



**NEVADA**  
**Physical Science Content Standards for Grade 8**  
***The Nature of Matter K***  
***Chemistry L***  
***Motion, Forces, and Energy M***  
***Electricity and Magnetism N***  
***Waves, Sound, and Light O*** © 2005

OBJECTIVES	PAGE REFERENCES
<b>Physical Science</b>	
<b>Content Standard 1.0: Forces and Motion</b> — <i>Students understand that forces such as gravitational, electrical, and magnetic influence the motion of objects.</i>	
By the end of <b>Grade 8</b> , students know and are able to do everything required in previous grades and:	
1.8.1 Investigate and describe that multiple forces acting on an object along a straight line affect the motion of an object. M 7.8.2; M 9.8.3	I/S (M) 36-41, 42-47 <i>Launch LAB 35</i> <i>MiniLAB 40</i> <i>LAB 56-57</i> IL 12 QD 38 A 38 VL 44, 46 SJ 45, 47 R 48
1.8.2 Describe the force ( <b>gravity</b> ) which makes objects fall and planets move in their orbits.	E/S (M) 43-44, 46-47 <i>Integrate History 43</i> CC 43 D 46
1.8.3 Investigate and describe that certain physical principles are used in the design and function of simple machines.	I/S (M) 109-115 <i>National Geographic 113</i> <i>MiniLAB 114</i> <i>LAB 116-117</i> IL 110 DI 110, 113 A 111 LD 112 VL 114 AIL 116
1.8.4 Investigate and describe that buoyancy changes the apparent weight of an object immersed in a fluid. M 2.8.2; M 9.8.3	I/S (M) 74-80 <i>LAB 81</i> D 76, 79 A 77 QD 77 VL 79

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1.8.5 Investigate and explain that electric current produces magnetic forces, and moving magnets produce electric forces in <b>conductors</b> .	I/S (N) 45-55 <i>MiniLAB</i> 46 <i>National Geographic</i> 47 <i>LAB</i> 56-57 VL 46, 48 QD 48 LD 50 IL 51
<b>Content Standard 2.0: Structure and Properties of Matter</b> — <i>Students understand that materials have distinct properties which depend on the amount of matter present, its chemical composition, and structure.</i>	
By the end of <b>Grade 8</b> , students know and are able to do everything required in previous grades and:	
2.8.1 Use simple models to explain observed properties of matter (e.g., use a particle model to account for the states of matter).	E/S (K) 40-44, 45-52, 73 <i>National Geographic</i> 48 MM 41, 73 DI (Challenge) 41 A 48
2.8.2 Separate <b>substances</b> based on their physical and chemical properties (e.g., color, solubility, <b>chemical reactivity</b> , melting point, boiling point).	E/S (K) 25-29, 72-76 <i>MiniLAB</i> 25, 75 <i>Applying Science</i> 27 <i>LAB</i> 30-31, 77 AIL 30 D 73
2.8.3 Use models or drawings to explain how atoms may join together to form molecules or large groups of molecules.	I/S (K) 25-26 TPK 25 DI 27 MM 73 (L) 8-15, 16-24 <i>MiniLAB</i> 14, 19 <i>National Geographic</i> 22 <i>LAB</i> 25, 26-27 MM 22
2.8.4 Explain that all atoms are made up of protons, neutrons, and electrons.	E/S (K) 8-17, 21-22 <i>MiniLAB</i> 15 D 14 SJ 14 DI 16 LD 21
2.8.5 Explain that liquids, solids, and gases are systems of particles.	I/S (K) 40-44, 45-52 <i>National Geographic</i> 48 A 42, 48 LD 43
2.8.6 Explain that various elements combine in a multitude of ways to produce all known living and non-living substances.	E/S (K) 18, 105-111, 112-114 SJ 106 MM 107 (L) 16-21, 96-100, 108-115 <i>MiniLAB</i> 19 DI 97

