THE FACULTY CORNER

FROM THE ANACAPA SCHOOL SCIENCE & MATHEMATICS DEPARTMENTS. . .

- ## 2013-2014 SCIENCE

Lower School Physical Science (Megan Nesland)
Physical Science offers Lower School students a chance to appreciate the scientific concepts at work in the world around us. Students use weekly lab assignments to investigate everyday phenomena, with an emphasis on the ongoing question: why do things work the way that they do? Students have many activities and projects to look forward to throughout the year, including a culminating project in which they design their own roller coasters based on their knowledge of energy!

Conceptual Physics (John Luca)
We're off to a great start in the Upper School Conceptual Physics class. The students have been re-introduced to the scientific method and are now working with one of the most useful mathematical tools of mechanics, the addition and subtraction of vectors. Since this is a conceptual physics class, we strike a balance between computation and conceptual understanding. We have a great group of strong students so we want to make sure that they get a solid introduction to some of the mathematical tools that they'll need later in more advanced physics classes, but we're also making sure that students are understanding the ideas of physics. We plan to cover the major topics of introductory physics: mechanics, including gravitation; properties of matter; heat; sound and light; electricity and magnetism; and atomic and nuclear physics. Most days there's a demonstration or two and some lively discussion concerning what is going on and why. The goal of the class is two-fold:

- to give students a good general overview of our current understanding of the world from the perspective of physics, and
- to give students the conceptual understanding and the necessary problem-solving skills they will need in chemistry, biology, and more advanced physics, science, and engineering classes.

It's going to be an excellent year in physics class!

Chemistry (Megan Nesland)
The Upper School students in Chemistry will focus on a combination of fundamental principles and applications throughout the year, including a “Science Friday” series covering everything from new trends in nanotechnology to the many emerging facets of our understanding of human biochemistry. Students will delve into experiment design and lab procedures, exploring the twists and turns of the Scientific Process along the way.

- ## 2013-2014 MATH

Pre-Algebra (Bryan Anderson)
Pre-Algebra has been moving along well thus far, and the students are doing a nice job of preparing themselves for solving more difficult equations in the near future. Their energy and insights are fantastic at this young age. I really enjoy getting to know the new students in their first year in our math sequence as well as teaching many of them in Robotics. Coming up is some more advanced material with multi-step equations and inequalities, and then we’ll move on to exponents and fractions by the December break!

(over please)

Algebra I (Bryan Anderson)
Algebra I students are already approaching their house projects, which will begin the week after Thanksgiving—after our completion of Chapters 3 and 4. The last chapter of solving equations with variables on both sides has been challenging, and this is being addressed and approached from different angles. Students are working with partners and in small groups, and many students are beginning to appreciate the value of figuring out the concepts together. The confidence and cooperative skills they are gaining will be more and more meaningful as they get older!

Geometry (John Luca)
We have a great group in Geometry class this year and a wonderful classroom. The Computer Room allows all students to sit around long tables with none of them more than a few feet away from me and the board. So they can't get away from me! Actually, it is quite a good set-up for a class like Geometry. Most days the students will work on problems in groups of two or three spread around the table. My best days in Geometry are when I can present a few ideas quickly so that there is a good deal of time to let the students work together to solve the problems and teach each other. Our Geometry class is a solid Common Core-based high school geometry class that satisfies the University of California's admission requirement while trying to be neither overly pedantic nor boring. In other words, we try to have a good time, at least I do, and I think most days we do a pretty decent job of it. I enjoy the students immensely, and I think they're smart, hardworking, thoughtful, decent kids who make it a pleasure to be in the classroom. In turn, I try to reward them for their efforts and their integrity by making the class as engaging and relevant as I can. There's never a class period that doesn't have a joke or a wise-crack or two to lighten things up along the way. Geometry, algebra, mathematical proofs and logic--the topics we cover--are not the easiest subjects in the world, so a joke or some self-deprecating humor on my part goes a long way in helping the students have a decent time while they forge their way through some challenging material.

Business Algebra II (Bryan Anderson)
Business Algebra II is going strong now that the class just completed Unit 1, “Business Plan Basics.” They spent many of the recent class periods working together on budgets, figuring out start-up costs, graphing supply and demand functions on Excel spreadsheets, and assigning tasks to follow through between meetings. It is beneficial for the students when I get to share stories of what is going on with my business on a daily basis so they can be involved in the process of a "real" business undertaking. I am looking forward to Unit 2 where we will be comparing two publicly traded companies’ annual reports and writing equations for revenues so that the solution to the system of equations can be found.

Pre-Calculus (Bryan Anderson)
Pre-Calculus will soon begin experimenting with rational functions and their intricate details. Math is all about the details, and it is challenging to figure out each piece of a functions graph and to understand why it is graphed that way. I am emphasizing partner and group work outside the classroom because many students will find that their level of understanding increases when they work in a collaborative setting. Also coming up will be logarithm applications and trigonometry. Get ready for those unit circles!

Statistics (John Luca)
Our new Statistics class is off to a good start. It's a fantastically relevant subject, probably more relevant on a daily basis than any other class typically taught by a high school mathematics department. How do we make decisions? "Show me the data," we hear so often. What is data? Where does it come from? What can it tell us? What can we do with it? Can it be trusted? How do we share it with others? What's the math behind it? Statistics show up in college admissions, professional sports, politics, economics, every area of academic and medical research, political elections, weather

forecasts, heated discussions about global warming and other important issues, and more. With the explosion of computing capacity has come an even bigger explosion of information. Information is coming from everywhere, in torrents. And there's no stopping it. From now on, data will be as present in our lives as oxygen, whether we like it or not. And our students must be able to understand it, work with it, and make predictions and decisions based upon it. Our job as educators at Anacapa is to give our students the tools they will need to understand their world and their place in it. With these tools in hand, we hope they will go on to live rich, fulfilling, thoughtful lives in a world that is constantly changing and constantly offering them new and exciting opportunities for growth and contribution.

~~ Bryan Anderson, John Luca, and Megan Nesland

IMPORTANT NOTES TO PARENTS FROM THE MATH TEACHERS

THE RIGHT TOOLS ARE ESSENTIAL TO SUCCESS: We still have some students who do not have their calculators for math class. Parents, please note that students in the following math classes need to have **a scientific calculator (TI - 30, etc.):**

Pre-Algebra,
Algebra I, and
Geometry

Students in the following math classes need to have **a graphing calculator (TI-84, etc.):**

Business Algebra II,
Pre-Calculus, and
Statistics

Although these calculators may be expensive, they are essential to your student's work in math classes, and they will be used for several years in the future, too. Please be sure to mark your student's name on the calculator so it is easily identifiable.

STUDENTS ARE ENCOURAGED TO TAKE RESPONSIBILITY AND GET INVOLVED: Faculty office hours are included on the last page of the November NOTABLES. Please encourage your student, as teachers do, to attend office hours to ask questions and get additional help with concepts and problems as they need it.

JOIN US FOR THE FAMILY MATH FAIR ON NOVEMBER 25: The 20th Annual Family Math Fair is happening on campus on Monday, November 25 at 7:30pm. It will be a great family time with logic puzzles and word problems—from easy to more challenging—that will really make you think outside the box! We will have prizes for a raffle at the end of the night, and you can earn tickets throughout the evening by answering problems correctly. You may even walk home with some cool "stuff" this year! We hope to see you at the Math Fair—and don't forget to bring the whole family!

THANKS!