

## Alabama Eighth Grade Course of Study

### Alignment to Science Modules

1.	Identify steps within the scientific process.	EMM Lessons 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15, 18, 19, 21 POM Lessons 1-8, 11-18, 20-25
	<ul style="list-style-type: none"> <li>Applying process skills to interpret data from graphs, tables, and charts</li> </ul>	EMM Lessons 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15, 18, 19, 21 POM Lessons 1-8, 11-18, 20-25
	<ul style="list-style-type: none"> <li>Identifying controls and variables in a scientific investigation</li> </ul>	EMM Lessons 4, 5, 6, 7, 8, 9, 11, 13, 14, 15, 18, 19, 21 POM Lessons 1-8, 11-18, 20-25
	<ul style="list-style-type: none"> <li>Measuring dimension, volume, and mass using SI units</li> </ul>	EMM Lessons 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15, 18, 19, 21 POM Lessons 1-8, 11-18, 20-25
	<ul style="list-style-type: none"> <li>Identifying examples of hypotheses</li> </ul>	EMM Lessons 2, 3, 4, 5, 6, 7, 8, 9, 11, 13, 14, 15, 18, 19, 21 POM Lessons 1-8, 11-18, 20-25
	<ul style="list-style-type: none"> <li>Identifying appropriate laboratory glassware, balances, time measuring equipment, and optical instruments used to conduct an investigation</li> </ul>	EMM Lessons 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15, 18, 19, 21 POM Lessons 1-8, 11-18, 20-25
2.	Describe the structure of atoms, including the location of protons, neutrons, and electrons.	POM Extra: Atomic Model of Matter
	<ul style="list-style-type: none"> <li>Identifying the charge of each subatomic particle</li> </ul>	POM Extra: Atomic Model of Matter
	<ul style="list-style-type: none"> <li>Identifying Democritus and Dalton as contributors to the atomic theory</li> </ul>	POM Extra: Atomic Model of Matter
3.	Determine the number of protons, neutrons, and electrons, and the mass of an element using the periodic table.	POM Extra: Adopt and Element, Mr. and Miss Periodic Table
	<ul style="list-style-type: none"> <li>Locating metals, nonmetals, and noble gases on the periodic table</li> </ul>	POM - Lesson 21, 22
	<ul style="list-style-type: none"> <li>Using data about the number of electrons in the outer shell of an atom to determine its reactivity</li> </ul>	POM Extra: Modeling Electron Dot Diagrams

4.	State the law of conservation of matter.	POM Lessons 8, 14 Extra: Are You Ready for a Change?, Balancing Chemical Equations, Solid + Liquid = Gas	POM
	<ul style="list-style-type: none"> <li>Balancing chemical equations by adjusting coefficients</li> </ul>	POM Extra: Balancing Chemical Equations	
5.	differentiate between ionic and covalent bonds.	POM Lessons 16, 22 POM Extra: Modeling Electron Dot Diagrams	
	<ul style="list-style-type: none"> <li>Illustrating the transfer or sharing of electrons using electron dot diagrams</li> </ul>	POM Extra: Modeling Electron Dot Diagrams	
6.	Define solution in terms of solute and solvent.	POM Lessons 12, 13, 15, 17, 18 Extra: What's in the bag?	POM
	<ul style="list-style-type: none"> <li>Defining diffusion and osmosis</li> </ul>	POM Lesson 15, ext. 4 (also Lesson 6 with added vocab.) POM Extra: What's in the bag?	
	<ul style="list-style-type: none"> <li>Defining isotonic, hypertonic, and hypotonic solutions</li> </ul>	POM Lesson 6 (with added vocab.) POM Extra: What's in the bag?	
	<ul style="list-style-type: none"> <li>Describing acids and bases based on their hydrogen ion concentration</li> </ul>	POM Extra: In a Jam	
7.	Describe states of matter based on kinetic energy of particles in matter.	POM Lessons 5, 6, 7, 18 ext. 2 Extra: Molecular Matters, Are You Ready for a Change?, B.B. Matter, Solid + Liquid = Gas	POM
	<ul style="list-style-type: none"> <li>Explaining effects of temperature, concentration, surface area, and catalysts on the rate of chemical reactions</li> </ul>	POM Lesson 1, 23, 24, 25 Extra: Chemical Kinetics	POM
8.	Identify Newton's three laws of motion	EMM--Lessons 5, 6, 7, 8, 9, 11, 12, 13, 14, 15, 17, 18, 19, 21	
	<ul style="list-style-type: none"> <li>Defining terminology such as <i>action and reaction forces</i>, <i>inertia</i>, <i>acceleration</i>, <i>momentum</i>, and <i>friction</i></li> </ul>	EMM--Lessons 5, 6, 7, 8, 9, 11, 12, 13, 14, 15, 17, 18, 19, 21	
	<ul style="list-style-type: none"> <li>Interpreting distance-time graphs</li> </ul>	EMM--Lessons 1, 18, 19, 21	
9.	Describe how mechanical advantages of simple machines reduce the amount of force needed for work.	EMM--Lessons 7, 11, 12, 13, 14, 15, 17, 21	
	<ul style="list-style-type: none"> <li>Describing the effect of force on pressure in fluids Example: increasing force on fluid leading to increase of pressure within a hydraulic cylinder</li> </ul>	POM Lesson 7 ext. 2 Extra: Making a Cartesian Diver	POM
10.	Differentiate between potential and kinetic energy. Examples: potential-rock resting at the top of a hill, kinetic-rock rolling down a hill	EMM--Lessons 2, 3, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15, 17, 18, 19, 20, 21	

11.	Explain the law of conservation of energy and its relationship to energy transformation, including chemical to electrical, chemical to heat, electrical to light, electrical to mechanical, and electrical to sound.	EMM--Lessons 2, 3, 4, 7, 8, 9, 17, 18, 19, 20, 21
12.	Classify waves as mechanical or electromagnetic. Examples: mechanical-earthquake waves; electromagnetic-ultraviolet light waves, visible light waves	
	<ul style="list-style-type: none"> <li>Describing how earthquake waves, sound waves, water waves, and electromagnetic waves can be destructive or beneficial due to the transfer of energy</li> </ul>	EMM--Lesson 9 (Reading page 89-91)
	<ul style="list-style-type: none"> <li>Describing longitudinal and transverse waves</li> </ul>	
	<ul style="list-style-type: none"> <li>Describing how waves travel through different media</li> </ul>	
	<ul style="list-style-type: none"> <li>Relating wavelength, frequency, and amplitude to energy</li> </ul>	
	<ul style="list-style-type: none"> <li>Describing the electromagnetic spectrum in terms of frequencies Example: electromagnetic spectrum in increasing frequencies- microwaves, infrared light, visible light, ultraviolet light, X rays</li> </ul>	