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<b>Content Standard 3.0: Energy and Matter: Interactions and Forms</b> — <i>Students understand that changes in temperature and pressure can alter states of matter. Energy exists in many forms, and one form can change into another.</i>	
By the end of <b>Grade 8</b> , students know and are able to do everything required in previous grades and:	
3.8.1 Investigate and describe how heat moves from one object to another at different rates, depending on what the objects are made of and whether they are touching each other.	E/L (M) 162-165 <i>MiniLAB</i> 164, 165 <i>LAB</i> 168, 174-175 DI 165 VL 165 LD 166 CA 167
3.8.2 Investigate and describe how all phase changes are accompanied by changes in energy.	E/S (K) 45-52 <i>National Geographic</i> 48 <i>MiniLAB</i> 50 IM 47 DI 48 D 49 QD 51
3.8.3 Investigate and describe how waves transfer energy and move at different speeds in different materials.	I/S (O) 8-12, 17, 20 <i>LAB</i> 18, 26-27 MM 9 IM 9, 22
3.8.4. Investigate, create, and describe parallel, series, and combination circuits.	I/S (N) 20-23 <i>MiniLAB</i> 22 <i>LAB</i> 27, 28-29 MM 21 VL 22 QD 23 AIL 28
3.8.5 Investigate and describe how energy may be transferred into or out of a system or object in many ways and readily changes forms.	E/S (M) 131-137 <i>MiniLAB</i> 133 <i>National Geographic</i> 134 <i>LAB</i> 138 IM 124F LD 132 QD 133 D 135
3.8.6 Identify the energy involved in a particular process as potential (energy of position and stored chemical energy) or kinetic (energy of motion).	E/S (M) 126-130 <i>Launch LAB</i> 125 IL 127 USW 128 SJ 129 DI 129 D 129 CU 130

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<b>Content Standard 4.0: Chemical Reaction</b> — <i>Students understand that chemical reactions change substances into different substances.</i>	
By the end of <b>Grade 8</b> , students know and are able to do everything required in previous grades and:	
4.8.1 Investigate and describe how in <b>chemical reactions</b> , the total mass is conserved and the elements involved do not change into other elements.	E/S (K) 87 (L) 40-41 <i>MiniLAB</i> 40 <i>Applying Math</i> 42 VL 40 DI 41 A 41
4.8.2 Investigate and describe how the rate of a chemical reaction can be influenced by variables such as temperature, <b>pH</b> , and light.	E/S (L) 46-52 <i>MiniLAB</i> 50 D 48 A 48 IL 49 QD 49 LD 51
4.8.3 Investigate and describe how materials may give off heat or light when they react chemically with each other.	E/S (L) 42-44 <i>LAB</i> 54-55 QD 39 USW 43 D 43 VL 44 SJ 44
4.8.4 Predict common properties of elements using the Periodic Table.	E/S (K) 98-104, 105-111, 112-116 <i>Applying Science</i> 103 <i>National Geographic</i> 115 <i>LAB</i> 117 D 100 SJ 101, 102 DI 102 IL 110
<b>Content Standard 5.0: Nuclear Energy and Electromagnetic Energy</b> — <i>Students understand that nuclear energy and electromagnetic energy are produced from both natural and human-made sources in many forms.</i>	
By the end of <b>Grade 8</b> , students know and are able to do everything required in previous grades and:	
5.8.1 Investigate and describe how light interacts with matter by moving through the matter, being absorbed by matter, or being scattered by the matter.	I/S (O) 96-98, 101-103 <i>LAB</i> 107 IM 94F D 99 TPK 101 A 102, 103 MM 102 VL 102
5.8.2 Describe some applications of <b>radioactive isotopes</b> including using nuclear energy to produce heat. H 10.8.1	W/L (M) 141 QD 141

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5.8.3 Compare and contrast between high and low level nuclear wastes and their associated hazards. H 10.8.3	I/S (M) 141 AIL 148
5.8.4 Investigate and describe how the sun produces energy in a range of wavelengths within the <b>electromagnetic spectrum</b> .	E/S (O) 73-76 <i>National Geographic</i> 78 D 75 UA 76
5.8.5 Compare and contrast the nuclear processes that occur in the sun and stars as well as in nuclear reactors.	I/S (M) 141 FF 141
5.8.6 Explain how nuclear reactions convert small amounts of matter into a relatively large amount of energy.	W/L (M) 137, 141 QD 141 FF 141
<b>The Nature and History of Science</b>	
<b>Content Standard 18.0: Scientific, Historical, and Technological Perspectives</b> — <i>Students understand that science is a unique way of knowing about things. Many men and women have contributed to the traditions of science. The ability to pursue activities and careers in science is accessible to people from all cultures and all levels of ability.</i>	
By the end of <b>Grade 8</b> , students know and are able to do everything required in previous grades and:	
18.8.1 Explain that scientific investigations involve the use of logic, respect for the rules of evidence, openness to criticism, and public reporting of methods and procedures. C 5.8.6	E/S (K) 128-136 <i>Communicating Your Data</i> 24 LAB 88-89 CYD 53 VL 75 (L) M 2 (M) LAB 26-27 <i>Communicating Your Data</i> 117 (N) CYD 57 (O) 4-5
18.8.2 Explain that scientific inquiry done in a school setting is similar to what scientists do.	I/L (K) LAB 62-63 MM 13 (L) LAB 116-117 (M) LAB 26-27, 55, 88-89, 116-117 QD 5
18.8.3 Explain, using examples, that ancient peoples provided knowledge about the natural world that is still regarded as valid today, even though that knowledge may not have originated by scientific methods.	I/L (K) 8 <i>Science and History</i> 32 HS 32 CD 80 (L) <i>Science and Society</i> 118 (M) 2-3, 77 CD 52, 111 (O) <i>Oops!</i> 120 CD 20

