



**MASSACHUSETTS**  
**Science and Technology/Engineering Curriculum Framework**  
**Physical Sciences (Chemistry and Physics), Grades 6-8**  
*The Nature of Matter K*  
*Chemistry L*  
*Motion, Forces, and Energy M*  
*Electricity and Magnetism N*  
*Waves, Sound, and Light O* © 2005

LEARNING STANDARD	PAGE REFERENCES
<b>Properties of Matter</b>	
1. Differentiate between weight and mass, recognizing that weight is the amount of gravitational pull on an object.	(K) 74 (M) 19, 43-44, 53 IM 20 DI 43
2. Differentiate between volume and mass. Define density.	(K) 59, 74 <i>Applying Math</i> 59 <i>MiniLAB</i> 74 A 59, 74 QD 76 (M) 78 <i>Applying Science</i> 78
3. Recognize that the measurement of volume and mass requires understanding of the sensitivity of measurement tools (e.g., rulers, graduated cylinders, balances) and knowledge and appropriate use of significant digits.	(K) <i>Science Skill Handbook</i> 133-134 <i>Math Skill Handbook</i> 156-158
4. Explain and give examples of how mass is conserved in a closed system.	(K) 87 <i>Section Review</i> 87 (L) 40 <i>MiniLAB</i> 40 <i>Applying Math</i> 42 <i>Section Review</i> 45 VL 40 DI 41 A 41
<b>Elements, Compounds, and Mixtures</b>	
5. Recognize that there are more than 100 elements that combine in a multitude of ways to produce compounds that make up all of the living and nonliving things that we encounter.	(K) 18, 105-111, 112-114 SJ 106 MM 107 (L) 16-21, 96-100, 108-115 <i>MiniLAB</i> 19 DI 97

LEARNING STANDARD	PAGE REFERENCES
6. Differentiate between an atom (the smallest unit of an element that maintains the characteristics of that element) and a molecule (the smallest unit of a compound that maintains the characteristics of that compound).	(K) 8, 18 D 27 DI 27 (L) 19-21, 70 <i>MiniLAB</i> 19 IL 20 VL 23
7. Give basic examples of elements and compounds.	(K) 18, 25-26 <i>LAB</i> 24 <i>MiniLAB</i> 26 TPK 18, 25 A 19, 20 DI 19 D 27
8. Differentiate between mixtures and pure substances.	(K) 27-29 <i>LAB</i> 30-31 A 27 QD 28 (L) 64-69 MM 65 QD 66 DI 67 R 69
9. Recognize that a substance (element or compound) has a melting point and a boiling point, both of which are independent of the amount of the sample.	(K) 47, 50, 74 LD 74 VL 75 CA 77
10. Differentiate between physical changes and chemical changes.	(K) 78-85 <i>MiniLAB</i> 81 QD 79, 80, 83 D 81, 85 IL 82 SJ 82 A 86
<b>Motion of Objects</b>	
11. Explain and give examples of how the motion of an object can be described by its position, direction of motion, and speed.	(M) 8-12 <i>MiniLAB</i> 11 A 9, 12 IM 10 VL 11 R 13
12. Graph and interpret distance vs. time graphs for constant speed.	(M) 12 <i>Section Review</i> 13 A 12 DI 12 CC 12 CU 13 CA 13

LEARNING STANDARD	PAGE REFERENCES
<b>Forms of Energy</b>	
13. Differentiate between potential and kinetic energy. Identify situations where kinetic energy is transformed into potential energy and vice versa.	(M) 127-128, 132 <i>MiniLAB</i> 133 IL 127 USW 128 CU 130 LD 132
<b>Heat Energy</b>	
14. Recognize that heat is a form of energy and that temperature change results from adding or taking away heat from a system.	(K) 46 SJ 46 (M) 158-162 <i>LAB</i> 168
15. Explain the effect of heat on particle motion through a description of what happens to particles during a change in phase.	(K) 47-51 <i>National Geographic</i> 48 <i>Section Review</i> 52 IM 47 A 48 (M) IL 163
16. Give examples of how heat moves in predictable ways, moving from warmer objects to cooler ones until they reach equilibrium.	(K) 46 SJ 46 (M) 162-164 <i>MiniLAB</i> 165 <i>LAB</i> 174-175 A 128 LD 166 CA 175

### Codes Used for TWE Pages

A	Activity
CA	Check Assessment
CC	Curriculum Connection
CU	Check for Understanding
D	Discussion
DI	Differentiated Instruction
IL	Inquiry Lab
IM	Identifying Misconceptions
LD	Lab Demonstration
MM	Make a Model
QD	Quick Demo
R	Reteach
SJ	Science Journal
TPK	Tie to Prior Knowledge
USW	Use Science Words
VL	Visual Learning