

Grade 7 Science Curriculum Map

Standards	Content	Skills/Practices	Materials/ Resources	Assessments (All) Daily/Weekly/ Benchmarks	Timeline (Months/Weeks /Days)
<p>S1.1 – S1.2c - S2 – S2.1d –</p>	<p>Nature of science: Scientific Method and Measurement Standard 1 SWBAT Formulate questions independently with the aid of references appropriate for guiding the search for explanations of everyday observations differentiate among observations, inferences, predictions, and explanations SWBAT go beyond the use of reasoning and consensus,</p>	<p>SWBAT utilizes the scientific method to conduct their own (guided) scientific experiments. SWBAT defines inference, qualitative and quantitative observation, and differentiate between the three. SWBAT differentiate between and identify independent (manipulated) and dependent (responding) variables in an experiment. SWBAT use metric forms of measurement to determine length, mass, volume (solid and liquid),</p>	<p>Teacher developed: -PowerPoints -Physical Science Textbook -Teacher developed Workbook Document -Camera -Smart Board -Student White Board</p>	<p>Tests – tests are written using Wizard Test Maker and Prentice Hall Science Explorer software. Some questions are also utilized from previous NYS 8th grade Science Tests and teacher generated. Quizzes – Wizard Test Maker, Prentice Hall, NYS 8th grade Science Test, teacher generated. Homework – assignments from textbook, assignments from teacher generated workbook, guided reading. Lab activities - Scientific Method, Observation and Inference, Metric Measurement, Graphing, Skills, Safety</p>	<p>The nature of Science 8 weeks September 14-November 5</p>

	<p>scientific inquiry involves the testing of proposed explanations involving the use of conventional techniques and procedures and usually requiring considerable ingenuity SWBAT use appropriate tools and conventional techniques to solve problems about the natural world, including:</p>	<p>temperature and density. SWBAT create simple graphs with clear, defined axis and titles.</p>			
<p>Ms-ps1-1 Ms-ps1-4 Ms-ps1-2 Ms-ps1-5</p> <p>3.1 3.1a 3.1b 3.1c-3.1d 3.1e</p>	<p>Chemistry Unit 5: Elements, Atoms, and the Periodic Table What is an element? How are elements the building blocks of the universe? What is an atom and what is its</p>	<p>SWBAT understand atoms and the periodic table, mixtures, solutions, chemical bonds, compounds and chemical reactions.</p>	<p>Teacher Developed: - PowerPoints - Physical Science Textbook - Teacher developed workbook Document - Camera - Smart Board - Student White Board</p>	<p>Tests – tests are written using Wizard Test Maker and Prentice Hall Science Explorer software. Some questions are also utilized from previous NYS 8th grade Science Tests and teacher generated. Quizzes – Wizard Test Maker, Prentice Hall, NYS 8th grade Science Test,</p>	<p>Intro to Chemistry 8 weeks November 6-January 4</p>

<p>3.1f equal to one atomic mass unit. An electron is much less massive than a proton or a neutron.</p> <p>3.1g The number of protons in an atom (atomic number) identifies the element. The sum of the protons and neutrons in an atom (mass number) identifies an isotope. Common notations that represent isotopes include: ^{14}C, ^{14}C, carbon-14, C-14.</p> <p>3.1h In the wave-mechanical model (electron cloud model) the electrons are in orbitals, which are defined as the regions of the most probable electron</p>	<p>structure? What are subatomic particles? What is the periodic table? Standard 4 3.3 (a-g) 3.2 (d, e) 4.3 a</p> <p>Matter is made up of particles whose properties determine the observable characteristics of matter and its reactivity. Explain the properties of materials in terms of the arrangement and properties of the atoms that compose them. The modern model of the atom has evolved over a long period of time through the work of many scientists Each atom has a nucleus, with an overall positive</p>	<p>Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context. Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model,</p>	<p>Teacher Developed:</p> <ul style="list-style-type: none"> -PowerPoints -Physical Science Textbook -Teacher developed workbook Document -Camera -Smart Board -Student White Board <p>TSWBT:Describe How do chemical changes produce new substances? Explain How do chemical reactions provide evidence for the Law of Conservation of Mass? Show How are substances characterized by how they react?</p>	<p>teacher generated. Homework – assignments from textbook, assignments from teacher generated workbook, guided reading. Lab activities</p>	
---	--	---	---	--	--