OBJECTIVES	PAGE REFERENCES
<p>18.8.4 Explain that scientists may work in teams and some may work alone, but all communicate extensively with each other.</p>	<p>E/L (K) 2-5, 8-17 CD 10 TFYI 13 CC 14 (L) <i>Science and Society</i> 118 HS 56 (M) DI 151 (N) 2-5 D 3 UA 5 (O) 2-5 <i>You Do It</i> 5 CB 5</p>
<p>18.8.5 Explain that scientific inquiry and technological design have similarities and differences. Scientists propose explanations for questions about the natural world and engineers propose solutions relating to human problems, needs, and aspirations.</p>	<p>W/L (K) 2-4 <i>You Do It</i> 5 <i>National Geographic</i> 115 (L) 2-5 E 5 (M) <i>Science and Society</i> 58, 118 (N) CC 20 SJ 80 (O) <i>Science and History</i> 88 CC 41</p>
<p>18.8.6 Explain that scientific knowledge is revised through a process of incorporating new evidence gained through continual investigation.</p>	<p>E/S (K) 9-17, 98-99 <i>National Geographic</i> 20 MM 13 (M) 39 (O) 113-115 <i>National Geographic</i> 78</p>
<p>18.8.7 Identify and describe how science is subject to strengths and limitations related to other human social and intellectual activities.</p>	<p>I/L (L) 4-5 (M) CC 38 Class discussion can include viewpoints of other disciplines, i.e., philosophy, religion, medicine, social sciences, etc.</p>
<p><b>Content Standard 19.0: Reasoning and Critical Response Skills</b>—<i>Students understand that many decisions require critical consideration of scientific evidence.</i></p>	
<p>By the end of <b>Grade 8</b>, students know and are able to do everything required in previous grades and:</p>	
<p>19.8.1 Identify and evaluate critically the use of statistics, data, and graphs. E 2.8.4; E 4.8.4; G 7.8.3; M 5.8.5; M 6.8.5; M 7.8.12</p>	<p>E/S (K) 132-134, 152, 159-160 <i>LAB</i> 53 (L) <i>LAB</i> 54-55, 86-87 (M) <i>LAB</i> 103, 168 (O) <i>LAB</i> 26-27, 118-119</p>
<p>19.8.2 Give examples of human activities with their associated benefits, costs, and risks. Ec 1.8.3</p>	<p>I/L (K) <i>LAB</i> 118-119 (L) 50 <i>Integrate History</i> 51 <i>National Geographic</i> 80 (M) 141, 167 <i>Science and Society</i> 58, 176 DI 141 AIL 148</p>

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19.8.3 Analyze and describe a system for efficiency, optimal function, and possible sources of malfunction. M 6.8.2; M 6.8.9	W/L (L) 46-51 IL 49 (M) LAB 26-27, 56-57, 116-117 AIL 116 (N) LAB 56-57 AIL 56
19.8.4 Critically evaluate information to distinguish between fact and opinion when responding to information. C 4.8.4; E 4.8.4	E/S (K) 135-136 (L) 5 You Do It 5 E 5 (O) 5

### Codes Used for TWE Pages

A	Activity
AIL	Alternative Inquiry Lab
CA	Check Assessment
CB	Content Background
CC	Curriculum Connection
CD	Cultural Diversity
CU	Check for Understanding
CYD	Communicating Your Data
D	Discussion
DI	Differentiated Instruction
E	Extension
FF	Fun Fact
HS	Historical Significance
IL	Inquiry Lab
IM	Identifying Misconceptions
LD	Lab Demonstration
M	Motivate
MM	Make a Model
QD	Quick Demo
R	Reteach
SJ	Science Journal
TPK	Tie to Prior Knowledge
UA	Use an Analogy
USW	Use Science Words
VL	Visual Learning