

Acids and Bases— National Science Education Standards



Experiments and Demonstrations

Content Standards

	Properties of Acids and Bases	Natural Indicators	Measuring Acid Strength	Classic Titration	Microscale Titration	Buffers: Keep the Balance	Indicator-Sponge	The Rainbow Tube	Upset Tummy? MOM to the Rescue!	Strong vs. Weak Acids	Buffer Balancing Acts
Unifying Concepts and Processes											
Systems, order, and organization	✓					✓					✓
Evidence, models, and explanation	✓	✓	✓			✓	✓		✓	✓	✓
Constancy, change, and measurement	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
Evolution and equilibrium			✓			✓			✓		✓
Form and function											
Science as Inquiry											
Identify questions and concepts that guide scientific investigation	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
Design and conduct scientific investigations	✓	✓	✓	✓	✓	✓				✓	✓
Use technology and mathematics to improve scientific investigations			✓	✓	✓						
Formulate and revise scientific explanations and models using logic and evidence	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
Recognize and analyze alternative explanations and models	✓		✓			✓			✓	✓	✓
Communicate and defend a scientific argument											
Understanding scientific inquiry	✓	✓	✓				✓		✓		
Physical Science											
Structure of atoms											
Structure and properties of matter	✓	✓	✓			✓			✓	✓	✓
Chemical reactions	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Motions and forces											
Conservation of energy and the increase in disorder											
Interactions of energy and matter											

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Science and Technology											
Identify a problem or design an opportunity				✓							
Propose designs and choose between alternative solutions											
Implement a proposed solution											
Evaluate the solution and its consequences											
Communicate the problem, process, and solution											
Understand science and technology				✓							
Science in Personal and Social Perspectives											
Personal and community health						✓					✓
Population growth											
Natural resources						✓					✓
Environmental quality						✓					✓
Natural and human-induced hazards						✓					✓
Science and technology in local, national, and global challenges											
History and Nature of Science											
Science as a human endeavor		✓									
Nature of scientific knowledge	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
Historical perspectives	✓	✓									