

Science - Grade 6

Idaho Department of Education Content Standards	Objective	Sub Objectives	Task Analysis	Essential Vocabulary
Cognitive level codes: • B: Memorize • C: Perform procedures • D: Demonstrate understanding • E: Conjecture, generalize, prove • F: Solve non-routine problems, make connections	Bloom's Equivalent • B = Knowledge • C = Comprehension • D = Comprehension • E = Application and Analysis • F = Synthesis			
Standard 1: Nature of Science				
Goal 1.1: Understand Systems, Order, and Organization	6.S.1.1.1 Analyze different systems. (618.01.a) CL: E Content Limit: Items should address content that the student has experience with such as fire drills, the organization of sports teams, an orchestra, or a band. Items can also address topics like organelles in protozoa or the role various plant cell types play in the survival of the plant. The idea is to draw learning together for students.	<ul style="list-style-type: none"> Analyze different systems. 	<ul style="list-style-type: none"> List at least three characteristics of a system (e.g. self contained, cyclic, organizational structure) Illustrate an example of a system Compare and contrast two systems 	system • cyclic
Goal 1.2: Understand Concepts and Processes of Evidence, Models, and Explanations	6.S.1.2.1 Explain how observations and data are used as evidence on which to base scientific explanations and predictions. (618.02.a) CL: E Content Limit: Items should offer choices that have a direct link between the observation offered for consideration and the correct answer.	<ul style="list-style-type: none"> Explain how observations and data are used as evidence on which to base scientific explanations and predictions. 	<ul style="list-style-type: none"> Relate the term "objective" to observation Record data in appropriate format Use graphic tool to summarize scientific observations Explain how observations and data are used as evidence in scientific explanations and predictions 	objective • observation • subjective • data • evidence • prediction
	6.S.1.2.2 Use observations to make inferences. (618.02.b) CL: Content Limit: Graphics or examples should be limited to natural history topics or observable reactions in living systems.	<ul style="list-style-type: none"> Use observations to make inferences. 	<ul style="list-style-type: none"> Make objective observations Collect data Organize data Make inferences based on organized data 	inference • observation • data
	6.S.1.2.3 Use models to explain or demonstrate a concept. (618.02.c) CL: Content Limit: Material should emphasize major body systems and their component parts including the circulatory, digestive, respiratory, and skeletal systems. Cell models, the component parts of an eye, and the atomic positioning in solids, liquids, and gases are also suitable topics.	<ul style="list-style-type: none"> Use models to explain or demonstrate a concept. 	<ul style="list-style-type: none"> Collect data View a variety of conceptual models Select appropriate model to display data Use model to explain or demonstrate a concept 	data • conceptual model

Science - Grade 6

Idaho Department of Education Content Standards	Objective	Sub Objectives	Task Analysis	Essential Vocabulary
Goal 1.3: Understand Constancy, Change, and Measurement	6.S.1.3.1 Analyze changes that occur in and among systems. (618.03.b)	<ul style="list-style-type: none"> • Analyze changes that occur in and among systems. 	<ul style="list-style-type: none"> • Review characteristics of a system • Discuss the nature of change, both past and present • Explain the interrelatedness of the components of a system • Analyze changes that occur in and among systems 	system • change • interrelated
	6.S.1.3.2 Measure in both U.S. Customary and International System of Measurement (metric system) units with an emphasis on the metric system. (618.03.c) CL: C Content Limit: Use linear metric measures, volume measures of milliliter and liter, and mass measure of grams.	<ul style="list-style-type: none"> • Measure in both U.S. Customary and International System of Measurement (metric system) units with an emphasis on the metric system. 	<ul style="list-style-type: none"> • Recognize the language of science is math • State that the metric system is the basis of measurement in science • Use both customary and metric measuring devices (e.g. rulers, scales, graduated cylinders, etc. • Measure in both metric and U.S. Customary units (length, capacity, mass, weight) 	<ul style="list-style-type: none"> • milli- • centi- • deci- • kilo- • deka- • meter • liter • gram • cup • pint • quart • gallon • inch • foot • yard • mile • ounce • pound • ton • newton
Goal 1.4: Understand the Theory that Evolution is a Process that Relates to the Gradual Changes in the Universe and of Equilibrium as a Physical State	No objectives at this grade level.			
Goal 1.5: Understand Concepts of Form and Function	6.S.1.5.1 Analyze how the shape or form of an object or system is frequently related to its use and/or function. (618.05.a)	<ul style="list-style-type: none"> • Analyze how the shape or form of an object or system is frequently related to its use and/or function. 	<ul style="list-style-type: none"> • Explain how the size and shape of an object affects how it works • Compare and contrast tools and simple machines • Infer the function of the object 	size • shape • function
Goal 1.6: Understand Scientific Inquiry and Develop Critical Thinking Skills	6.S.1.6.1 Write and analyze questions that can be answered by conducting scientific experiments. (619.02.a)	<ul style="list-style-type: none"> • Write and analyze questions that can be answered by conducting scientific experiments. 	<ul style="list-style-type: none"> • Use examples from history of someone who posed a question (Galileo, Newton, Bohr, Moh, etc.) • Discuss how past scientists answered their questions • Draw on experiences to create own question • Create questions of interest that are both measurable and testable • Write and analyze questions that can be answered by conducting an experiment 	
	6.S.1.6.2 Conduct scientific investigations using a control and variables. Repeat same experiment using alternate variables. (619.02.b) CL: E Content Limit: Items should stress the students' ability to distinguish between a control and a variable.	<ul style="list-style-type: none"> • Conduct scientific investigations using a control and variables. Repeat same experiment using alternate variables. 	<ul style="list-style-type: none"> • Determine the purpose of the experiment • Label control and variables • Observe and record findings • Make a conclusion • Repeat experiment using alternate variables 	control • variables (dependent and independent)

