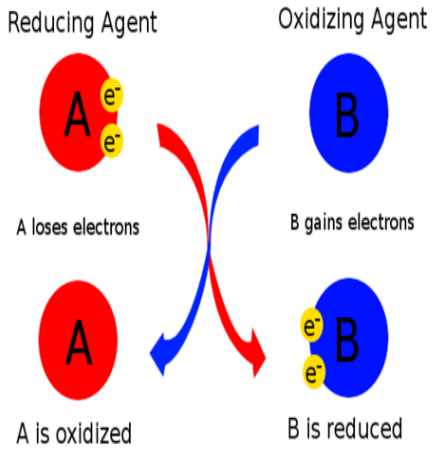
Student Name: _____ Date: _____

Affects of Oxidizing Agents on Vitamin C Concentration

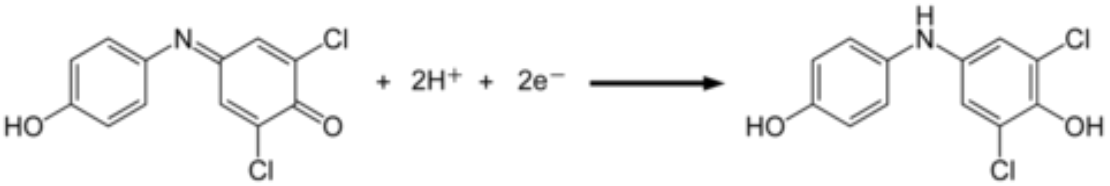
Background Info:



An ***oxidizing agent,*** or oxidant, *gains* electrons and is reduced in a chemical reaction. Also known as the electron acceptor, the oxidizing agent is normally in one of its higher possible oxidation states because it will gain electrons and be reduced. Examples of oxidizing agents include halogens, potassium nitrate, and nitric acid.

A ***reducing agent***, or reductant, *loses* electrons and is oxidized in a chemical reaction. A reducing agent is typically in one of its lower possible oxidation states, and is known as the electron donor. A reducing agent is oxidized, because it loses electrons in the redox reaction. Examples of reducing agents include the earth metals, formic acid, and sulfite compounds.

2,6-Dichlorophenolindophenol (DCPIP) is a chemical compound used as a redox dye. When oxidized, DCPIP is blue; when reduced, DCPIP is colorless.



Blue **Colorless**

Aim: To find out how an oxidizing agent affects the concentration of Vitamin C

Materials:

- Ascorbic Acid
- Oxidizing agents
- DCPIP
- Measuring Cylinder
- 5 Containers
- 3 Pipettes

Student Name: _____ Date: _____

Method:

___ 1) Measure out 5ml of Ascorbic Acid and add to each of the 5 vials. Label the vials (0,2,4,6,8)

___ 2) You will be assigned one of the following oxidizing agents. Mark the one that you are testing:

Zinc Sulfate ($ZnSO_4$)	Copper Sulfate ($CuSO_4$)	Sodium Sulfate (Na_2S0_4)

___ 3) Add one pipette full (2ml) of your oxidizing agent to each container at the same time.

___ 4) Start timing. You will test a different vial after every two minutes.

___ 5) Add one drop of DCPIP indicator to the 0 minute vial. Swirl and watch the DCPIP color disappear.

___ 6) Continue adding, one drop at a time, until the DCPIP (blue) color remains. Count the total number of drops and record in the table.

___ 6) Repeat step 5 for the other times (2,4, 6, and 8 minutes).

___ 7) Clean up your experiment.

___ 8) Share your data with other groups and record their oxidizing agent data in your results table.

Student Name: _____ Date: _____

Results:

	Number of Drops Added		
Time (min)	**$ZnSO_4$**	**$CuSO_4$**	**Na_2S0_4**
0			
2			
4			
6			
8			

