


	Essential Questions	Content	Skills	Assessments	Standards/PIs	Resources/Notes
Unit 1	<p>How does the scientific method help to solve problems?</p> <p>Why do scientists use the scientific method?</p> <p>Why do scientists test one variable (independent) at a time?</p> <p>What is the sequence of the scientific method?</p> <p>Why are graphs important?</p> <p>How do scientists graph data?</p> <p>What are the rules to follow when working in the science laboratory?</p> <p>How do we properly use the triple beam balance, graduated cylinder, over flow tank, and microscope?</p> <p>How is a well designed investigation developed?</p> <p>How are graphs useful to show trends in data?</p> <p>How do you determine the factor that is the independent/ dependent variable?</p> <p>Why do scientists use the metric system?</p> <p>How do we convert between units when using the metric system?</p>	<p>Scientific Method/ Review of Measurement and Graphing in the context of the scientific method.</p> <p>Mathematic deductive and inductive reasoning are used to reach mathematical conclusions.</p> <p>Critical thinking skills are used in the solution of mathematical problems.</p> <p>Scientific inquiry involves the testing of proposed explanations involving the use of conventional techniques and procedures and usually requiring considerable ingenuity.</p> <p>The observations made while testing proposed explanations, when analyzed using conventional and invented methods, provide new insights into phenomena.</p> <p>Scientific Method</p> <p>Constants</p> <p>Control Group</p> <p>Observation</p> <p>Inference</p> <p>Independent Variable</p> <p>Dependent Variable</p> <p>Hypothesis</p> <p>Conclusion</p> <p>Data Tables</p> <p>Graphs</p> <p>Mass</p>	<p>List the steps of the scientific method in order.</p> <p>Define all of the steps of the scientific method.</p> <p>Match the steps of the scientific method with the definition of the step.</p> <p>Discuss why scientists use the scientific method when solving a problem.</p> <p>Explain the importance of the scientific method.</p> <p>Demonstrate the scientific method.</p> <p>Design charts, tables, graphs that address their research question.</p> <p>Measure length, mass, volume and density .</p> <p>Compute mass by difference and when using weighing paper.</p> <p>Distinguish between different types of measurements and units.</p> <p>Round to the nearest tenth when making measurements.</p> <p>Assess the length, mass, volume and density of different objects.</p>			


		<p>Volume</p> <p>Length</p> <p>Density</p> <p>scientific method notes (fill-in)</p> <p>More notes: vocabulary notes</p> <p><u>Vocabulary Scientific Method, Review Graphing, Review Measurement.</u></p> <p><i>Hypothesis, Variable, Independent Variable, Dependent, Variable, Problem, Materials, Inference, Observation, Analyze, Data, Conclusion, Constants, Control Group, Controlled Variables, Scientific Method, Experiment, Results, Line graph, Data Tables, Mass, Volume, Length, Density, Triple Beam Balance, Graduated Cylinder, Scale, Units</i></p> <p>Mass notes</p> <p>length notes</p>	<p>sci.method worksheet</p>			
Unit 2	<p>How is matter classified?</p> <p>Why is matter classified?</p> <p>Why is the classification system important?</p>	<p>Chemistry</p> <p>Matter is made up of particles whose properties are observable. Observe and describe properties of materials, such as density, conductivity, and solubility.</p> <p>General properties of</p>	<p>Identify phase changes in matter.</p> <p>Interpret a phase change diagram.</p> <p>Differentiate between chemical and physical changes and properties.</p>			

