MARBLEHEAD COMMUNITY CHARTER PUBLIC SCHOOL

NAVIGATORS

Academic Excellence Committee
Criteria for Excellence

Timeline

2014 - 15: Academic Excellence Committee Established and then Dissolved

2017 - 19: Academic Excellence Committee Reestablished

- Created Definition of Academic Success
- Assisted with Charter Renewal Process

2019 - 20:

- Measuring Our Academic Program
- School Visits: Parker School Devens, Salem Academy
- Criteria for Success

We end up valuing the things that are easily assessed, rather than figuring out ways of assessing what we value.

- Mitch Resnick (MIT)

What Do We Value?

MCCPS is designed to support each student's maximum **individual growth in order to continue successfully on their educational path**, in particular preparing them for high school and beyond. MCCPS creates **an environment that promotes community, project-based learning, and service learning**. MCCPS **students will generate questions for learning, be self-directed in the inquiry process, and be able to defend their findings**. All students will be knowledgeable and contributory members of society who **demonstrate integrity, perseverance, leadership, initiative, and problem-solving**.

-   Definition of Academic Excellence from the Academic Excellence Committee 11/7/2018

Visit to Francis W. Parker Charter Essential School

The Francis W. Parker
Charter Essential School

Criteria for
Excellence

2017-2018

Link to Parker Criteria

Parker Criteria for Excellence - Skill Areas

Writing
Reading
Research
Oral Presentation
Artistic Expression
Listening and Media Analysis
Technical Communication
Mathematical Problem-Solving
Scientific Investigation
Systems Thinking
Technology
Spanish (Interpersonal, Presentational, and Interpretive Communication)
Wellness

Formation of MCCPS' Criteria for Excellence

- Academic Excellence Committee selected elements of Parker Criteria that we wished to emulate and those we wished to change

- Vision of Graduate Activity in Departments

- Humanities and Math/Science Departments Created Draft Criteria

- Integrated Arts write Draft Criteria

- Shared Drafts with Academic Excellence Committee

Parker School Criteria for Excellence in
Mathematical Problem-Solving

Problem-Solving

- You understand the problem.
- You identify special factors that influence your approach before you start.
- Your approach is efficient or sophisticated.
- You clearly explain the reasons for your decisions along the way.
- You solve the problem and make a general rule about the solution.
- You extend what you find to a more complicated situation.

Marblehead Community Charter Public School Criteria for Success: Mathematics

Problem Solving:

- Make sense of problems and persevere in solving them.
- Solve problems that arise in mathematics and in other contexts.
- Apply and adapt a variety of appropriate strategies to solve problems. .
- Justify and reflect on the process for problem solving and the solution.
- Solutions are accurate and precise.

Reasoning and Proof:

- Recognize reasoning and proof as fundamental aspects of mathematics.
- Make and investigate mathematical conjectures.
- Develop and evaluate mathematical arguments and proofs.
- Select and use various types of reasoning and methods of proof.
- Make sense of the quantities and their relationships in problem solving.
- Understand and use stated assumptions, definitions, and previously established results in constructing arguments.

Communication (Oral and Written):

- Organize and consolidate mathematical thinking through communication.
- Communicate and defend mathematical thinking coherently and clearly to peers, teachers, and others.
- Analyze and evaluate the mathematical thinking and strategies of others.
- Use the language of mathematics to express mathematical ideas precisely.

Connections:

- Recognize and analyze patterns/structure in order to make connections among mathematical ideas.
- Understand how mathematical ideas interconnect and build on one another to produce a coherent whole.
- Recognize and apply mathematics in contexts outside of mathematics.

Representation:

- Create and use representations to organize, record, and communicate mathematical ideas.
- Select, apply, and translate appropriate mathematical representations to solve problems.
- Use representations to model and interpret physical, social, and mathematical phenomena.

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Standards for Student Mathematical Practice

1 Make sense of problems and persevere in solving them.

Keep on going!

2 Reason abstractly and quantitatively.
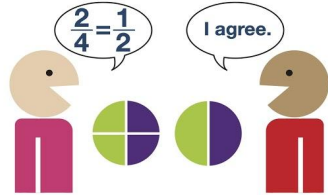
Write a story for the mathematical equation

$$\frac{1}{2} \times 4$$

DeJuan exercises 1/2 hour a day for 4 days. How many total hours does he exercise?
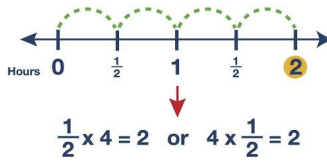
Think what makes sense.

3 Construct viable arguments and critique the reasoning of others.

$\frac{2}{4} = \frac{1}{2}$ I agree.

Talk and explain.