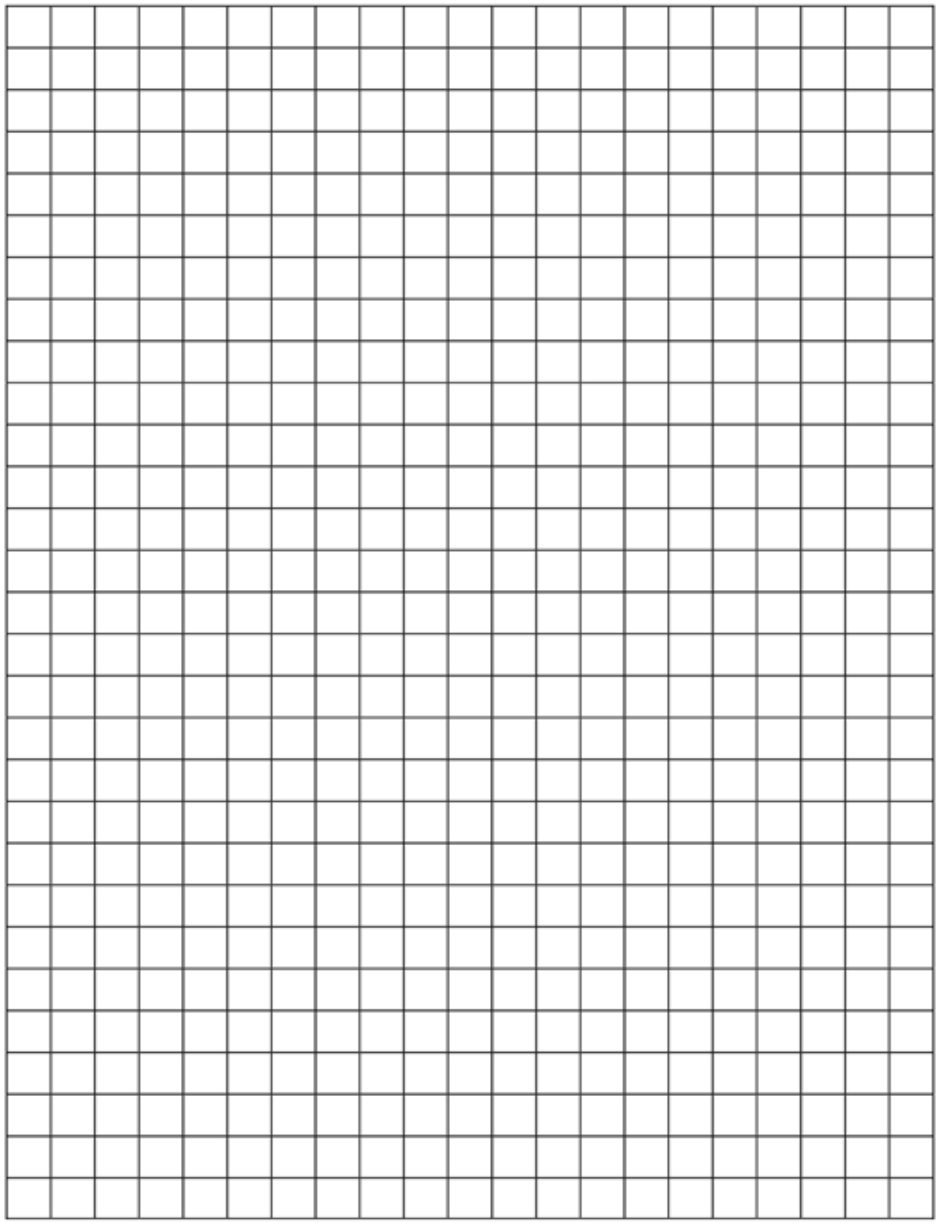
Questions:

Did you notice anything at the bottom of the containers? If so, what do you think this is? How did it get there?

Draw redox for ZnSO4

Student Name: _____ Date: _____

Plot line graph of Time vs. # of drops added for each oxidizing agent



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Draw atoms for the 4 metal ions. Find valence for each ion.	
Zn	Cu
Na	

Is there any pattern between the valence of the metal and the vitamin concentration? Explain.