Science - Grade 6

Idaho Department of Education Content Standards	Objective	Sub Objectives	Task Analysis	Essential Vocabulary
	6.S.1.6.3 Select and use appropriate tools and techniques to gather and display data. (619.02.c) CL: C Content Limit: Line graphs, bar graphs, pie charts, and tables are all suitable for use and interpretation.	<ul style="list-style-type: none"> Select and use appropriate tools and techniques to gather and display data. 	<ul style="list-style-type: none"> Recognize and use the five senses to make observations Accurately use measurement tools Organize and record data Compare data with others Verify accuracy of observations Determine which visual to use based on the data given (graphs, charts, organizers etc.) Determine appropriate scales and intervals for graphs and charts, formats for graphic organizers Use appropriate labels Interpret scientific data 	data • scales • intervals
	6.S.1.6.4 Use evidence to analyze data in order to develop descriptions, explanations, predictions, and models. (619.2.d) CL: E Content Limit: Data offered for consideration should be linear or tied to a focused topic.	<ul style="list-style-type: none"> Describe how observations and data are evidence on which to base scientific explanations and predictions 	<ul style="list-style-type: none"> Summarize key points of gathered data Determine a direct link between the observation offered for consideration and the correct answer. Develop descriptions, explanations, predictions, and models based on analyzed data 	data • describe • explain • predict • model
	6.S.1.6.5 Test a hypothesis based on observations. (619.02.e) CL: E Content Limit: Material offered for consideration should be single-faceted and include topics like the impact of over-watering potted plants or growing plants in light or darkness	<ul style="list-style-type: none"> Test a hypothesis based on observations. 	<ul style="list-style-type: none"> Explain the steps in the scientific method Demonstrate scientific process skills (hypothesis, replication, sample size, appropriate use of control, use of standardized variables) Apply components of experimental design used to produce evidence that can be verified 	hypothesis • observation • replication • variables • control • sample
	6.S.1.6.6 Communicate scientific procedures and explanations. (619.02.g)	<ul style="list-style-type: none"> Communicate scientific procedures and explanations. 	<ul style="list-style-type: none"> Conduct scientific inquiry Record results Draw conclusions Communicate results and explanations 	
Goal 1.7: Understand That Interpersonal Relationships Are Important in Scientific Endeavors	No objectives at this grade level.			
Goal 1.8: Understand Technical Communication	6.S.1.8.1 Read, give, and execute technical instructions. (628.01a) CL: E Content Limit: Items indicate that students can read and follow the instructions for lab procedures and textbook activities.	<ul style="list-style-type: none"> Read, give, and execute technical instructions. 	<ul style="list-style-type: none"> Read the instructions for lab procedures and textbook activities. Paraphrase instructions orally Execute instructions 	