4 Model with mathematics.

Hours 0 $\frac{1}{2}$ 1 $\frac{1}{2}$ 2

$$\frac{1}{2} \times 4 = 2 \quad \text{or} \quad 4 \times \frac{1}{2} = 2$$

Show your thinking.

5 Use appropriate tools strategically.

$3 \times 2 = 6$

3
2

Use the right tools.

6 Attend to precision.
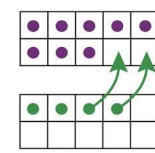
symbol: equals (the same as)

120 <u>minutes</u> = 2 <u>hours</u>

units of measure

Check your work.

7 Look for and make use of structure.

$8 + 4 = \underline{12}$

See the pattern or connection.

8 Look for and express regularity in repeated reasoning.

See the pattern or connection.

Connecting Tasks from the Classroom to the Criteria for Excellence

Thanksgiving Travel

Zach is planning to drive to his parents' house in Philadelphia for Thanksgiving. He lives in Pittsburgh so he can either take Route 30, which is a scenic drive, or take the Pennsylvania Turnpike.

Pennsylvania Turnpike:
- distance is 305 miles each way
- toll road charge is $22.25 each way
- 1/61 of the trip is city driving and 60/61 is highway driving

Route 30:
- distance is 372 miles each way
- no tolls
- 1/3 of the trip is city driving and 2/3 is highway driving

Gas costs on the average $2.90 per gallon. Zach's car gets 25 miles per gallon in the city and 30 miles per gallon on the highway.

Explain which plan is the most economical (not considering the time involved or the wear and tear on his car).

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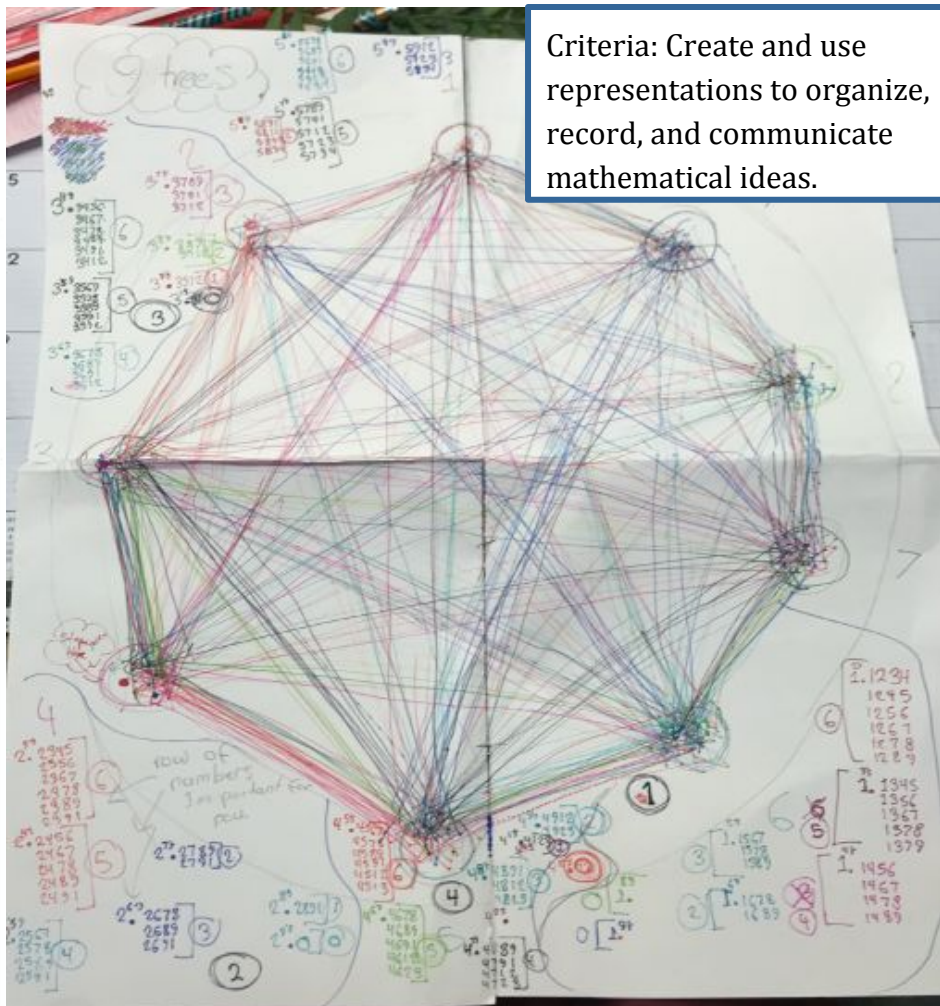
POW #13

The nine trees in my large backyard form a rough circle. I've decided to use four of the trees as fence posts. This will create a quadrilateral region where my two dogs, Peanuts and Duke, can play.

How many different quadrilaterals can be formed by joining any four of the trees?