<p>location (ground state).</p> <p>3.1i Each electron in an atom has its own distinct amount of energy.</p> <p>3.1j When an electron in an atom gains a specific amount of energy, the electron is at a higher energy state (excited state).</p> <p>3.1k When an electron returns from a higher energy state to a lower energy state, a specific amount of energy is emitted. This emitted energy can be used to identify an element.</p> <p>3.1l The outermost electrons in an atom are called the valence electrons. In general, the number of valence electrons</p>	<p>charge, surrounded by negatively charged electrons. The proton is positively charged, and the neutron has no charge. The electron is negatively charged. Protons and electrons have equal but opposite charges.</p> <p>The number of protons equals the number of electrons in an atom. equal to one atomic mass unit. An electron is much less massive than a proton or a neutron.</p> <p>How does the position of an atom in the periodic table</p>	<p>graph, or table). Write arguments focused on discipline-specific content.</p> <p>Write informative and /explanatory texts, including scientific procedures and experiments, or technical processes. Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source, and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation. Use appropriate units for measured and calculated values</p>	<p>-Lab report -Element project -Tests/quizzes</p> <p>Teacher Developed: -PowerPoints -Physical Science Textbook -Teacher developed workbook Document -Camera -Smart Board -Student White Board</p>	<p>Tests – tests are written using Wizard Test Maker and Prentice Hall Science Explorer software. Some questions are also utilized from previous NYS 8th grade Science Tests and teacher generated.</p> <p>Quizzes – Wizard Test Maker, Prentice Hall, NYS 8th grade Science Test, teacher generated.</p> <p>Homework – assignments from textbook, assignments from teacher generated workbook, guided reading. Lab activities</p>	
--	--	---	--	---	--

<p>affects the chemical properties of an element.</p> <p>3.1m Atoms of an element that contain the same number of protons but a different number of neutrons are called isotopes of that element.</p> <p>3.1n The average atomic mass of an element is the weighted average of the masses of its naturally occurring isotopes.</p> <p>3.1o Stability of an isotope is based on the ratio of neutrons and protons in its nucleus. Although most nuclei are stable, some are unstable and spontaneously</p>	<p>reflect the atom's structure? How do atoms interact?</p> <p>-----</p> <p>-----</p> <ul style="list-style-type: none"> -Concept of an element -Properties of elements -Types of subatomic particles and their properties -Atoms and atomic structure -Electron arrangement in an atom. 	<p>Recognize and analyze patterns and trends.</p> <p>Determine the identity of an unknown element using physical and chemical properties Utilize the organization of the periodic table to predict the structure of an atom Utilize the organization of the periodic table to predict the properties of an atom Diagram atoms Classify objects according to an established scheme</p>	<p>Teacher Developed:</p> <ul style="list-style-type: none"> -PowerPoints -Physical Science Textbook -Teacher developed workbook Document -Camera -Smart Board -Student White Board 		
---	---	---	--	--	--

<p>decay, emitting radiation.</p> <p>3.1p Spontaneous decay can involve the release of alpha particles, beta particles, positrons, and/or gamma radiation from the nucleus of an unstable isotope. These emissions differ in mass, charge, ionizing power, and penetrating power.</p> <p>3.1q Matter is classified as a pure substance or as a mixture of substances.</p> <p>3.1r A pure substance (element or compound) has a constant composition and constant properties throughout a given</p>		<p>3.1c The motion of particles helps to explain the phases (states) of matter as well as changes from one phase to another. The phase in which matter exists depends on the attractive forces among its particles.</p> <p>3.1d Gases have neither a determined shape nor a definite volume. Gases assume the shape and volume of a closed container.</p> <p>3.1e A liquid has definite volume, but takes the shape of a container. 3.1f A solid has definite shape and volume.</p>			
--	--	---	--	--	--