Science - Grade 6

Idaho Department of Education Content Standards	Objective	Sub Objectives	Task Analysis	Essential Vocabulary
Standard 2: Physical Science				
Goal 2.1: Understand the Structure and Function of Matter and Molecules and Their Interactions	6.S.2.1.1 Compare and contrast the differences among elements, compounds and mixtures. (620.01.a) CL: D Content Limit: Items can address that there are more than 100 unique elements. Elements bond to make compounds and can be physically combined to make mixtures. The properties of elements change when compounds are formed. Elements can be physically separated from mixtures.	• Compare and contrast the differences among elements, compounds and mixtures.	• Define element, compound, mixture • Classify various substances as an element, compound, or mixture • Using a graphic organizer, compare and contrast elements, compounds, and mixtures	element • compound • mixture • atom • molecule • periodic table
	6.S.2.1.2 Define the properties of matter. (620.01.b) CL: B Content Limit: Items can address ideas like a solid has definite volume and shape, a liquid has a definite volume and an indefinite shape, and a gas has no definite shape or volume.	• Define the properties of matter.	• Identify states of matter (solid, liquid, gas, plasma) • Describe other properties of matter (density, buoyancy, ductility, malleability)	solid • liquid • gas • matter • density • buoyancy • ductility • malleability
	6.S.2.1.3 Compare densities of equal volumes of a solid, a liquid, or a gas. (619.01.c) CL: D Content Limit: Items must address atomic or molecular spacing in each state of matter.	• Compare densities of equal volumes of a solid, a liquid, or a gas.	• Explain that density is a comparison of an object's mass to its volume • Describe the molecular spacing in each state of matter. • Compare densities of equal volumes of a solid, a liquid, or a gas.	density • volume • mass • molecule • solid • liquid • gas
	6.S.2.1.4 Describe the effect of temperature on density. (620.01.c) CL: D Content Limit: Items should address the impact that temperature has on the density of a material.	• Describe the effect of temperature on density.	• Review the molecular spacing in each state of matter. • Recognize the relationship between temperature and molecular spacing and motion • Describe the effect of temperature on density.	temperature • density • Fahrenheit • Celsius
	6.S.2.1.5 Explain the nature of physical change and how it relates to physical properties (the distance between molecules as water changes from ice to liquid water, and to water vapor). (620.01.d) CL: D Content Limit: Items address the effect of temperature on the spacing and movement of atoms or molecules.	• Explain the nature of physical change and how it relates to physical properties (the distance between molecules as water changes from ice to liquid water, and to water vapor).	• Make a visual showing changes in molecular spacing as H ₂ O cycles through various states of matter	physical property • physical change • molecule

Science - Grade 6

Idaho Department of Education Content Standards	Objective	Sub Objectives	Task Analysis	Essential Vocabulary
Goal 2.2: Understand Concepts of Motion and Forces	6.S.2.2.1 Describe the effects of different forces (gravity and friction) on the movement, speed, and direction of an object. (620.03.d) CL: D Content Limit: Items will address friction's effect on motion and that gravity is an attractive force between objects.	<ul style="list-style-type: none"> Describe the effects of different forces (gravity and friction) on the movement, speed, and direction of an object. 	<ul style="list-style-type: none"> Define force as a push or pull that is measured in newtons Recognize and give examples of different types of forces Conduct investigations changing the direction and speed of an object Analyze results of investigation Form conclusions describing the effects of force 	force • gravity • friction • Isaac Newton
Goal 2.3: Understand the Total Energy in the Universe is Constant	No objectives at this grade level.			
Goal 2.4: Understand the Structure of Atoms	No objectives at this grade level.			
Goal 2.5: Understand Chemical Reactions	No objectives at this grade level.			
Standard 3: Biology				
Goal 3.1: Understand the Theory of Biological Evolution	No objectives at this grade level.			
Goal 3.2: Understand the Relationship between Matter and Energy in Living Systems	No objectives at this grade level.			
Goal 3.3: Understand the Cell is the Basis of Form and Function for All Living Things	6.S.3.3.1 Identify the different structural levels of which an organism is comprised (cells, tissues, organs, organ systems, and organisms). (621.01.a) CL: E Content Limit: Items should address the components of an individual system, such as the digestive system.	<ul style="list-style-type: none"> Identify the different structural levels of which an organism is comprised (cells, tissues, organs, organ systems, and organisms). 	<ul style="list-style-type: none"> Define cell, tissue, and organ Discuss how similar cells form tissues Discuss how similar tissues form organs Illustrate the hierarchical relationships of cells, tissues, and organs 	hierarchical level • cell • tissue • organ
	6.S.3.3.2 Analyze the structural differences between plant and animal cells. (621.01.b)	<ul style="list-style-type: none"> Analyze the structural differences between plant and animal cells 	<ul style="list-style-type: none"> Recognize the structures of animal and plant cells Explain the function of the cell structures of both plant and animal cells Build a model of a plant and animal cell Describe the structural differences between plant and animal cells 	structure • function • organelles