Problem Solving Write-Up Protocol

● **Rewrite** the problem in your own words, as if you were explaining the problem to a younger student; define any unknown vocabulary. If anything is unclear, tell us how you are choosing to interpret it (your assumptions).

● Your problem solving steps: Explain your **process** to solve the problem. Include what you tried, where/if you got stuck, and any data you collected (tables, diagrams). Show me your "messy".

● What is your **solution**, if you found one? Explain how you know you are correct.

● **Reflection**: What problem solving strategies did you use? Why did you choose those strategies? What did you learn from this problem? Can you think of a similar problem you have worked on/solved? What could you add to this problem to extend it? What kind of math do you gain a deeper understanding of by solving this problem?
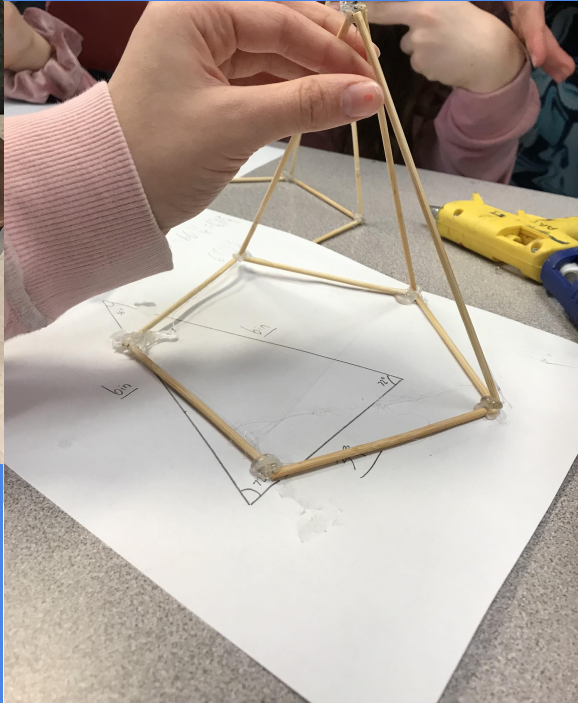

Criteria: Create and use representations to organize, record, and communicate mathematical ideas.

Mathematics: Recognize and analyze patterns/structure in order to make connections among mathematical ideas.
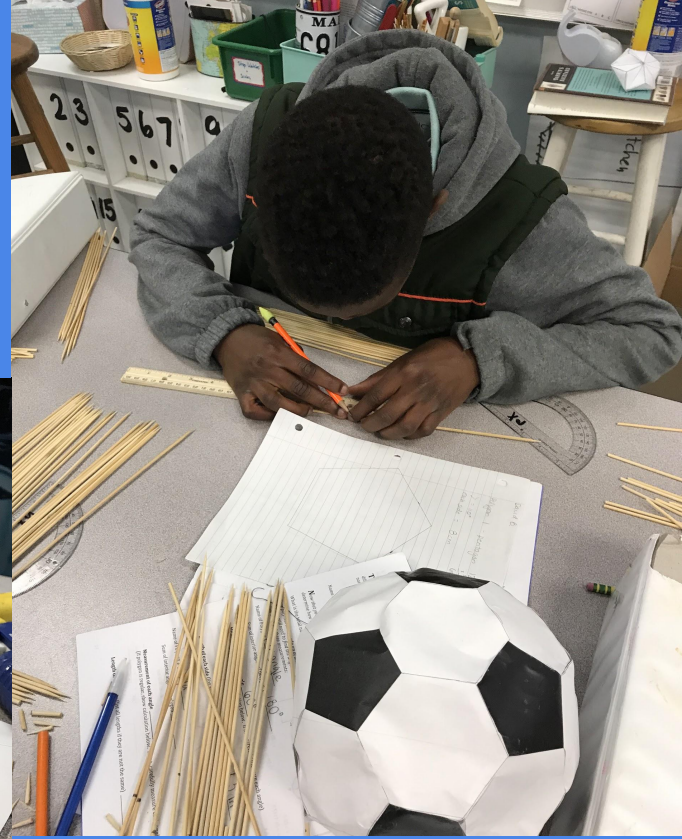
English Language Arts: Speaking Skills - Engage in both formal and informal public speaking opportunity

Science and Engineering: Recognize the importance of scale, proportion, and quantity.

What's Next

- Share Draft Criteria

  - Among Faculty, Community

- Align Assessments, Projects, and Units to Criteria

- Recognizing Existing Integration Across Disciplines - Project Based Learning

- Integration into other instructional areas: LMS (Schoology), Portfolios

Resources

Existing Draft Criteria, Parker's Criteria

Existing MCCPS Curriculum Overviews

Massachusetts Curriculum Frameworks

National Organizations:

- National Council of Social Studies
- NSTA
- NAFME

- NAEA
- CDC
- National Health and Physical Education Standards