AP Physics C Summer Work (2011-12)

I am excited to have the opportunity to lead our class through the AP Physics C curriculum this year. We much work to do and with the new MHS schedule, we have less time next year to accomplish our goals. As you prepare for the course this year, be comforted in the fact that you have already established a solid foundation in physics. The principles and laws have not changed in the years since 9th grade physics, the only change is that you have matured intellectually, physically, and (specifically for the AP C course) mathematically. This course will build on your prior understanding and tackle interesting physics problems requiring more sophisticated mathematical applications.

In anticipation of the course, I ask that you:

- Organize a physics collaborative learning team (PCLT) consisting of 2-4 MHS APPC students.
- Send me an email (jsullivan@mtsd.us) so that I can organize our online discussion forum indicating who you will be working with as a collaborative team. Please use the subject APPC.
- Review Chapters 1-4 in our text book, Fundamentals of Physics, 6th Edition by Halliday, Resnick, and Walker (ISBN #0471332356). If you have not checked out your book, you may either contact me to pick it up at school or purchase a copy on your own. The books are fairly inexpensive and you may also elect to purchase a solutions manual or other supplementary materials.
- Complete the odd numbered problems at the end of chapters 2-3 with your PCLT. **Only work submitted by the collaborative group will be accepted.**
- Complete the unit review sheets related to previous course work in 9th grade physics.
- Review the videos and documents on teaching learning. Take notes and prepare personal reflections on each (collaborative teams should discuss the materials, but your reflections are written individually).
- Review basic calculus principles (there are a number of online or review texts available; i.e. Quick Calculus, by Kleppner and Ramsey).
- Obtain an AP Physics C prep book (older versions are fine and coordinate with peers to get different versions).
- Download and review the course description: http://apcentral.collegeboard.com/apc/public/repository/ap-physics-course-description.pdf

AP Physics C	0471332364	John Wiley & Sons	Halladay	2001	

Physics 9 Review Documents: (also visit the Physics 9 Resource page for more review)

Constant Velocity:
http://dl.dropbox.com/u/16675567/AP%20Summer%20Assignment/1%20Constant%20Velocity%20Review.doc

Uniform Acceleration:

http://dl.dropbox.com/u/16675567/AP%20Summer%20Assignment/2%20Uniform%20Acceleration%20Review.doc

Dynamics:

http://dl.dropbox.com/u/16675567/AP%20Summer%20Assignment/3%20Dynamics%20Review.doc

Energy:

http://dl.dropbox.com/u/16675567/AP%20Summer%20Assignment/4%20Energy%20Review.doc

Momentum:

http://dl.dropbox.com/u/16675567/AP%20Summer%20Assignment/5%20Momentum%20Review.doc

Circular Motion:

http://dl.dropbox.com/u/16675567/AP%20Summer%20Assignment/6%20Circular%20Motion%20Review.doc

Teaching and Learning Materials:

I'd like you to reflect on three different visions of teaching physics, described below, and then write a two page paper sharing your thoughts.

The first vision of teaching physics is provided in an article by David Hammer, titled "Two Approaches to Learning Physics." It appeared in the December 1989 issue of *The Physics Teacher*, when Hammer was a graduate student at the University of California. Now he's a professor of physics and education at the University of Maryland-College Park, where he continues to write about how students learn science. I have posted the article here: http://dl.dropbox.com/u/16675567/AP%20Summer%20Assignment/Hammer%20paper.pdf

The second vision is in the form of a video of a physics lecture at MIT. The professor's name is Walter Lewin, and the video is provided courtesy of MIT's Open Courseware project. It's about 50 minutes long, and can be accessed here: http://ocw.mit.edu/courses/physics/8-01-physics-i-classical-mechanics-fall-1999/video-lectures/lecture-7/

The third vision is in the form of a talk given by Eric Mazur, a professor of physics at Harvard. It's titled, "Confessions of a Converted Lecturer." The sound in the beginning is not so great, but it gets better. It goes for about an hour. Mazur's talk can be seen here: http://www.youtube.com/watch?v=WwslBPj8GgI

Special thanks to Mr. Buszka for posting the review materials and identifying the links for the teaching and learning resources. Have a great summer and not just to complete this work, spend time thinking about the concepts and ideas. Enjoy your summer.