

GATEWAY

February, 2017

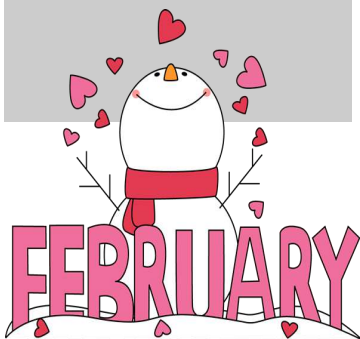
Mrs. Anderson,
Mrs. Contrino,
Gateway Teachers
Grades 6-7

Newsletter Highlights:

- Mission
- Tier 3 Intensive Supports

MISSION

To support **ALL** students through talent Development and to identify, challenge and encourage academically advanced and creative thinkers.



STEM

Grade 6: The highly anticipated time has come; we are dropping Barbie!!! Our focus has been on the rate of change between the distance of Barbie's drop and the number of rubber bands used to secure her feet. As we analyzed our data, it became apparent that Barbie's drop distance did not remain constant. Students determined this was due to wear and tear on the rubber bands. By using a line of best fit, students surmised how many rubber bands they would use to drop Barbie from a distance of 354cm and 530cm. Their goal is to get Barbie within 5 cm of the ground; therefore, some groups have decided to use a few less rubber bands, but pre-stretch the bands. Still others decided to use fewer rubber bands, have a smaller first drop, but better final drops. Either way, the students did an excellent job determining their rate of change and problem solving to determine the best possible drop for Barbie.



Grade 7: As an extension to the classroom investigations of thermal energy, students have been hard at work determining how heat travels through homes. We began by designing and constructing a home only covered in paper. Students had to meet the following criteria with their home: the home needed at least two windows, a peaked roof, and a door. Due to their creativity and love of a challenge, students created homes that had chimneys, sunroofs, larger and smaller frames. This allowed us to first choose data points to test without the insulation, and their designs further allowed us to compare and contrast heat loss within the home. Our original data proved that the heat did in fact rise and each house lost significantly more heat through open areas in the roof due to convection currents. From here, students investigated insulation techniques. We have spent the last few classes insulating our homes using a variety of techniques. Once homes are well insulated, we will retest the homes for heat loss; comparing data and noticing how well we have reduced conduction and convection within the home.

Advanced Math Gateway

Grade 6: Our work with right triangles and the Pythagorean Theorem has allowed us to understand two important roles of the Pythagorean Theorem in math: differentiating types of triangles and determining the distance between two points. Extending classroom understanding of determining vertical and horizontal distances, the advanced math students were challenged to determine the distance between diagonal points. Students accomplished this by creating a right triangle from the two diagonal points and applying a proof of the Pythagorean Theorem to prove the length of the diagonal line. We will conclude using Pythagorean Triples in proofs by solving real life right triangle problems and creating our own situations. From here, students will investigate right triangles with irrational sides. We will pay particular attention to the patterns found within 45-45-90 and 30-60-90 special right triangles. As a reminder, students can still be practicing patterns with their perfect squares and patterns creating Pythagorean Triples. Many students have mastered and extended the patterns, and this knowledge will continue to be utilized throughout this year and into seventh grade advanced math. It might be fun to pick a random number, say 100, and have your child create as many Pythagorean Triples as possible that contain the number 100. We often we do this in class-they enjoy this higher level thinking.

Grade 7: Our final factoring classes will involve higher level binomial expansion. We will explore patterns in Pascal's triangle and compare the expansion of binomials such as $(x+y)^5$ with levels of Pascal's triangle. With connections that are made, students will have the opportunity to apply the patterns while expanding their own binomial creations. Our factoring knowledge will be applied as we move into investigations with parent families and quadratic functions.

$$\begin{aligned}
 (x+y)^0 &= 1 \\
 (x+y)^1 &= 1x + 1y \\
 (x+y)^2 &= 1x^2 + 2x^1y^1 + 1y^2 \\
 (x+y)^3 &= 1x^3 + 3x^2y^1 + 3x^1y^2 + 1y^3 \\
 (x+y)^4 &= 1x^4 + 4x^3y^1 + 6x^2y^2 + 4x^1y^3 + 1y^4 \\
 (x+y)^5 &= 1x^5 + 5x^4y^1 + 10x^3y^2 + 10x^2y^3 + 5x^1y^4 + 1y^5
 \end{aligned}$$