Science - Grade 6

Idaho Department of Education Content Standards	Objective	Sub Objectives	Task Analysis	Essential Vocabulary
	6.S.3.3.3 Describe how traits are passed from parents to offspring. (621.01.c) CL: D Content Limit: Include traits easily observed: hair color, eye color, and skin color.	<ul style="list-style-type: none"> Describe how traits are passed from parents to offspring. 	<ul style="list-style-type: none"> Briefly introduce Gregor Mendel and his findings Define genetic traits Define heredity Explain how desired genetic traits can be passed from parent to offspring 	characteristics • heredity • genetic traits • DNA • genes • dominant trait • recessive trait
Standard 4: Earth and Space Systems				
Goal 4.1: Understand Scientific Theories of Origin and Subsequent Changes in the Universe and Earth Systems	6.S.4.1.1 Explain the interactions among the solid earth, oceans, atmosphere, and organisms. (624.01.a) CL: D Content Limit: Items will address layers of Earth, the effect of weathering on rocks, and the impact bodies of water have on weather.	<ul style="list-style-type: none"> Explain the interactions among the solid earth, oceans, atmosphere, and organisms. 	<ul style="list-style-type: none"> List the layers of earth, ocean, and atmosphere Discuss the physical characteristics at each layer Give examples of biotic and abiotic parts of each environment Explain the interactions among the solid earth, oceans, atmosphere, and organisms. 	core • mantle • crust • asthenosphere • lithosphere • thermosphere • mesosphere • stratosphere • biotic • abiotic • environment • ecosystem • population • habitat • community • biome • photic • aphotic
	6.S.4.1.2 Explain the water cycle and its relationship to weather and climate. (624.01.b) CL: D Content Limit: Items should address the water cycle and its impact on the movement of water in the system (precipitation).	<ul style="list-style-type: none"> Explain the water cycle and its relationship to weather and climate. 	<ul style="list-style-type: none"> Recognize that the sun is the energy source that drives the water cycle Describe the processes within the water cycle (evaporation, condensation, transpiration, precipitation) Differentiate between weather and climate Explain the water cycle and its relationship to weather and climate. 	evaporation • condensation • transpiration • precipitation • weather • climate • water cycle
	6.S.4.1.3 Identify cumulus, cirrus, and stratus clouds and how they relate to weather changes. (624.01.c) CL: D Content Limit: Items should address cloud types and the weather patterns associated with each.	<ul style="list-style-type: none"> Identify cumulus, cirrus, and stratus clouds and how they relate to weather changes. 	<ul style="list-style-type: none"> Label clouds as cumulus, cirrus, or stratus Describe the relationship between air masses, fronts, cloud types, and weather Explain the weather changes connected with each type of cloud 	cumulus • cirrus • stratus • weather • air masses • fronts
Goal 4.2: Understand Geo-chemical Cycles and Energy in the Earth System	No objectives at this grade level.			
Standard 5: Personal and Social Perspectives; Technology				
Goal 5.1: Understand Common Environmental Quality Issues, Both Natural and Human Induced	6.S.5.1.1 Identify issues for environmental studies. (626.01.a)	<ul style="list-style-type: none"> Identify issues for environmental studies. 	<ul style="list-style-type: none"> Review environment and its characteristics Recognize various environmental issues Describe how environmental issues impact Earth Identify national and local environmental issues 	air, land, and water pollution • global warming • erosion • deforestation • aquifer • invasive species • noxious weeds
Goal 5.2: Understand the Relationship between Science and Technology	6.S.5.2.1 Describe how science and technology are part of our society. (625.01.a)	<ul style="list-style-type: none"> Describe how science and technology are part of our society. 	<ul style="list-style-type: none"> Define science Define technology Give examples of current technologies Describe how science and technology are part of our society 	science • technology • society

Science - Grade 6

Idaho Department of Education Content Standards	Objective	Sub Objectives	Task Analysis	Essential Vocabulary
	6.S.5.2.2 Describe how science and technology are interrelated. (625.01.b)	<ul style="list-style-type: none"> • Describe how science and technology are interrelated. 	<ul style="list-style-type: none"> • Define science • Define technology • Describe the process scientists use to solve problems • Describe how science and technology are interrelated. 	science • technology
Goal 5.3: Understand the Importance of Natural Resources and the Need to Manage and Conserve Them	6.S.5.3.1 Explain the difference between renewable and nonrenewable resources. (626.03.a)	<ul style="list-style-type: none"> • Explain the difference between renewable and nonrenewable resources. 	<ul style="list-style-type: none"> • Define renewable • Define nonrenewable • List examples of renewable and nonrenewable resources • Explain the difference between renewable and nonrenewable resources. 	renewable • nonrenewable • resource