

**Gilford School District
Grade 6 - Science**

Scientific Method		
Proficiencies	Content	Skills
What is the scientific method and how does it work?	Choose a problem, research a problem, develop a hypothesis, write your hypothesis, test your hypothesis, organize your data, state your conclusion.	use the scientific method to design an experiment
How can we use the scientific method to answer questions and solve problems?	Inquiry process: Design conduct, analyze, and present a scientific investigation following these steps (Develop hypothesis, follow procedures, make observations, collect data, evaluate results, and draw conclusions) of the Scientific method.	Apply the scientific method to everyday problem solving and lab assignments
How does using the scientific method help me solve scientific problems? How can we systematically solve problems using the scientific method?		
Observation and Inferences		
Proficiencies	Content	Skills
Why do we Observe? What is an Inference?	What are the five skills of observation? How to make an Inference.	Students will learn to use their five senses when making observations. Students will learn to make factual not vague observations.
Metric Conversion / Metric System		
Proficiencies	Content	Skills
Why is it important to learn the metric system of measurement? How are relationships among units in the metric system utilized? How do you convert units in the metric system? How to move the decimal point in the metric system?	Measurement using the Metric System Length and mass in the Metric system Metric measurement conversions	Students will be able to convert metric measures Students will be able to measure length, volume and mass using the metric system

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Controls/Variables/Constants		
Proficiencies	Content	Skills
<p>Why are controls, constants, and variables important in an experiment?</p> <p>What can we learn about variables from an experiment?</p> <p>How is an experiment an investigation about relationships between variables?</p>	<p>Variable</p> <p>Independent variable Dependent variable</p> <p>control constants</p>	<p>Students will be able to identify in an experiment the difference between an independent and dependent variable, a control and constants.</p>
Rocks and Minerals		
Proficiencies	Content	Skills
<p>What is the difference between rocks and minerals?</p>	<p>What is a mineral? How do minerals form?</p> <p>Properties of minerals?</p> <p>Metamorphic, igneous, sedimentary rocks</p> <p>Rock cycle</p>	<p>Students will be able to describe the properties that are used to identify minerals.</p> <p>Students will be able to identify the difference between a mineral and a rock.</p> <p>Students will be able to explain how extrusive intrusive igneous rocks are different.</p> <p>Students will describe how different types of sedimentary rocks form.</p> <p>Students will describe the conditions needed for metamorphic rocks to form.</p> <p>Students will explain how all rocks are linked by the rock cycle.</p>
Earthquakes		
Proficiencies	Content	Skills
<p>Why do earthquakes cause so much damage?</p> <p>What are the forces within the earth that result in earthquakes?</p>	<p>Forces inside the eathquake and earthquake causes.</p> <p>Fault Formation</p> <p>What causes faults?</p> <p>Types of Faults!</p>	<p>Students will be able to explain how earthquakes result from the buildup of energy in the rocks.</p> <p>Students will describe how compression, tension, and shear forces make rocks move along faults.</p> <p>Students will be able to distinguish among normal, reverse, and strike-slip faults.</p>

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Tsunamis		
Proficiencies	Content	Skills
How could the advancement of technology and an international tsunami warning system help reduce the destruction and death caused by tsunamis? Why are Tsunamis such a deadly force of nature?	How are tsunamis formed? Ocean Tsunamis Fjord Tsunamis	Students will be able to explain how tsunamis are formed. Students will be able to explain the difference between a fjord and ocean tsunami.
Volcanos		
Proficiencies	Content	Skills
How do volcanoes change the earth?	Where volcanoes Form? Why volcanoes form. Types of volcanoes	Students will be able to explain where volcanoes form. Students will be able to explain how volcanoes form. Students will be able to distinguish between a cindercone, shield, and a strato volcano. Students will be able to locate the "Ring of Fire".
Landforms		
Proficiencies	Content	Skills
What are landforms? What is the effect of the forces that build the Earth's landforms?	Types of landforms: Plains, Plateaus, Mountains How mountains are formed.	Students will be able to articulate the differences between plains and plateaus Students will be able to describe upwarped, folded, fault-block and volcanic mountains.
Topography		
Proficiencies	Content	Skills
What do topographical maps tell you about an area? How do cartographers make topographical maps?	Maps What is topography. Contour lines Contour interval Longitude and Latitude	Students will be able to use a contour map to distinguish the different types of landforms on the earth's surface. Students will understand how topo maps are created and map their own landform. Students will be able to use a topo map to navigate and determine the easiest route to a desired location.

