In Honors Chemistry you will be required to complete a science project. This project will be worked on mostly at home or after school and not in class.

Expectations:

1. Maintaining a scientist's Data Notebook.

2. Researching a selected topic.

3. Developing an experimental design and carrying out the experimental method of science.

4. Completing a written report that includes the problem, purpose, background, hypothesis, procedure, materials, results, conclusion, and a simple bibliography.

5. Making a backboard display of required information.

6. Orally presenting the project to other students and judges.

Your project will be judged in February, 2012 according to The Ohio Academy of Science. A superior score (36 or higher out of 40), will qualify you to compete in the Regional Science and Engineering Expo at The University of Cincinnati.

More information can be found at the following web sites:


Science Project Time-line

<table>
<thead>
<tr>
<th>Event</th>
<th>Date (approximate)</th>
<th>Grades given:</th>
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</thead>
<tbody>
<tr>
<td>Initial question workshop</td>
<td>August 7 &amp; 12, 2013</td>
<td>none</td>
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<tr>
<td>Research Question:</td>
<td>August 14, 2013</td>
<td>1st quarter grade</td>
</tr>
<tr>
<td>Background research:</td>
<td>September 23, 2013</td>
<td></td>
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<tr>
<td>Research Plan:</td>
<td>October 7, 2013</td>
<td></td>
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<tr>
<td>Required Forms:</td>
<td>October 28, 2013</td>
<td></td>
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<tr>
<td>Begin Experiment:</td>
<td>November</td>
<td>2nd quarter grade</td>
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<tr>
<td>Data Notebook:</td>
<td>Nov./Dec.</td>
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<tr>
<td>Finish Experiment:</td>
<td>January</td>
<td>3rd quarter grade</td>
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<tr>
<td>Project Display:</td>
<td>January</td>
<td></td>
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<tr>
<td>Turn In Project:</td>
<td>January</td>
<td></td>
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<tr>
<td>School Judging:</td>
<td>February</td>
<td></td>
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<tr>
<td>Regional Science Fair:</td>
<td>February (if applicable)</td>
<td>4th quarter grade</td>
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<tr>
<td>State Science Fair:</td>
<td>May (if applicable)</td>
<td></td>
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</tbody>
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This project may sound overwhelming; however, it will be completed over the school year. The time table above gives the schedule of when sections will be due. The remaining dates will be determined as we go through the school year.
GLOSSARY OF TERMS

Scientist's Data Notebook: The student's personal record of all her/his science project ideas, information, notes, events, data, sketches, etc. This book also provides both the teacher and parent a way to monitor the progress of the science project.

Topic: The general area of interest explored through the project investigation.

Background: Learning about the topic by reading books, newspapers, magazines, by watching TV, films, or filmstrips, and by interviewing people who are knowledgeable regarding the topic. Information gathered by the student is to be incorporated into a 2-5 page formally written report.

Problem: This is the specific problem the student is investigating. It should be stated in the form of a question.

Purpose: This is a statement about what the student is attempting to find out by doing the experiment.

Hypothesis: Through the student's research she/he becomes educated enough to make a guess as to what the experiment will show. This is not a random guess, but an educated scientific guess made prior to experimentation.

Procedure: The step-by-step description of the entire experiment. Notes, paragraphs, diagrams, timelines, etc. are used to maintain detailed records. Even errors and "disasters" are to be included. (Example: Plant #3 fell off the windowsill and broke on December 3.)

Materials: A list of everything used while running the experiment including chemicals, equipment, organisms, etc.

Variable: The factor or condition in the experiment which the student changes on purpose. All other factors in the Experiment which the student attempts to keep the same. These conditions should be controlled so they do not change.

Data/Results: The student's observations of everything that happens during the experiment. Measurements should be included whenever possible, even if the student has to create a form of measuring (such as Jane's Rust Scale 1-10). Repetition of the experiment provides more convincing results. Results are often displayed in the form of tables, graphs, photographs, etc.

Conclusions: A paragraph written by the student which tells what her/his experiment demonstrated in answer to the problem.

Abstract: The student's written summary of her/his experimental investigation with emphasis on purpose, procedure, and conclusion. A form will be provided by the teacher when the abstract is due.

Display: Specific requirements and suggestions for making the display will be sent home at a later date.

Research Report: Contains all of the above information with a Table of Contents. The student should use the formal writing procedure and be as neat as possible. The Data Notebook is to be turned in separately and NOT recopied.
CHOOSING A SCIENCE PROJECT TOPIC:

- Think about your own hobbies and interests.
- Ask adults for ideas.
- Look through scientific magazines.
- Look in the library at experiment books.
- Read books and newspapers.
- Look for problems that need to be solved
- Think of a question that you would like answered from a survey.

Possible Categories of Science Projects:

1. Behavioral and Social Sciences: Psychology, most surveys, archaeology, animal behavior.
5. Computer Science: information systems & theory, coding, encryption.
7. Engineering: power transmission, electronics, heating, aeronautics.
9. Mathematics: statistics, logic, probability, number theory.
10. Medicine and Health: drugs, pathology, sanitation, allergies.
13. Zoology: animals, circadian rhythms, physiology
Writing a good research question is critical to a successful project. Many students begin with a wide topic and need to narrow it down before it is possible to begin research. The majority of unsuccessful projects stem from poorly written research questions. The research question is due on the first day of school, so this year we will be providing 2 workshops to help students write their research questions.

The workshop will begin with an overview of what is necessary for a well written research question. The rest of the workshop will be spent with teachers and mentors helping individual students refine their questions.

Prior to the workshop, the student should complete the question worksheet found in this package.

Workshop Information:
Date: August 7 & 12, 2013
Time: 9:00am-12:00pm
Location: Fenwick High School rm 503