West Orange High School Institute for Mathematics and Science IMS 9 & 10 NEWSLETTER

November 2024

Hello IMS families!

The first quarter of the year has brought IMS students numerous alternative experiences that have hopefully broadened their understanding of STEM careers and education. In addition to our monthly math and science league contests, all IMS students attended a field trip and had the chance to attend guest speakers.

IMS 9 students visited the American Museum of Natural History in New York City, while IMS 10 students

participated in a campus tour and an information session at Stevens Institute of Technology in Hoboken. We are fortunate to have locations such as these in such close proximity.

Two guest speakers have also visited us at the high school, which students attended during lunch or after school. Our first speaker was an Actuary who shared about the profession and facilitated a probability game regarding insuring a house in a flood zone. The second speaker works in pharmaceutical research and development, whose message provided students with an understanding of a life and career as a journey.

We look forward to many upcoming guest speakers, as well as a Networking Event with former IMS students now in AP courses and applying to college. Please be on the lookout for our program fundraiser selling Double Good popcorn!

Wishing you an enjoyable holiday season,

Dr. Jessica Nuzzi IMS Program Coordinator



Double Good

CLTRA-PREMIUM POPC





IMS School Counselor News

Madelin Fernandez-Perez, School Counselor



Greetings IMS families!

Congratulations on completing the first marking period of the 2024-2025 school year. The School Counseling office is currently reviewing first marking period grades for all students. Each marking period counts for 25% of their final grade. Students should continue to work diligently throughout the rest of the year. Feel free to reach out to your child's school counselor if you have any questions or concerns. We encourage students to reflect on their progress thus far and create short and long term goals for themselves. Freshmen students met with their school counselor in October to discuss the importance of their 9th grade year. We discussed topics such as building their academic and activity resume, monitoring their grade point average, and Naviance. Parents can continue to monitor their child's academic progress through the <u>PowerSchool Parent Portal</u> account. Please contact your child's <u>school counselor</u> if you have not activated the Parent Portal.

After the New Year, school counselors will be meeting with students to input course requests for the 2025-2026 school year. Teachers are responsible for submitting recommendations for academic courses and students have the option to choose elective courses for next year. For current 9th graders, students will be considered for Honors Math and Honors Chemistry. Additionally, students are required to enroll in a STEM elective designed to provide practical and experiential application of learning in the core math and science classes. The IMS elective tracks are:

- Programming in Visual Basics/Programming in C++
- Architectural and Engineering Design 1
- Introduction to Engineering
- Sustainable Technology
- Dynamics of Health Care & Society

Technology & Engineering

Mrs. Celi, Technology & Engineering Coordinator, Teacher of Architecture and Engineering Design

Architectural and Engineering Design 1 Student Highlights



The students in Architectural and Engineering Design 1 have been putting in tremendous effort! They have been mastering the fundamentals of hand drafting with architectural tools while maintaining accurate scale. Utilizing their knowledge of measurement, drafting, and design, they have produced some AMAZING projects!

Earlier this quarter, students assumed the role of textile designers, creating a culturally infused swatch measuring 12" x 12" based on a culture of their choice. They presented their designs to the class, articulating how they integrated cultural elements into their designs.

Most recently, the students have focused on conveying 3-dimensional projects through the creation of 2-dimensional drawings using orthographic projection. Each student has crafted intricate drawings of wooden toys, showcasing their creativity and skills.



Kailey Blas Class of 2028



Charles Mitchell-Rector Class of 2028

Honors Biology IMS 9

Tagen Jacobus, Teacher of Biology

Greeting IMS Families,

During Marking Period 1 your children have been researching and exploring cells and homeostasis in great depth. They have also been practicing reading, note-taking, forming bullet points from a text, and scientific models. Students enjoyed themselves while using the microscopes to see Elodea plant cells in freshwater and saltwater. Then we moved into a heart rate lab where they set up a procedure to run and collect data on how heart rate changes before, during, and after exercise.

Moving onto Unit 2, which explores matter and energy transformations, students are analyzing the relationship between photosynthesis and respiration. During this unit's lab, teams created their own experiment to run. Last, we will move onto cycles through the different "spheres" of our Biosphere.