<p>sample, and from sample to sample.</p> <p>3.1s Mixtures are composed of two or more different substances that can be separated by physical means. When different substances are mixed together, a homogeneous or heterogeneous mixture is formed.</p> <p>3.1t The proportions of components in a mixture can be varied. Each component in a mixture retains its original properties.</p> <p>3.1u Elements are substances that are composed of atoms that have the</p>		<p>Particles resist a change in position.</p>	<p>Teacher Developed:</p> <ul style="list-style-type: none"> -PowerPoints -Physical Science Textbook -Teacher developed workbook Document -Camera -Smart Board -Student White Board 	<p>Tests – tests are written using Wizard Test Maker and Prentice Hall Science Explorer software. Some questions are also utilized from previous NYS 8th grade Science Tests and teacher generated.</p> <p>Quizzes – Wizard Test Maker, Prentice Hall, NYS 8th grade Science Test, teacher generated.</p> <p>Homework – assignments from textbook, assignments from teacher generated workbook, guided reading. Lab activities</p>	<p>Matter 8 Weeks January 5-March 1</p>
--	--	---	--	---	---

<p>same atomic number. Elements cannot be broken down by chemical change.</p> <p>3.1v Elements can be classified by their properties and located on the Periodic Table as metals, nonmetals, metalloids (B, Si, Ge, As, Sb, Te), and noble gases.</p> <p>3.1w Elements can be differentiated by physical properties. Physical properties of substances, such as density, conductivity, malleability, solubility, and hardness, differ among elements.</p>	<p>Matter: Standard 4 3.1a, 3.1h, 3.1i, 3.2</p>	<p>TSWBT: describe What are the properties of solids, liquids, and gasses? Show How does heat affect matter? Tell How does the motion of particles determine the phases of matter?</p> <p>SWBAT begin basic intro into Solutions and Solubility SWBAT define the following terms: Solution Solute Solvent Concentration Dilute</p>			<p>Composition of Matter 3 Weeks March 2-March 22</p>
--	--	--	--	--	---

	<p>(a-c) 4.2 (c, e) 3.3 h To study Matter:</p> <ul style="list-style-type: none"> -Follow safety procedures in the classroom and laboratory -Safely use laboratory burner and associated equipment -Identify patterns and trends -Identify cause and effect relationships <p>Composition of matter. Standard 4 3.1c, 3.1d, 3.1e, 3.1f, 3.3h, 4.2d</p>	<p>Concentrated Solubility SWBAT read a solubility graph</p>			
5.1d	Motion:	SWBAT understand	Teacher Developed:	Tests – tests are written	Motion

<p>Msp 2-2, ETS1-1,ETS1-2</p> <p>An object in linear motion may travel with a constant velocity or with acceleration. (Note: Testing of acceleration will be limited to cases in which acceleration is constant.)</p> <p>5.1e An object in free fall accelerates due to the force of gravity. Friction and other forces cause the actual motion of a falling object to deviate from its theoretical motion. (Note: Initial velocities of objects in free fall may be in any direction.)</p> <p>5.1f The path of a projectile is the</p>	<p>Standard 4 5.1 (a - e) 5.2 (a,c,d,e)</p> <p>SWBAT work with their partners on a hands on lab that requires them to determine the amount of time it takes them to walk 5 meters quick, slow and moderately paced. SWBAT determine the speed for themselves and their partners. SWBAT determine the distance they can travel in 5 seconds quick, slow and moderately paced. S's will again determine speed for themselves and their Partner.</p> <p>SWBAT answer analysis questions concerning the</p>	<p>displacement, distance, velocity, speed, and acceleration, SWBAT understand Newton's laws of motion.</p> <p>SWBAT: given the lab paper for their guided inquiry of speed. Together with their lab partner, they will be able to determine a hypothesis to investigate.</p> <p>SWB given the following materials: Pascars (spring loaded), varying amounts of mass, ramps, meter sticks, masking tape and stop watches. SWBAT utilize the speed equation to prove their hypothesis.</p>	<ul style="list-style-type: none"> -PowerPoints -Physical Science Textbook -Teacher developed workbook Document -Camera -Smart Board -Student White Board 	<p>using Wizard Test Maker and Prentice Hall Science Explorer software. Some questions are also utilized from previous NYS 8th grade Science Tests and teacher generated.</p> <p>Quizzes – Wizard Test Maker, Prentice Hall, NYS 8th grade Science Test, teacher generated.</p> <p>Homework – assignments from textbook, assignments from teacher generated workbook, guided reading. Lab activities</p>	<p>3 weeks March 23- April 9</p>
---	---	---	---	--	--------------------------------------

