Honors Physics **Mrs. Downing | 2021-2022**

Welcome to Honors Physics! I am so excited to have you all in class this year. This physics course encompasses the topics that explain how the world around you functions and I cannot wait to explore them with you. **There will be no mandatory summer assignment for Honors Physics this year.** However, there are a few options that you may wish to consider as a way to engage in science learning this summer:

1. Go through the review resources below on vectors listed below. Vectors are foundational mathematical concepts used in physics. We will review these throughout our first unit but if you're feeling nervous about physics, this may be a good way to refresh your brains over the summer!

   Go to https://www.flippingphysics.com/ap-physics-1.html
   - Introductory Concepts – watch video 6 – "A Problem to Review SOH CAH TOA"
   - Go down to "Two-Dimensional Motion" – find the "Vectors and Scalars" section – watch all 7 videos

     As you watch the videos, please take notes and work to review the fundamentals of vectors.

   Go to: https://www.physicsclassroom.com/Physics-Interactives/Vectors-and-Projectiles
   - Use the following interactives to help build your understanding of vectors. These games help you practice the concepts and gain understanding. Practice enough so you are comfortable with vectors.
     - Vector Addition
     - Name that Vector
     - Vector Guessing Game
     - Vector Addition: Does Order Matter?

2. Read a book about physics! Some suggestions are:

   - The Bastard Brigade: The True Story of the Renegade Scientists and Spies Who Sabotaged the Nazi Atomic Bomb, by Sam Kean
     Relevant Topics: atomic and nuclear physics, thermodynamics, ethics of scientific research

   - Storm in a Teacup: The Physics of Everyday Life, by Helen Czerski
     Relevant Topics: scientific literacy, linking everyday occurrences to big ideas in science

   - A Brief History of Time, by Stephen Hawking
     Relevant Topics: entropy, the nature of time, the formation of the universe

3. Visit a science museum, aquarium, nature center, or zoological park when traveling to a new city or even here in our own town.

4. Spend time in nature. Try hiking, kayaking, biking, surfing, or other outdoor activities for the first time or for the millionth time. Be observant of the patterns of the natural world around you and marvel in the beauty of our earth.

5. Sign up to be a Citizen Scientist and make a difference by contributing to environmental studies in our local area through the SC Aquarium or SC Seagrant.

6. Take part in a STEM enrichment program either in person or virtually.

7. Use the Internet as a guide to pursue answers to a question about the scientific universe that you wish to learn more about. Dive into learning more about your question either by watching YouTube or TikTok videos or even by enrolling in an online course on a platform like EdX.

8. Most of all, observe and be curious about the world around you. Disconnect from technology from time to time and keep your head up and aware of your surroundings. Make special note of ways that we measure our world and share these measurements.

If you make it to the bottom of this list and send me an email with a selfie of you doing one of these items on the list (as well as an introduction of yourself), then you will receive extra credit.

I'm looking forward to our year together in Honors Physics!