

Greetings, New Academy Chemists! We have a COOL summer assignment for YOU!

Later this school year, our Academy is planning to host a celebration of original student-generated scientific research at our Night of Science/Research Symposium. At that time, you (or you and a partner) might be asked to showcase your talents in the fields of chemistry, math, engineering or another scientific field in an original research-based mini-project that you have selected and worked on over the course of the year.

The FUN part begins NOW. Your job is to start looking for ideas of things you are interested in exploring and questions you'd like to answer...and then we will encourage you to pair up with someone by interest for the actual research endeavor (or "go it alone" if you prefer)!

Are you interested in CHEMISTRY topics such as: food chemistry (vitamin C, food energy), environmental chem (water testing, carbon filters, carbon dioxide levels, pH levels, UV radiation), fuels (types, efficiency, biofuel), electrochem (conducting current, making batteries, electrolysis), acid-base chem (titrations, acid content in foods/meds), rate of chemical reactions (how do things work with a catalyst, what causes rates to differ), spectroscopy, metallurgy, natural and synthetic fibers, organic chemistry, nuclear chem, and the list goes on and on and on! (CAN you tell we're prejudiced toward this field???)

And then there's MATH! Have you ever thought about doing research on a math topic? What about statistics and probability, game theories, geometry or algebra, applied math, etc.

Let's talk about ENGINEERING DESIGN!!! Robotics, bridges, software design, and??? What problem can YOU solve using your engineering brain?

How about BEHAVIORAL SCIENCE? Learning or memorizing? Placebo effect? Social media studies? Perception of...? Or LIFE/ENVIRONMENTAL SCIENCE? Acid rain, plants, amoeba, erosion.. oh MY!
And EARTH/GEOLOGICAL SCIENCE? Minerals, meteorology, weathering, ... what else?
Finally: PHYSICS (is phun!) and ASTRONOMY: Newton's Laws, friction, aerodynamics, spectral signatures of stars... keep brainstorming!

As the first (of many) endeavors into the upcoming research, start this summer with some simple Internet navigation and write down an idea from EACH of the SEVEN GIVEN TOPICS and ONE MORE OF YOUR CHOICE... Use the "First Look at Research" document to record your thoughts. Write the topic and two-three sentences minimum of background information and what YOU would attempt to study/experiment about the topic on the handout provided. Think of a possible question to answer and variables to manipulate/measure (IV, DV, constants). Keep in mind that you will later have a follow-up assignment to dig a little deeper (and will be working on an APA paper in your 9th grade MG English class or a research paper for this class if you are a 10th grader), so think carefully about what interests you now. All topics must be of a high-school level...so stay away from elementary and middle school level topics, or adjust them to be loftier! Even if you don't know anything about the topic of interest now, you will research the topic more during the year and learn the content as required for your in-depth understanding of your eventual final topic. In addition, on the FIRST LOOK document or in email to yourself, record website addresses that you find helpful so that you can find them again! Please be VERY careful that you use the Internet ideas appropriately; there should be NO COPYING from others' work!

There are many, many topics that you can find on the Internet. If you need ideas, just start to poke aroundyou will be amazed at the possibilities! Think out of the box, broaden your horizons, and begin to find the fun in learning more/experimenting with something that catches your attention!

This assignment is DUE to your Magnet Chemistry teacher during the first week of school in September! Have FUN researching research!! We look forward to hearing about some REALLY COOL topics from you in September!

ONWARD JUNIOR SCIENTISTS!

MAGNET CHEMISTRY SUMMER ASSIGNMENT

Research Ideas – A First Look

BRAINSTORMING DOCUMENT!!!!!!!

Name _____

Date _____

Please answer these questions before starting your work on this document.

1. Have you ever participated in a science fair before? _____ If yes, please answer questions #2-3 below.

2. In what grade level(s) did you participate? _____ and what was your project? _____

3. Are you interested in continuing a project on the same topic? _____ If yes, please place a STAR by the category that it falls under for this assignment, and give as much detail as possible about your idea(s).

IDEA 1: TOPIC/QUESTION FROM CHEMISTRY

Explanation/Ideas/Possible **EXPERIMENTAL DESIGN** (IV, DV, constants) _____

IDEA 2: TOPIC/QUESTION FROM MATH

Explanation/Ideas/Possible **EXPERIMENTAL DESIGN** (IV, DV, constants) _____

IDEA 3: TOPIC/QUESTION FROM ENGINEERING

Explanation/Ideas/Possible **EXPERIMENTAL DESIGN** (IV, DV, constants) _____

IDEA 4: TOPIC/QUESTION FROM BEHAVIORAL SCIENCE

Explanation/Ideas/Possible **EXPERIMENTAL DESIGN** (IV, DV, constants) _____

Explanation/Ideas/Possible **EXPERIMENTAL DESIGN** (IV, DV, constants) _____

IDEA 8: TOPIC/QUESTION FROM _____ (you pick!)

Explanation/Ideas/Possible **EXPERIMENTAL DESIGN** (IV, DV, constants) _____

TEACHER NOTES: