



## Alignment Document

### State of Louisiana And Aventa Learning Physical Science

#### Physical Science 2005-2007 Benchmark Blueprint

State Standard Number	State Standard Area / Description	Unit Name	Course Topic Description
IS	Science as Inquiry		
0	The Abilities Necessary to Do Scientific Inquiry		
SI.1	Write a testable question or hypothesis when given a topic	Doing Science	Scientific method
SI.2	Describe how investigations can be observation, description, literature survey, classification, or experimentation		
SI.3	Plan and record step-by-step procedures for a valid investigation, select equipment and materials, and identify variables and controls	Doing Science	Experimental set up
SI.4	Conduct an investigation that includes multiple trials and record, organize, and display data appropriately	Doing Science	Experimental set up
SI.5	Utilize mathematics, organizational tools, and graphing skills to solve problems	Doing Science	Experimental set up
SI.6	Use technology when appropriate to enhance laboratory investigations and presentations of findings		
SI.7	Choose appropriate models to explain scientific knowledge or experimental results (e.g., objects, mathematical relationships, plans, schemes, examples, role-playing, computer simulations)		
SI.8	Give an example of how new scientific data can cause an existing scientific explanation to be supported, revised, or rejected		



SI.9	Write and defend a conclusion based on logical analysis of experimental data	Doing Science	Experimental set up
SI.10	Given a description of an experiment, identify appropriate safety measures		
0	Understanding Scientific Inquiry		
SI.11	Evaluate selected theories based on supporting scientific evidence	Doing Science	Scientific method
SI.12	Cite evidence that scientific investigations are conducted for many different reasons		
SI.13	Identify scientific evidence that has caused modifications in previously accepted theories		
SI.14	Cite examples of scientific advances and emerging technologies and how they affect society (e.g., MIR, DNA in forensics)		
SI.15	Analyze the conclusion from an investigation by using data to determine its validity	Doing Science	Experimental set up
SI.16	Use the following rules of evidence to examine experimental results:		
SI.16.a	Can an expert's technique or theory be tested, has it been tested, or is it simply a subjective, conclusive approach that cannot be reasonably assessed for reliability?		
SI.16.b	Has the technique or theory been subjected to peer review and publication?		
SI.16.c	What is the known or potential rate of error of the technique or theory when applied?		
SI.16.d	Were standards and controls applied and maintained?		
SI.16.e	Has the technique or theory been generally accepted in the scientific community?		
PS	Physical Science		
0	Measurement and Symbolic Representation		
PS.1	Measure the physical properties of different forms of matter in metric system units (e.g., length, mass, volume, temperature)	Matter	Matter
		Matter	States of Matter
		Matter	System Units
		Matter	Length
		Matter	Changes in Matter
		Doing Science	SI Units and symbols
PS.2	Gather and organize data in charts, tables, and graphs		



PS.3	Distinguish among symbols for atoms, ions, molecules, and equations for chemical reactions	Chemical Bond	Ionic Bonds
		Atomic Structure	The Periodic Table
		Atomic Structure	Protons, Neutrons, and Electrons
PS.4	Name and write chemical formulas using symbols and subscripts	Atomic Structure	The Periodic Table
0	Atomic Structure		
PS.5	Identify the three subatomic particles of an atom by location, charge, and relative mass	Atomic Structure	Protons, Neutrons, and Electrons
PS.6	Determine the number of protons, neutrons, and electrons of elements by using the atomic number and atomic mass from the periodic table	Matter	Elements and Compounds
		Atomic Structure	The Periodic Table
		Atomic Structure	Protons, Neutrons, and Electrons
PS.7	Describe the results of loss/gain of electrons on charges of atoms	Atomic Structure	Protons, Neutrons, and Electrons
PS.8	Evaluate the uses and effects of radioactivity in people's daily lives		
PS.9	Compare nuclear fission to nuclear fusion	Atomic Structure	Nuclear Process
PS.10	Identify the number of valence electrons of the first 20 elements based on their positions in the periodic table	Atomic Structure	Protons, Neutrons, and Electrons
		Atomic Structure	History of the Periodic Table
0	The Structure and Properties of Matter		
PS.11	Investigate and classify common materials as elements, compounds, or mixtures (heterogeneous or homogeneous) based on their physical and chemical properties	Matter	Elements and Compounds
		Matter	Mixtures
		Matter	Changes in Matter
PS.12	Classify elements as metals or nonmetals based on their positions in the periodic table	Chemical Bond	Metallic Bonding
		Atomic Structure	The Periodic Table
PS.13	Predict how factors such as particle size and temperature influence the rate of dissolving		
PS.14	Investigate and compare methods for separating mixtures by using the physical properties of the components	Matter	Changes in Matter



