Welcome!

Dear Parents and Guardians,

Thank you for your interest in your child's mathematics class this year. I am very glad to hear that you would like to know more and be a part of your child's continued educational growth and discovery in the field of mathematics.

As the technology and data-related demands of careers increase and telecommunication advances effectively decrease the size of the world, math and solid reasoning ability will be critical to students' opportunities for success. These skills are more valuable than ever to having the foundation for a bright future.

In addition, education in the United States is undergoing a major shift by way of the Common Core State Standards. For mathematics there is an increased focus on problem-solving and reasoning skills, as well as communicating how to use those processes. Students will begin moving away from answer-focused multiple choice tests and toward open-ended tasks that challenge them to apply mathematical concepts taught in class. Students will find these tasks more relevant and engaging, and ultimately more applicable to situations in the real world.

With such importance being placed on mathematics in careers and education, I want to make sure that you have access to information that will help your child fulfill their potential. This newsletter will provide helpful tips and information that you can use to boost your child's learning at home.

Please feel free to contact me if you have any questions.I look forward to hearing from you and to working more with your child through the year!

Best regards,
Dan Stone
Mathematics Teacher
Ogden International High School
E-mail - dgstone@cps.edu
Website - http://mathstone.weebly.com

Dinner Table Review: Student Learning by Teaching at Home

Time is a scarce luxury for families these days. Work schedules can result in late nights, and students have practice and activities that can keep them at school later. Finding the time for the traditional family dinner can be difficult. And at the table when the question is asked of students, “How was your day?”, too often the response is a simple shrug or just, “Okay,” with little depth or explanation about what they are accomplishing. Can we get more of a response from this question and make this time more beneficial for students’ learning and development?

Your child is in my room for class for about four hours per week. While we will do some great things in class, having homework, studying notes, and exploring mathematics at home is essential for students to be successful and learn as much as they can from the course.

How to Help: Ask your child to share with you what they learned today.

- I**nstead of just asking “How was your day?”, try and go further by adding, “And what did you learn today?”** Set the focus on not just the quality of your child’s day, but also the content. If your child is expected to learn the material, it should stay in their heads at least long enough for them to get home!
- **Show interest in how your child is growing intellectually and the amazing new skills and insights they are achieving.** Even if math was not your favorite class, it is still amazing to see someone grow from a tiny toddler to a young adult tackling concepts once used by Newton and Einstein. Share that sense of wonder and show your child how amazing they are when they do math.
- **Ask for examples or details.** This makes your child recollect and put together the full concepts and not just gloss over details. Your child can take ownership of those ideas and then they become a stronger part of their knowledge base.

Benefits

- **Teaching what they learned solidifies learning.** In class, the student can reach an understanding of concepts and practice them. Sharing this knowledge with others makes students take the information they received and process it in a manner that allows them to present the ideas clearly to someone else. The greater depth needed to articulate ideas prompts students to re-evaluate concepts to ensure understanding before giving explanations to others.

- **Becoming experts builds confidence.** There are few things more wonderful in the classroom than a student who suddenly “gets it” and can proudly and surely answer a question or explain a process in class. The student feels a sense of accomplishment and empowerment. When your child can explain these concepts and takes the role of “teacher” at home, they gain a greater sense of confidence in working with mathematics.

- **Reviewing ideas keeps them fresh.** If a student does not think about math outside of the classroom, they can struggle to gain a solid understanding of the concepts during the four hours of class we have per week. Remembering discussions and practice from class promotes long-term retention and understanding.

Setting aside a few minutes every night to ask your child what they learned in school today can be helpful to all subjects, including mathematics. Time always seems in short supply, but I strongly encourage taking a few moments of your day to help your child show some of the amazing ways they are building their academic abilities.

How Do You Use Math?

"When do we actually use this?" This is a question that has plagued math classrooms everywhere. As an educator, I make every effort to make the material directly relevant to students' lives as possible. Knowledge of how proficiency in mathematics can help students long-term in their careers is a great motivator.

I would like to reach out to you as I compose a career reference guide in mathematics. In the twenty-first century, more than just scientists and mathematicians need strong math skills. Lawyers, health care professionals, journalists, psychologists, and others routinely need to employ some form of mathematics as part of their profession.

If you would like to share your experience with mathematics in your career, please e-mail me at dgstone@cps.edu with answers to the questions below. Responses will be in the class guide and available for students to review. Names will not be included, just career titles.

The questions and an example response follow. Any insight you can offer on how math connects to your career is most welcome and would greatly benefit our students!

<u>Questions</u>

1. How do you use math, logic, and/or critical thinking at work?
2. What types of math classes did you have to take for your career?
3. How does math tie-in to your career field?
4. What advice do you have for students who are interested in getting into your career field?

Example - Video Game Design

I spoke with a good friend, who is a video game designer in Seattle, about how he uses math on the job. He has made games for the Xbox360, Nintendo 3DS, iPad, and other systems.

How do you use math and/or logic on the job?

I use math and logic pretty much everyday. Math can vary from simple algebra to coming up with equations to solve gameplay problems. For example, on my current game we had to come up with equations for scaling level difficulty. On a previous game I had to write an equation for scaling weapon accuracy.

One of the more interesting problems I had to solve involved Spider-Man's web. We had to come up with a system that allowed for Spider-Man to swing from anything. Getting Spider-Man to swing was the easy part. The hard part was when Spider-Man's web got intersected and making it look believable on a Nintendo DS. What we discovered is we could just make Spider-Man's web a straight line and when it gets intersected just create another straight line to Spider-Man's hand.

This worked but another problem arose. What happens when Spider-Man swings the opposite way and we have reform the web from the segments we made? A lot of geometry and cross product math had to be done.

Logic comes heavily into play during level design. Keeping track of variables and the order of operations of things becomes extremely important. Many times your logic may be sound for correct play-throughs but the player can be unpredictable. You have to build your scripting logic to cover all types of play styles.

What types of math classes did you have to take in college?

Calculus 1, 2, 3, discrete math and linear algebra.

What did you think of math classes when you were in school?

I thought they were extremely difficult and I wish I spent more time studying math. You have no idea how helpful it can be in game design. If you are going to be a game programmer, math skills are must have.

How does math tie in to computer science?

Math is essential to computer science and especially game programming. Everything from gameplay to graphics requires extremely strong math skills. Bad math can completely derail a game. On a first person shooter I worked on getting the correct equation and ease-in, ease-out curve for aiming controls and it took months to get right.

What advice do you have for students who are interested in getting into game design or into the video game industry in general?

Take math seriously. I wish I had taken more math classes. Math, Computer Programming (C++), and technical writing courses are very important to both game designers and programmers.

If you're serious about getting into games I suggest looking at games you like and try to figure how they are doing simple things. For example, play a first person shooter and play a match against other people then play another match where you try to only shoot your team members. You'll find that it's very hard to keep aim on your teammates. Why is that? What are they doing to make it easy to aim against enemies?

The other thing I can suggest is to download unity, unreal 3 and maya. Practice. Try to make your own game but keep it simple. Anything you make can be put into your portfolio. Also, look at starting in game testing. I started as a tester and I learned a lot about how games are made from starting at the bottom.

Thank you for taking time to read this newsletter to help learn more about contributing to your child's success in mathematics. I hope you have a great day!