8th Grade CP Science – Summer Project

Welcome to 8th Grade CP Science. This summer, you will complete a project which focuses on one of the most important distinctions in chemistry: **THE DIFFERENCE BETWEEN AN ATOM AND A MOLECULE**. You will also gain a better understanding of what makes a molecule **ORGANIC versus INORGANIC**. This is a very important distinction to make.

Make sure you read both the front and back of this paper.

The Model:

Your will construct a model of a molecule of Carbon Dioxide (CO_2). Your model should include the proper number of atoms and bonds. Check several sources before deciding on your model- don't forget, the internet is created by people- and people make mistakes! The first image you find may not be accurate- do some research!

Each atom in your model should be labeled with either the full name or the chemical symbol of the element it represents.

Your model must be capable of being hung from the ceiling for display in the classroom.

The molecule must be three-dimensional and making it out of used/recycled/found materials is encouraged, but not required. The size may be no larger than 1 x 1 meter and no smaller than 5 x 5 centimeters. **Drawings, computer models and posters will not be accepted.**

Your model will also need to include an information card (or several, depending on how you think it looks best) containing answers to the following questions:

- What is the difference between an atom and a molecule?
- Is Carbon Dioxide organic or inorganic?
- What makes a molecule organic or inorganic?

These information cards can be attached via string or cord and hang like a mobile or they can be attached directly to the model itself.

See the grading rubric on the back for an exact blueprint of how I will grade this work. Make sure you fall within the guidelines of the grade you are trying to receive.

Information on the molecule Carbon Dioxide can be found online or in any chemistry textbook.

Project Due Date: 24 August 2015 (The first day of school)

Carbon Dioxide Molecule Grading Rubric

	(+10)	(+15)	(+20)	Bonus Points (+5)
Structure (Atoms)	Both the type and the number of atoms used in the structure are incorrect.	Either the type or the number of atoms used in the structure is incorrect.	Both the type and the number of atoms used in the structure are correct.	Scale of atoms in relation to one another is correct. (Carbon atom is smaller than Oxygen atoms.)
Structure (Bonds)	Bonds are missing completely.	Bonds are present, but incorrectly link the atoms in the molecule.	Bonds are present and correctly link the atoms in the molecule.	A double bond is used to connect both Oxygen atoms to the Carbon atom.
Guidelines for Model	Model does not meet the definition of 3D as outlined in the handout. Model is larger or smaller than guidelines on the handout. Model is not capable of being hung.	Model meets at least one project guideline regarding size or materials used. Model can be hung.	Model meets all project guidelines. Model falls within size and construction requirements and is capable of being hung.	
Model Information	Three questions and answers are missing completely. Model has information cards present, but all are inaccurate.	Model has at least two of the three question cards present and accurate. / Cards are all present and accurate, but sloppy.	All three question cards are present, neatly typed or handwritten and are accurate.	
Model Labels	Model is missing all labels on atoms.	Model has labels on atoms, though not all are correct.	Model has labels on atoms and all are correct.	

Carbon Dioxide Molecule Grading Rubric

	(+10)	(+15)	(+20)	Bonus Points (+5)
Structure (Atoms)	Both the type and the number of atoms used in the structure are incorrect.	Either the type or the number of atoms used in the structure is incorrect.	Both the type and the number of atoms used in the structure are correct.	Scale of atoms in relation to one another is correct. (Carbon atom is smaller than Oxygen atoms.)
Structure (Bonds)	Bonds are missing completely.	Bonds are present, but incorrectly link the atoms in the molecule.	Bonds are present and correctly link the atoms in the molecule.	A double bond is used to connect both Oxygen atoms to the Carbon atom.
Guidelines for Model	Model does not meet the definition of 3D as outlined in the handout. Model is larger or smaller than guidelines on the handout. Model is not capable of being hung.	Model meets at least one project guideline regarding size or materials used. Model can be hung.	Model meets all project guidelines. Model falls within size and construction requirements and is capable of being hung.	
Model Information	Three questions and answers are missing completely. Model has information cards present, but all are inaccurate.	Model has at least two of the three question cards present and accurate. / Cards are all present and accurate, but sloppy.	All three question cards are present, neatly typed or handwritten and are accurate.	
Model Labels	Model is missing all labels on atoms.	Model has labels on atoms, though not all are correct.	Model has labels on atoms and all are correct.	