matter:			
Phases of matter	Describe the arrangement and movement of particles in solids, liquids and gases.		
Phase changes			
Chemical properties and changes	Explain the importance of a system of classification.		
Development of an atomic model			
A divisible atom	Classify matter according to its importance.		
Forces within the atom			
The modern periodic table			
Using the periodic table	Describe the properties of mixtures.		
Periodic properties of elements			
Properties of metals and nonmetals	Distinguish between homogeneous and heterogeneous mixtures.		
Halogens			
Noble gases			
Classes of Matter	Compare the properties of solutions with other mixtures.		
Chemical Equations			
Exothermic/Endothermic Reactions	Explain why elements are pure substances.		
Nature of solutions			
Water as a solvent	Explain why compounds are pure substances.		
Mixtures			
Elements			
Compounds	Discuss how chemical symbols, formulas and balanced equations are used to describe a chemical reaction.		
Subatomic Particles			
<u>Vocabulary for Chemistry:</u>			
<i>atom, chemical equation, chemical formula, coefficient, compound, element, heterogeneous matter, heterogeneous mixture, homogeneous matter, homogeneous mixture, mixture, molecule, substance, subscript, atomic mass, atomic number, electron, proton, neutron, isotope, mass, matter, neutron, nucleus, solid, liquid, gas, plasma, melting, freezing, vaporization, condensation, evaporation, sublimation, deposition, physical property, chemical property, chemical change, physical change, valence electrons, energy levels</i>	Classify three subatomic particles according to location, charge and mass.		
	Define the terms atomic number, mass number, and atomic mass, isotope.		
	Define periodic properties.		
	Define the difference between groups and periods.		

		<p>Chemistry Review Sheet</p> <p> basic review sheet</p>	<p>Compare the properties of metals, non-metals, and metalloids.</p> <p>Describe the properties of noble gases, halogens and rare earth elements.</p> <p>Define a molecule, compound, mixture.</p> <p>Explain bonding based upon valence electrons.</p> <p>Draw and interpret electron dot diagrams.</p>			
Unit 3	<p>How can I best prepare for the 8th Grade Science Performance Test and Written Test?</p> <p>(see measurement essential questions covered in September)</p> <p>How are classification systems developed?</p> <p>Where in the world around us do we use classification systems?</p> <p>Why is classification important to scientist?</p> <p>How is the name of an organism determined?</p> <p>Why was the invention of the microscope so important?</p>	<p>New York State 8th Grade Science Performance Test Preparation</p> <p>(TO BE DONE PRIOR TO ADMINISTRATION OF EXAM)</p> <p>Basic Practice Stations provided by Boces</p> <p>a) Review Microscope</p> <p>b) Review Classification</p> <p>c) Review Measurement - length, volume, mass, density, comparison of density of different materials to the density of water, placement of objects in containers with water.</p> <p>d) Review speed, momentum, velocity.</p> <p>Practice/Review for New York State Written Test</p> <p>a) Review grade 5 through grade 8 by providing students with a list of New York State standards.</p> <p>b) Practice previously given New York State tests.</p>	<p>See skills from Unit #1</p> <p>Measure length, volume, density, mass.</p> <p>Explain how to measure density.</p> <p>Interpret charts and graphs.</p> <p>Describe the procedure used to get volume of an odd-shaped object, liquid, and regularly shaped object.</p> <p>Manipulate the density formula to solve for volume or mass.</p> <p>Estimate the location of objects when placed into water.</p> <p>Draw picture which accurately reflects position based upon density comparisons.</p> <p>Evaluate the difference in density between the objects provided.</p> <p>Operate microscope, triple beam balance, ruler and graduated cylinder properly.</p> <p>Formulate conclusions based upon data collected.</p> <p>Construct graphs based upon data collects.</p> <p>Collect data using</p>			

			instruments supplied.			
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Apply ELA strategies.