In December, we will be heading to the LMC for a little bit of SEL time while strategizing, collaborating, and problem solving during a Breakout EDU program.

Happy Thanksgiving and Holidays as well!

Mrs. Jacobus



<excellent student photo of Plasmolysis

>LMC Breakout EDU



Honors Algebra II IMS 9

Katherine Bryant, Teacher of Mathematics

Dear families,

This month for IMS Honors Algebra II, we have been analyzing polynomials and their characteristics. This includes end behavior, zeros, domain, and range, evaluating the functions at a specific value, using synthetic division, factoring, and applying properties of exponents.

Students will use polynomial functions to relate it to the shapes of roller coasters. They will take everything that they learn in this unit to create their own roller coaster polynomial function using specific requirements and draw its graph.



Honors Geometry & Analysis IMS 9/10

Samantha Heller, Teacher of Mathematics

Hello!

We have been very busy in Geometry during these first few months of school. We have developed a solid foundation of points, lines, planes, and angles. We have also measured and constructed various lines and angles using compasses and protractors during our first Performance Based Assessment (PBA). Furthermore, we've studied the various transformations performed on geometric figures in the coordinate plane. We have also been working on our logic skills by writing geometric proofs and solving complex algebraic problems that relate to Geometry. We are currently learning about the different angle relationships found involving transversals. My students have shown much growth over the past couple of months and I am already so proud of all that they have accomplished (especially with the dreaded topic of Proofs)!

In this new marking period, we will be continuing with our analysis of transversals and we will begin focusing on triangles. More specifically, we will be learning about the various types of triangles, the angle relationships found within triangles, the theorems that relate to triangles, congruent triangles, and various proofs that correlate to these triangle topics. I am excited to continue to build our Geometry knowledge and look forward to all that this new marking period has in store!

Have a wonderful holiday season!

Ms. Heller

Honors Chemistry IMS 10

Ms. Tantanya Hodges, Teacher of Chemistry thodges@westorangeschools.org

Hello,

These first few months the students have been learning about developments of atomic theory: the discoveries of the atom, proton, electron, neutrons and nucleus. Recently we've discussed the historical developments in atomic structure and why the model of the atom has evolved from a simple circle to something

abstract and difficult to describe. The students learned the complexity of the atom is the cause of

the emission spectrum of chemical elements. Each element produces a unique electromagnetic radiation or light when its

electrons transition between energy levels. We can use this light to identify the element.

After talking about it for a few days the students got to see the different colors produced by elements with their own eyes during the Flame Test lab. The emission spectrum produced by copper and magnesium was by far the students' favorite, with lithium coming in a distant third.







Honors Precalculus IMS 10

Dr. Jessica Nuzzi, Teacher of Mathematics



Dear IMS 10 Precalculus families,

In our Honors Precalculus course, we have completed three units of Trigonometry: triangles, the Unit Circle, and graphing. We have made great strides in learning this new content, which is very important for later units in our course as well as in Calculus and additional higher level mathematics courses.

Building on their Geometry knowledge of right triangles and trigonometric ratio definitions, students reasoned their way through building the Unit Circle in radian measure (illustrated above). Students also "unwrapped" the Unit Circle onto a coordinate plane to graph the sine, cosine, tangent graphs, and their reciprocal functions, then mastered transformations of these functions by translating or dilating their wave-like depictions.

Students have worked on two Performance Based Assessments (PBAs) in these units to apply and summarize their learning. Students reflected on their learning of radian measure and the Unit Circle special values, and applied their knowledge of graphing the sine function to a real world scenario. Students are creatively integrating their mathematical knowledge into an individualized product of their own creation. Real world applications that students are researching include musical frequencies, tidal waves, and animal populations.

I very much enjoy working with your children and hope that their learning experiences are positive and meaningful. Please reach out if you have any questions about our class. I look forward to continuing our journey of preparing for the study of Calculus and wish you and your families a joyful and restful upcoming holiday season.

Sincerely,

Dr. Nuzzi