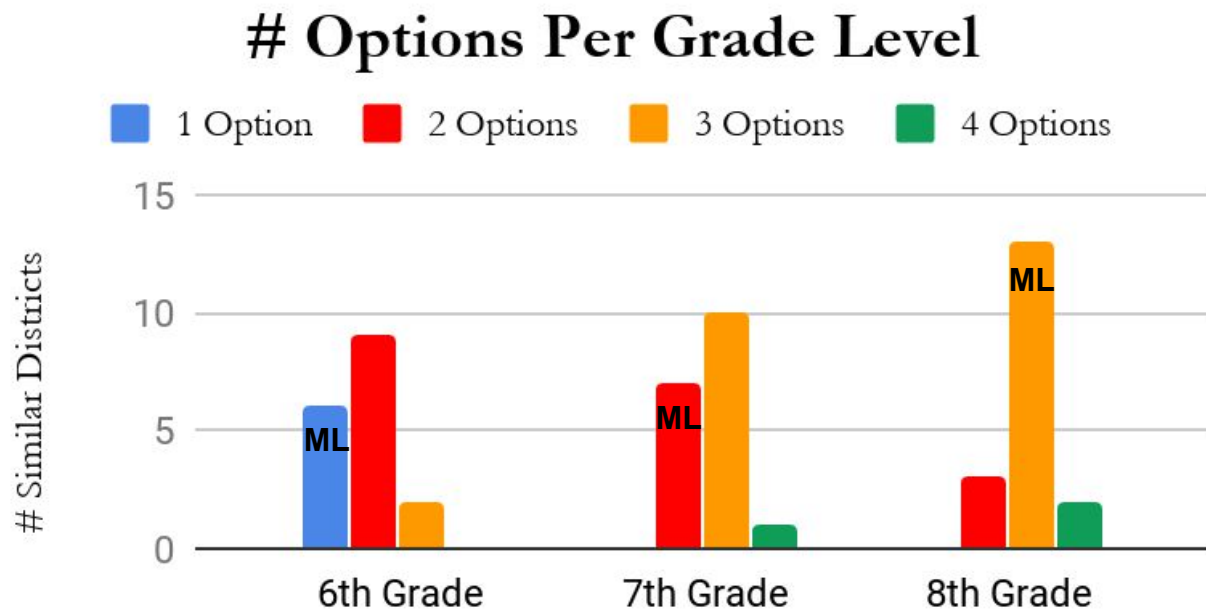
Ridgewood

Summit

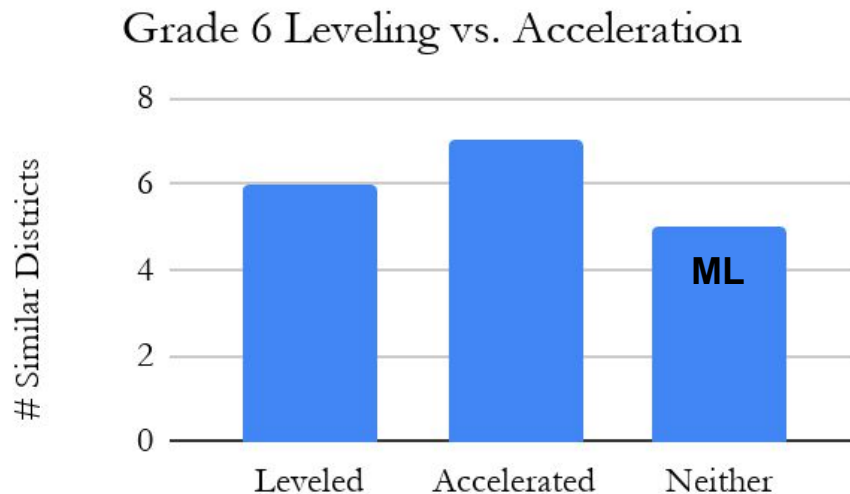
West Windsor-Plainsboro

Westfield

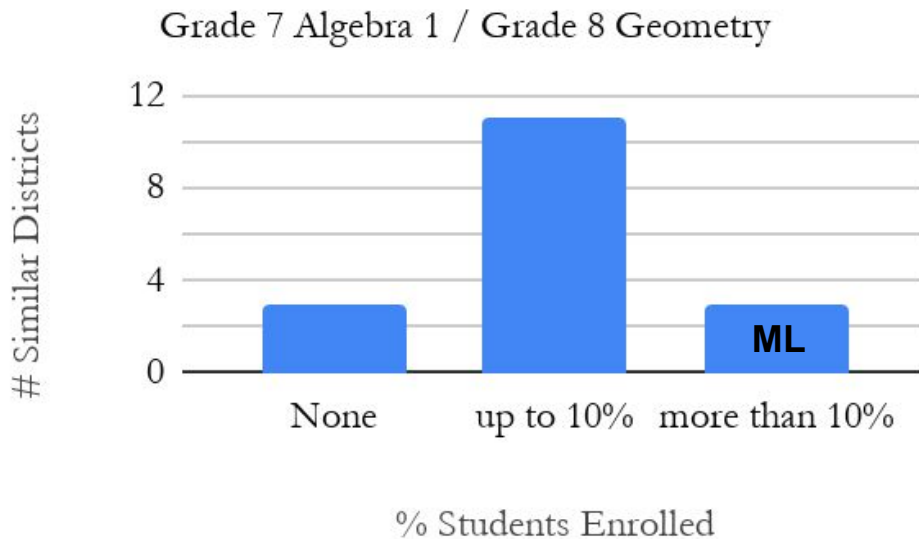
# Number of Course Offerings Per Grade



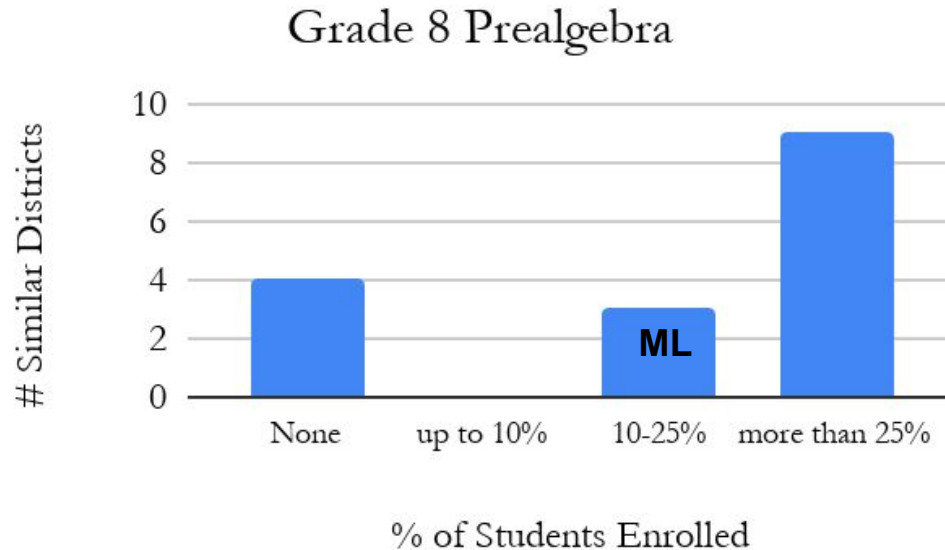
# How is advanced mathematical ability addressed in 6th Grade?



# What percent of students are enrolled in a 7th-8th grade Algebra 1 to Geometry program?



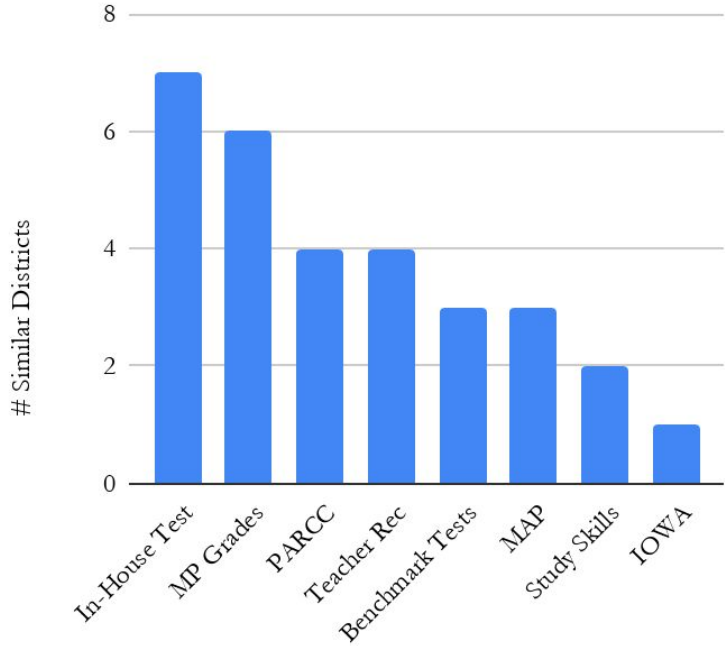
# What percent of students are enrolled in Prealgebra in 8th Grade?





# How are Districts Determining Placement?

Commonly Used Placement Criteria



# 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)

Grade	95+%	90-94%	85-89%	80-84%	<80%
MP1 Quarterly	2	1.5	1	0.5	0
MP2 Quarterly	2	1.5	1	0.5	0
MP3 Quarterly	2	1.5	1	0.5	0
MP4 Quarterly	2	1.5	1	0.5	0

## Rubric: 6th Grade PARCC Scores (10 Points)

<b>6th Grade PARCC</b>	<b>800+</b>	<b>795-799</b>	<b>790-794</b>	<b>785-789</b>	<b>780-784</b>
Rubric Points	10	9	8	7	6
<b>6th Grade PARCC</b>	<b>775-779</b>	<b>770-774</b>	<b>765-769</b>	<b>760-764</b>	<b>&lt;760</b>
Rubric Points	5	4	3	2	0

# Rubric: Briarcliff Diagnostic Assessment of 7th Grade NJSLA (10 Points)

<b>BDA Score</b>	<b>90+%</b>	<b>85-89%</b>	<b>80-84%</b>	<b>75-79%</b>	<b>70-74%</b>
Rubric Points	10	9	8	7	6
<b>BDA Score</b>	<b>65-69%</b>	<b>60-64%</b>	<b>55-59%</b>	<b>50-54%</b>	<b>0-49%</b>
Rubric Points	5	4	3	2	0

# 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/>
- **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/>
- **PARCC Practice Tests:**  
<https://parcc.pearson.com/practice-tests/math/>
- **Free Online Support in Mathematics:**  
<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**

