

AP Chemistry Demonstration Project

For this project, you will choose, research, and perform a chemical demonstration. You will be graded on the following elements: written report, poster, presentation, and teamwork. Demonstrations must be approved by Ms. Wong by the proposal due date. Demonstrations should focus on the chemistry while engaging the audience. Safety is a priority. Unsafe laboratory procedures may result in the termination of the presentation.

Demo Selection: It is important that you choose a demonstration for which you understand and are able to explain the chemistry. Standard lab equipment and reagents are available to use. You may supply additional materials if necessary. The following websites are good starting points as you begin your search: <http://chemistry.elmhurst.edu/demos/index.html> and <https://www.stevespanglerscience.com/>

Science Concepts and Explanations: As you prepare the demonstration and explanation, you will need to work at two levels of explanation. The first level of explanation is to strive for the most scientific understanding for you (i.e. an AP Chem level). The second level is how you would present the concepts to someone who hasn't taken chemistry. Here is where analogies, reference to common materials, pictures, and concrete objects to represent molecules or atoms are in order. Is it possible to visualize atoms and molecules and their behavior? How do you make the abstract concepts of atoms and molecules come alive for yourself and the non-chemistry person?

Written Report: Each demonstration will turn in a typed written report via Google Classroom. The report should include the following:

- Title
- Science Concept(s) – one to two short sentences that describe the chemical concept(s) being demonstrated.
- Materials & Pre-Demo Preparations – include all materials and directions to prepare solutions, including concentrations and amounts. Include anything that is done before the audience arrives.
- Directions – provide necessary details to perform the demo.
- Introduction & Commentary – How will you capture the audience's attention? What background information will you need to discuss (if any)? What will you do/say perform to the audience before you perform the demo?
- Non-chemistry Explanation – Explain the science behind the demo in a way that someone who has not taken chemistry can understand. This is where analogies and references to everyday items are helpful.
- Scientific Explanation – Explain the science principles of the demo. Explanations should be regarded as reference material for another person who wishes to use the demonstration and should provide background for future use. Explanations should be written at an AP Chemistry level.

Poster: Each demonstration will construct a poster to help aid with the presentation. Posters need to be able to stand on their own. Trifold boards work the best. Posters need to be neat and legible. Use large enough lettering so that information is visible from 10 feet away.

Presentation Guidelines:

1. The demonstration should be as simple as possible. If it is too complicated, the audience may become so enamored with the complicated set-up that they lose sight of the central concepts that you are trying to teach.
2. The demonstration should be visible to the entire audience. Hold what you are doing high in the air and turn in all directions so that everyone can see.
3. All parts of the demo should be visible. Clearly state what objects or chemicals that you are using. If too many things are hidden, the demo becomes a "black box" or just a magical happening.
4. The audience should be encouraged to ask questions about the demonstration. If possible be prepared to explain the purpose of each step in the demo. Also try to connect the demo to something they may have experienced in everyday living or in terms of some product on the market.
5. When doing a demonstration the most basic principle is: DO NOT tell what will happen ahead of time. Let the demo "speak" for itself. Try not to fall in the trap of asking a question such as "Do you think I can make this solution turn colors?" This also gives away what you are trying to do. As the demo is in progress, you may ask students to observe certain events that may be missed. After the demo is completed, review observations and give the explanations.
6. Commentary: As you carry out the various steps in the demo, develop some commentary to go along with the steps. This commentary may take a variety of forms. For certain demos, it is probably best to be straight forward and give the names of chemicals as you are mixing them, point out important observations, and then explain why everything happened. In some cases, try to think of the demo as an experiment: Have a starting question, a hypothesis, and then do the experiments with several changes of variables. In other cases, you may make the presentation in a story/drama form. Costumes and props add good effect, but don't lose sight of the chemistry.
7. Learn and practice saying the proper chemical names of all the chemicals that you are using. Be sure that you know the science concepts involved with the demo. If you do not know these, ask your teacher for guidance.
8. Practice! Practice exactly what you are going to say several times. Think clearly about what you want to say during the demo and for the explanation afterward. Practice projecting your voice so that you can be heard. Practice explaining the demo with your poster board.
9. Maintain an attitude of safety. Wear safety glasses/goggles throughout the entire demo. Handle chemicals with care.
10. Clean-up after your demo. Have a waste disposal plan.
11. Maintain a professional decorum. It is alright to have a little fun, but do not get carried away with it.

AP Chemistry Demonstration Project Rubric

Criteria	Description	Points Earned
Written Report		
Title (2 pts)	Title is present.	
Science Concept (3 pts)	Correct science concept is identified. One to two sentences in length.	
Materials and Pre-Demo Preparations (5 pts)	All materials listed. Pre-demo preparations listed or indicate none needed.	
Directions (5 pts)	Clear, concise, easy to follow. All steps included.	
Introduction and Commentary (5 pts)	Introduction is engaging and appropriate given the audience and topic.	
Non-Chemistry Explanation (10 pts)	Explanation is correct and at appropriate level. Explanation uses concrete analogies.	
Scientific Explanation (20 pts)	Explanation is clear and correct. Correct vocabulary is used.	
Poster		
Content (5 pts)	Information is scientifically correct and relevant to the demonstration.	
Design (10 pts)	Words and images are neat and legible. Poster layout is logical and flows. Color is used appropriately.	
Presentation		
Content/Knowledge (10 pts)	Presenter is knowledgeable of the scientific principles of the demonstration. Presenter is able to appropriately answer questions from the audience.	
Presentation Flow and Delivery (5 pts)	Presentation flows smoothly. It is evident that presenters practiced the presentation.	
Audience Engagement (5 pts)	Presenter makes good eye contact with audience. Presenter projects voice and speaks clearly. Presenter interacts with the audience.	
Teamwork		
Team Cohesiveness (5 pts)	Group worked well as a team. Each group member contributed to the project.	
Professionalism (5 pts)	Presenter was punctual, dressed appropriately. Class time was used effectively and productively.	
Partner Evaluation (5 pts)	Results from Partner Evaluation.	

Due Dates:

May 21 (A Day) / 22 (B Day) – Project Proposals and Approval

May 29 (B Day) / 30 (A Day) – Written Reports and Presentations