

Guest Hollow's

High School Chemistry in the Kitchen Curriculum

*Adaptable for
Middle School*

Living books, no crazy
labs, no math, recipes
you can eat...

Practical chemistry you
can use in real life!



Week 1	Complete all recipes and activities with responsible adult supervision.				
	Day 1	Day 2	Day 3	Day 4	Day 5
The Chemistry of Food & Cooking					
Some of the science topics this week: Ratios, density, measurement, chemistry of whipped cream, disulfide bridge, how to read structural formulas, carbonic acid, ionic bonds					
<u>Culinary Reactions</u>	Introduction Chapter 1 Measuring and Weighing p. 1-5 (Stop at Calorie Estimation.)	p. 5-7		Chapter 2 Foams p. 9-14	p. 15-24 (Stop at Gelatin Foam.)
Activities	<u>Make a homemade hydrometer</u> , or watch the video linked in the videos.	Estimate the calories in several packaged or canned items you have at home.			p. 16-18 Make bread using the basic bread recipe in the book, or any other bread recipe.
Online Reading			<u>Units of Measurement in Chemistry</u>		
Additional Reading					
<u>Dr. Joe and What You Didn't Know</u>	Question 1 - Cochineal red dye	Question 2 - Carbamide peroxide	Question 3 - CFC's	Question 4 - Snake venom	Question 5 - Henry's Law, the bends
Mixing History & Chemistry					
<u>The Mystery of the Periodic Table</u>	Chapters 1-2 The Puzzle	Chapters 3-4 Optional activities: Distill salt water Acid reaction	Chapters 5-6	Chapters 7-8 Optional activity: Make a pneumatic trough	Chapters 9-10
Learning About the Periodic Table					
<u>Elements</u>	Look over the introduction p. 1-14	p. 15-16 <u>Hydrogen</u>	p. 16-17 <u>Helium</u>	p. 18-19 <u>Lithium</u>	p. 20-21 <u>Beryllium</u>
The Periodic Table of Videos		<u>Hydrogen</u>	<u>Helium</u>	<u>Lithium</u>	<u>Beryllium</u>
Activities & Assignments					
Printables					

Videos					
	<p>Make a hydrometer</p> <p>TED-Ed: How big is a mole?</p> <p>Take the video quiz here.</p> <p>Cochineal Bugs Create Red Dye</p> <p>Spangler Science: Float or Sink Density Experiment</p> <p>Density: A Story of Archimedes</p>	<p>Mythbusters Hindenburg Mystery</p> <p>TED-Ed: What is a calorie?</p> <p>What triggers a chemical reaction? (enthalpy and entropy)</p> <p>The Periodic Table of Videos: Exploding Hydrogen Bubbles</p>	<p>Naked Science Scrapbook: Why does helium make your voice sound funny?</p>		<p>Ionic bonds</p> <p>What's the big deal with gluten?</p> <p>55-gallon drum crushed – This is the empty soda can experiment on p. 24 of Culinary Reactions, only much bigger, lol...</p> <p>How Heavy is Air?</p> <p>Why don't whales get the bends?</p>
Online					
	<p>Optional: Mystery of the Periodic Table chapter questions</p>			<p>The Science of Whipped cream article – We will make some crème fraiche in week 13! You may want to bookmark this article.</p>	<p>Ionic bonding – PBS interactive</p>

Week 2	Complete all recipes and activities with responsible adult supervision.				
	Day 1	Day 2	Day 3	Day 4	Day 5
The Chemistry of Food & Cooking					
Some of the science topics this week: denature gelatin, breaking up sucrose with an acid, covalent bonds, emulsions, water molecules, phospholipids, hydrogen bonds, monoglycerides, diglycerides, polysorbates					
<u>Culinary Reactions</u>	p. 24-27 (Stop at sugar foam.)	p. 27-35	Chapter 3 Emulsions p. 36-44 (Stop at Other Emulsifiers.)		p. 44-45
Activities – Choose one or more recipes.	<u>Make homemade marshmallows</u>	p. 29 – 35 Optional recipe: Whipped creamsicle topping NOTE: Make sure all items / chemicals / ingredients are food grade, and approved by the USDA, before using in a recipe!		Make Eggs Benedict (See video linked below.)	
Additional Reading					
<u>Dr. Joe and What You Didn't Know</u>	Question 6 – Wine vinegar	Question 7 – Gel candles	Question 8 - Dalton and color blindness	Question 9 - Acrylamide	Question 10 - Fizz Keeper
Mixing History & Chemistry					
<u>The Mystery of the Periodic Table</u>	Chapters 11-12	Chapters 13-14	Chapters 15-16	Chapters 17-18	Elements Listed by Date of Discovery (End!)
Learning About the Periodic Table					
<u>Elements</u>	p. 22-23 <u>Boron</u>	p. 24-25 <u>Carbon</u>	p. 26-27 <u>Nitrogen</u>	p. 28-29 <u>Oxygen</u>	p. 30-31 <u>Fluorine</u>
The Periodic Table of Videos	<u>Boron</u>	<u>Carbon</u>	<u>Nitrogen</u>	<u>Oxygen</u>	<u>Fluorine</u>
	<u>Introducing Boron</u>			<u>Introducing Oxygen</u>	
Activities & Assignments					
Printables					

Videos					
	<p>TED-Ed: How Atoms Bond</p> <p>Take the video quiz here.</p> <p>Dogs Teaching Chemistry: Chemical Bonds</p> <p>How to Make Homemade Marshmallows</p>	<p>Chemical bonds song by Mr. Edmonds</p> <p>SciShow: Why Do Atoms Bond?</p>	<p>Chemical Bonds: Covalent vs. Ionic</p> <p>How to unboil an egg</p> <p>Emulsifiers</p>	<p>Octet Rule Song</p> <p>The genius of Mendeleev's periodic table</p> <p>How to Make Eggs Benedict</p> <p>Food Science 101: What is an emulsion?</p>	<p>Solving the puzzle of the periodic table</p> <p>Food Science 101: How Emulsifiers and Stabilizers work</p> <p>Food Science 101: The Emulsification Process</p>
Online					
			<p>Color blindness test</p>		