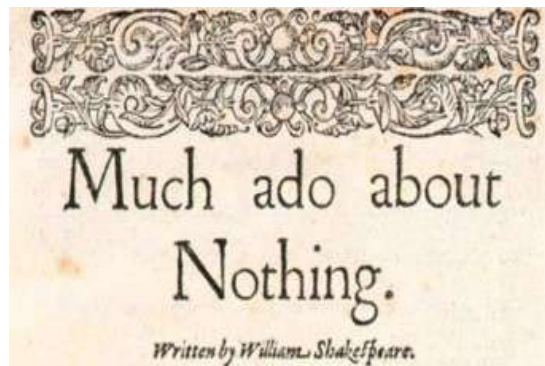
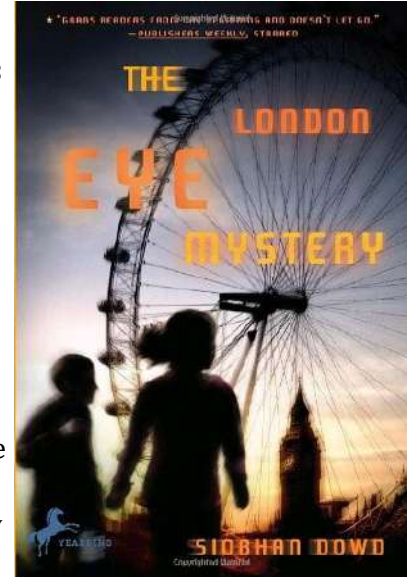
6th Grade: Our Sixth Grade Future Problem Solvers have learned how to effectively generate and apply criteria that is used to evaluate and measure many different possible solutions, in order to choose the BEST solution to their Underlying Problem. Criteria must address real-world considerations, such as cost effectiveness of a solution, public approval of a solution, and how quickly can the solution be put into place? Once the five most important criterions have been generated and debated by the team, the top eight solutions are measured against one another using the criteria in an "Evaluation Matrix Grid!" Whew!



7th and 8th Grade: Our Competitive 7th and 8th Grade Future Problem Solving Teams have been hard at work gearing up for the big Massachusetts Qualifying Problem, taking place at BHS on February 1st and at BIS on February 2nd. The students have been learning the technical terminology and reading many current news articles as they research and prepare for the Qualifying Problem's topic, "3D Printing." During the QP, students have just two hours to apply all six steps of the problem solving process to a Future Scene regarding some aspect of 3D Printing. This topic is being examined by Future Problem Solvers throughout the world, as hundreds of teams will compete to see who will qualify for their respective regional championship bowls. Our Massachusetts State Bowl will take place on Saturday, April 1st at Clark University in Worcester. Good Luck to all of our Barnstable Future Problem Solvers! Go Barnstable!

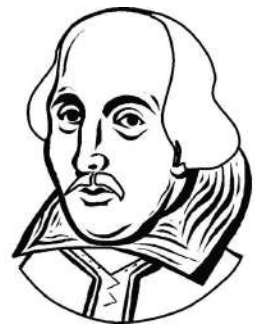
Advanced ELA

Grade 6: Our Sixth Graders have just finished reading a wonderfully clever mystery novel by Siobhan Dowd, *The London Eye Mystery*. The twists and turns encountered throughout this intriguing tale led our book groups to discuss many profound ideas; such as the appropriate occasions for “small talk” and “big talk;” the beauty, the power, and the fragility of nature; the complexities of family relationships; and the juxtaposition of appearance vs. reality. Students were also asked to work on a creative writing piece that was inspired by a photograph of what appears to be a tall building with many windows. The writers were asked to incorporate an aspect of the novel’s theme we had been discussing – namely, that what we see with our eyes is not always the whole truth of a situation. In the novel, Ted’s nine theories regarding Salim’s disappearance are an example of how appearance and reality can sometimes be at odds. Upon completion of the writing assignment, the students will participate in a peer sharing and editing class, which is always a helpful activity in the pursuit of improving our writing skills!



Grade 7: Our Seventh Graders have merrily jumped in to a raucous study of Shakespeare’s ridiculous comedy, *Much Ado About Nothing*. We have devoted the past few weeks to various lessons designed to make Shakespeare’s work more accessible and fun for a young, modern student. A focus has been placed on the physical performance of the play, rather than a line by line interpretation; although many of Shakespeare’s commonly used conventions (such as pun, quibble, and malapropisms) were examined throughout the text.

Seventh Grade students were also asked to work on a creative writing piece that was inspired by a photograph of what appears to be a tall building with many windows. The writers were asked to incorporate some aspect of a common Shakespearean theme we have been discussing - what we see with our eyes is not always the whole truth of a situation. Appearances and reality are frequently at odds in Shakespeare’s plays. For example, the rumors that Benedick and Beatrice “accidentally” overhear set actions into motion that otherwise would not have occurred. Upon completion of the writing assignment, the students will participate in a peer sharing and editing class, which is always a helpful activity in the pursuit of improving our writing skills.



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