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Introduction to Chemical Science		
Proficiencies	Content	Skills
What measurements of physical properties are used to describe matter?	Physical properties of a material.	Students will be able to identify a physical change of a material or substance.
What are some physical changes of matter?	Matter	Students will be able to define matter.
What are the four states of matter?	Physical Changes	Students will be able to differentiate between the 4 different states of matter, and describe each states properties.
How do particles move in the 4 different states of matter?	Mass and Length	
	Volume and density States of Matter Moving Particles	
Chemical Properties and Changes		
Proficiencies	Content	Skills
What is the difference between a chemical property and a chemical change?	Chemical property	Students will be able to differentiate between physical properties and chemical properties.
What is needed for combustion to occur?	Chemical change	Students will be able to differentiate between physical changes and chemical changes.
	Combustion (fire)	Students will be able to list the 3 factors in order for fire to occur.
	Law of conservation of mass	Students will be able to articulate the law of conservation of mass.
MATTER - Atoms and Elements		
Proficiencies	Content	Skills
How are our lives influenced by the different states of matter?	Structure of matter.	Students will be able to identify what is and isn't matter.
	What makes up matter?	Students will be able to identify the parts of an atom.
	What makes up an Atom?	Students will be able to explain an element.
	What is an element?	Students will be able to identify an element on the periodic table using the atomic number, atomic mass or element abbreviation.
	Identifying characteristics of an element.	Students will be able to utilize the periodic table and identify elements based on physical characteristics (metal, nonmetal, mettalliod).
	Classification of an element.	

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Chemical Science		
Proficiencies	Content	Skills
What makes a fire? Why does metal rust?	Physical Properties Physical Changes Matter mass volume density States of Matter particle movement chemical properties chemical changes	Store data in an appropriate technological device. Use appropriate measurement units.
Compounds and Mixtures		
Proficiencies	Content	Skills
How are compounds and mixtures different?	What is a substance? What is a compound? Subscript number Mixture Proportion Homogeneous Heterogeneous	Students will be able to articulate the difference between a substance and a compound. Students will be able to distinguish and explain a heterogeneous and homogeneous mixture.
Motion /Position and Speed		
Proficiencies	Content	Skills
Why is an objects position important?	Position of an object Describing a position Reference point Motion Describing Motion Speed	Students will be able to identify an objects position or location. Students will be able to demonstrate motion of an object using tennis balls. Students will be able to explain speed.
Acceleration		
Proficiencies	Content	Skills
How do force, mass, and acceleration relate to each other? How are force and acceleration related?	Acceleration	Students will be able to articulate acceleration and how it relates to a skateboarder on a halfpipe.

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Work and Mechanical Advantage		
Proficiencies	Content	Skills
What is work and Mechanical Advantage	Work No work without motion Only force in the same direction. Calculating work Mechanical advantage. Multiplying force Multiplying distance Changing direction Efficiency of machines	Students will be able to explain work. Students will be able to calculate work.
Newton's Laws		
Proficiencies	Content	Skills
How can you change an object in motion?	Force Net Force Balanced Force Unbalanced force Newton's Law's of motion	Students will be able to distinguish and articulate the difference between unbalanced and balanced forces acting on an object. Students will be able to connect Newton's three Law's of motion an how it can change an object in motion.
Machines		
Proficiencies	Content	Skills
How do compound machines make life easier? What type of simple machines make up a compound machine?	Simple machines Compound machines Force and motion	Students will be able to explain a compound machine, how it is doing work, what is its mechanical advantage, and efficiency.
Cells		
Proficiencies	Content	Skills
How can you tell the difference between a plant and animal cells? Why do plant cells have cell wall?	Plant cell organelles Animal cell organelles	Students will be able to distinguish the difference between a plant and animal cells. Students will be able to label the parts of both a plant and an animal cell.

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Invertebrates		
Proficiencies	Content	Skills
What are the different classes of invertebrates?	What is an animal? Sponges Cnidarians Flatworms Roundworms Mollusks Annelids Arthropods Centipedes and Millipedes Crustaceans Echinoderms	Students will be able to articulate the different types of invertebrates using common body characteristics.
Vertebrates		
Proficiencies	Content	Skills
What is the difference between an amphibian and a reptile? What characteristics enable a bird to fly? What types of mammals are there? What is the difference between a monotreme, marsupial and placental?	amphibians, reptiles, birds, and mammals.	Students will be able to distinguish and explain the differences between amphibians, reptiles, birds, and mammals.
Forest Ecosystems		
Proficiencies	Content	Skills
What type of forest surrounds our school?	Forest types and ecosystems Regional tree Identification Native tree species around the school	Students will be able to utilize a Key to identify tree species based on the needles or leaves. Students will be able to understand what type of forest their school is surrounded by and what types of trees make up the forest.