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Unit 4	<p>What is energy?</p> <p>What are the different forms of energy?</p> <p>How is energy measured?</p> <p>Why is the total energy in the universe constant?</p> <p>How is energy transferred?</p> <p>How does energy transformation occur?</p> <p>Why are fossil fuels considered nonrenewable resources?</p> <p>How is energy conserved?</p> <p>How is energy measured?</p>	<p>Physical Science</p> <p>Energy</p> <p>Energy exists in many forms, and when these forms change energy is conserved.</p> <p>Sources and transformations of energy observed in everyday life</p> <p>Nature of energy</p> <p>Kinetic and Potential Energy</p> <p>Energy conversion</p> <p>Conservation of energy</p> <p><u>Vocabulary for Energy:</u></p> <p><i>Chemical energy, Mechanical energy, Potential Energy, Kinetic Energy, Electromagnetic Energy, Nuclear Energy, Heat Energy, Energy, Gravitational Potential Energy (GPE), Joules, Law of Conservation, Convection, Radiation</i></p> <p> notes on energy (fill-in)</p>	<p>Define energy.</p> <p>Describe five forms of energy and give examples of each.</p> <p>Distinguish between kinetic and potential energy.</p> <p>Explain the relationship between kinetic energy, mass and velocity.</p> <p>Calculate gravitational potential energy.</p> <p>Identify several energy conversions.</p> <p>Explain the law of conservation of energy.</p>			
Unit 5	<p>How do energy and matter interact through forces that result in changes in motion?</p>	<p>Physical Science</p> <p>Motion and Forces</p> <p>Energy and matter interact through forces that result in changes in motion. There are different patterns of motion of objects.</p> <p>Forces affect the motion of objects.</p> <p>Motion is judged with respect to a frame of reference.</p> <p>The motion of an object can be described by its position, direction and speed.</p> <p>Newton's Laws of Motion</p> <p>Solve for speed, momentum, force, and velocity.</p> <p>Law of Conservation of</p>	<p>Define motion.</p> <p>Relate motion to a frame of reference.</p> <p>Describe speed in terms of distance and time.</p> <p>Identify Newton's three laws.</p> <p>Explain motion in terms of Newton's three laws.</p> <p>Identify the effect of forces on motion.</p> <p>Interpret graphs.</p> <p>Construct hypothesis based upon laws of motion.</p> <p>Devise a procedure to test how friction affects speed.</p> <p>Generate data tables and graphs for data collected.</p> <p>Interpret results based</p>			

Vocabulary for Earth Science:

Equator, Hemisphere, Longitude, Latitude, Crust, Mantle, Inner core, Outer Core, Seismic Waves, Seismograph, Convection Currents, Exosphere,

Ionosphere, Magnetosphere, Mesosphere, Stratopause, Stratosphere, Thermosphere, Tropopause, Troposphere, Van Allen Radiation Belt, Divergent Boundary, Convergent Boundary, Convection Current, Midocean Ridge, Sea Floor Spreading, Pangaea, Subduction Zone, Tectonics, Theory of Continental Drift, Theory of Plate Tectonics, Transform Boundary, Trench, Epicenter, Focus, Lava, Magma, Richter Scale, Ring of Fire, Volcano, Earthquake, Rock Cycle, Igneous Rock, Metamorphic Rock, Sedimentary Rock, Cleavage, Crystal, Ductility, Fracture, Mineral, Streak, Nonmetal, Hardness, Luster, Atmosphere, Revolution, Rotation, Season, Winter Solstice, Summer Solstice, Equinoxes, Vernal Equinox, Autumnal Equinox, Phases of the Moon, New moon, Waxing Moon, Waning Moon, Waxing Crescent, Waning Crescent, Waxing Gibbous, Waning Gibbous, Full Moon, Eclipse, Penumbra, Solar Eclipse, Lunar Eclipse, Total Eclipse, Tides, Air Mass, Air Pressure, Cold Front, Convection, Dew Point, Front, Greenhouse Effect, Isobar, Isotherm, Land Breeze, Maritime Polar, Maritime Tropical, Continental Tropical, Continental Polar, Meteorologist, Precipitation, Radiation, Relative Humidity, Sea Breeze, Stationary Front, Warm Front, Wind, Station Model, Erosion, Deposition, Humidity

 [basic fill-in notes on minerals](#)

 [Review Sheet for](#)

floor.

Identify the gases that make up the earth's atmosphere.

Compare the various layers of the atmosphere.

Review the three methods of heat transfer as they relate to weather.

Interpret a weather map.

Explain how fronts affect weather patterns.

Compare the four basic types of air masses.

Describe three factors that affect air pressure.

Define erosion and deposition.

Describe the types of erosion caused by gravity.

Explain why water is the major cause of erosion.

Explain what happens during an earthquake.

Describe how earthquakes are detected.

Describe the theory of continental drift.

Relate fossil and rock evidence to continental drift.

Explain ocean floor spreading.

Identify the major lithospheric plates using the reference tables.

Explain three types of plate boundaries.

Identify some of the ways fossils are formed.

Describe how fossils are useful in understanding the earth's past.

Explain convection currents in the mantle and the movement of the plates.

Compare relative humidity and dew point.

Collect data from station models.

Measure relative humidity

[atmosphere and weather](#)

and dew point using a sling psychrometer.

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Key to Standards used in this Map						