

## Conceptual Chemistry Power Standards by Quarter (6/23/08)

	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Goal 1 Inquiry	<p>Collect, organize and analyze data accurately and precisely, using appropriate instruments, equipment and units.</p> <p>Emphasis on: 1. Laboratory skills 2. Collecting and organizing data</p>	<p>Collect, organize and analyze data accurately and precisely, using appropriate instruments, equipment and units.</p> <p>Emphasis on: 1. Laboratory skills 2. Graphing skills</p>	<p>Collect, organize and analyze data accurately and precisely, using appropriate instruments, equipment and units.</p> <p>Emphasis on: 1. Laboratory skills 2. Interpreting and analyzing data</p>	<p>Collect, organize and analyze data accurately and precisely, using appropriate instruments, equipment and units.</p> <p>Emphasis on: 1. Laboratory skills 2. Formulating conclusions</p>
Goal 2 Content	<p><b>Science Background</b> 3. Recognize the fundamental characteristics of matter and the metric units that are used to measure them.</p> <p><b>Elements</b> 4. Explain how elements are represented on the periodic table and relate this information to their physical and chemical properties.</p> <p><b>Atoms and Subatomic Particles</b> 5. Investigate the atomic and nuclear structure of matter including historical atomic theories.</p>	<p><b>Nuclear Chemistry</b> 3. Distinguish between types and risks of nuclear radiation and their effects on the atoms that release them.</p> <p><b>Atomic Models</b> 4. Describe the quantum mechanical view of the atom and compare and contrast elements based on their configurations.</p> <p><b>Shapes and Bonding</b> 5. Explain how an elements position on the periodic table can be used to determine valence electrons and predict the number and type of bonds</p>	<p><b>Molecular Mixing</b> 3. Explain solution vocabulary and how solubility changes with temperature and pressure.</p> <p><b>Water</b> 4. Explain how the molecular structure of water relates to its physical characteristics.</p> <p><b>Chemical Reactions</b> 5. Complete and balance chemical equations and relate to the matter/energy changes they represent.</p>	<p><b>Acids and Bases</b> 3. Compare and contrast acids and bases, including the concepts of pH and neutralization.</p> <p><b>Oxidation and Reduction</b> 4. Describe oxidation and reduction and identify real life applications.</p> <p><b>Organic Chemistry</b> 5. Compare and contrast organic and inorganic compounds and classify them by their functional groups.</p>
Goal 3 Connections	6. Demonstrate lab safety procedures and accepted practices of science.	6. Identify important contributions, both historical and current, that have been made by individuals and groups from various cultures to our understanding of chemistry.	6. Explain how chemistry concepts are used in various occupations.	6. Describe how scientific knowledge and explanations may change with new information over time.