PS.15	Using selected elements from atomic numbers 1 to 20, draw Bohr models	Atomic Structure	Atomic Theory
		Atomic Structure	Protons, Neutrons, and Electrons
PS.16	Name and write the formulas for simple ionic and covalent compounds		
PS.17	Name and predict the bond type formed between selected elements based on their locations in the periodic table	Matter	Elements and Compounds
		Atomic Structure	The Periodic Table
PS.18	Diagram or construct models of simple hydrocarbons (four or fewer carbons) with single, double, or triple bonds	Atomic Structure	Carbon Atoms
PS.19	Analyze and interpret a graph that relates temperature and heat energy absorbed during phase changes of water	Matter	Length
PS.20	Predict the particle motion as a substance changes phases		
0	Chemical Reactions		
PS.21	Classify changes in matter as physical or chemical	Matter	Changes in Matter
PS.22	Identify evidence of chemical changes	Matter	Changes in Matter
PS.23	Classify unknowns as acidic, basic, or neutral using indicators	Chemical Reactions	Acid/Base Reactions
PS.24	Identify balanced equations as neutralization, combination, and decomposition reactions		
PS.25	Determine the effect of various factors on reaction rate (e.g., temperature, surface area, concentration, agitation)		
PS.26	Illustrate the laws of conservation of matter and energy through balancing simple chemical reactions		
PS.27	Distinguish between endothermic and exothermic reactions	Chemical Reactions	Endothermic and exothermic reactions
PS.28	Identify chemical reactions that commonly occur in the home and nature	Chemical Reactions	Chemical Reactions
		Chemical Reactions	Chemical Reactions and Energy
0	Forces and Motion		
PS.29	Differentiate between mass and weight	Doing Science	SI Units and symbols
		Matter	Length
PS.30	Compare the characteristics and strengths of forces in nature (e.g., gravitational, electrical, magnetic, nuclear)		



PS.31	Differentiate between speed and velocity	Energy and Motion	Acceleration
		Energy and Motion	Motion
PS.32	Plot and compare line graphs of acceleration and velocity	Forces	Newton's Second Law of Motion
		Energy and Motion	Acceleration
PS.33	Calculate velocity and acceleration using equations	Forces	Newton's Second Law of Motion
		Energy and Motion	Acceleration
PS.34	Demonstrate Newton's three laws of motion (e.g., inertia, net force using $F = ma$ , equal and opposite forces)	Energy and Motion	Sir Isaac and Seat Belts
		Energy and Motion	Newton's First Law of Motion
		Forces	Newton's Second Law of Motion
		Forces	Newton's Third Law
PS.35	Describe and demonstrate the motion of common objects in terms of the position of the observer		
0	Energy		
PS.36	Measure and calculate the relationships among energy, work, and power	Simple Machines	Using machines
PS.37	Model and explain how momentum is conserved during collisions		
PS.38	Analyze diagrams to identify changes in kinetic and potential energy	Energy	Potential energy
PS.39	Distinguish among thermal, chemical, electromagnetic, mechanical, and nuclear energy	Energy	Conservation of Energy
PS.40	Demonstrate energy transformation and conservation in everyday actions		
0	Interactions of Energy and Matter		
PS.41	Identify the parts and investigate the properties of transverse and compression waves	Waves	Waves
PS.42	Describe the relationship between wavelength and frequency	Waves	Waves
		Atomic Structure	Electromagnetic Radiation
PS.43	Investigate and construct diagrams to illustrate the laws of reflection and refraction	Waves	Wave Properties of Light
PS.44	Illustrate the production of static electricity	Electricity and Magnetism	Static electricity
PS.45	Evaluate diagrams of series and parallel circuits to determine the flow of electricity	Electricity and Magnetism	Electrical Current



PS.46	Diagram a magnetic field	Electricity and Magnetism	Magnetism
		Atomic Structure	Electromagnetic Radiation
PS.47	Explain how electricity and magnetism are related	Electricity and Magnetism	Electrical Current
		Electricity and Magnetism	Magnetism
PS.48	Compare properties of waves in the electromagnetic spectrum	Waves	Electromagnetic Radiation
		Atomic Structure	Electromagnetic Radiation
PS.49	Describe the Doppler effect on sound	Waves	Waves
PS.50	Identify positive and negative effects of electromagnetic/mechanical waves on humans and human activities (e.g., sound, ultraviolet rays, X-rays, MRIs, fiber optics)	Waves	Electromagnetic Radiation
		Atomic Structure	Electromagnetic Radiation