<p>result of the simultaneous effect of the horizontal and vertical components of its motion; these components act independently.</p> <p>5.1g A projectile's time of flight is dependent upon the vertical component of its motion.</p> <p>5.1h The horizontal displacement of a projectile is dependent upon the horizontal component of its motion and its time of flight.</p> <p>5.1n Centripetal force is the net force which produces centripetal acceleration. In uniform circular motion, the centripetal force is perpendicular to the</p>	<p>different speeds and their variation with time and distance as well as pace.</p> <p>Objective: S's will be able to identify the equation for speed and velocity, distinguishing the only difference of Direction.</p> <p>S's will be able to utilize the tricky triangle to determine equations for distance and time.</p>				
---	---	--	--	--	--

<p>tangential velocity.</p> <p>5.1o Kinetic friction is a force that opposes motion.</p>					
--	--	--	--	--	--

<p>Energy and matter interact through forces that result in changes in motion.</p> <p>5.1e An object in free fall accelerates due to the force of gravity. Friction and other forces cause the actual motion of a falling object to deviate from its theoretical motion. (Note: Initial velocities of objects in free fall may be in any direction.)</p> <p>5.1i According to Newton's First Law, the inertia of an object is directly proportional to its mass. An object remains at rest or moves with constant velocity, unless acted upon by an unbalanced force.</p>	<p>Forces:Standard 4 5.1 (a - e) 5.2 (a,c,d,e) Force, Mass, and Weight What are force, mass, and weight? What is the relationship between weight and gravity? How are force, mass, and weight measured? How are mass and weight related?</p> <p>Newton's First Law of Motion An object at rest will remain at rest and an object in motion will continue moving at a constant velocity unless acted upon by a net force.</p>	<p>SWBAT understand forces on objects at rest SWBAT understand forces on objects moving with constant velocity SWBAT understand forces on accelerating objects</p> <p>SWBAT review Newton's first law of motion SWBAT discuss what an outside force is that will act on an object to change its motion. SWBAT distinguish between a balanced and unbalanced force. SWBAT define inertia SWBAT recognize that Newton's first law is. TSWBT: Explain Newton's First Law of Motion is sometimes referred</p>	<p>Teacher Developed: -PowerPoints -Physical Science Textbook -Teacher developed workbook Document -Camera -Smart Board -Student White Board</p>	<p>Tests – tests are written using Wizard Test Maker and Prentice Hall Science Explorer software. Some questions are also utilized from previous NYS 8th grade Science Tests and teacher generated. Quizzes – Wizard Test Maker, Prentice Hall, NYS 8th grade Science Test, teacher generated. Homework – assignments from textbook, assignments from teacher generated workbook, guided reading. Lab activities</p>	<p>Forces 3 weeks April 10-May10</p>
---	---	---	---	---	--

<p>5.1j When the net force on a system is zero, the system is in equilibrium.</p> <p>5.1k According to Newton's Second Law, an unbalanced force causes a mass to accelerate.</p> <p>5.1l Weight is the gravitational force with which a planet attracts a mass. The mass of an object is independent of the gravitational field in which it is located.</p> <p>5.1m The elongation or compression of a spring depends upon the nature of the spring (its spring constant) and the magnitude of the applied force.</p>	<p>Newton's Second Law of Motion The acceleration of an object is directly proportional to the net force acting on it and inversely proportional to its mass.</p> <p>All objects accelerate toward Earth at 9.8 m/s/s Air resistance slows the acceleration of falling objects An object is in free fall if gravity is the only force acting on it. An orbit is formed by combining forward motion and free fall Objects in orbit appear to be weightless</p>	<p>to as the Law of Inertia</p> <p>TSWBT: Understand Inertia is the tendency of matter to resist a change in motion. Mass is a measure of inertia.</p> <p>TSWBT: Relate The more mass which an object has, the more inertia it has - the more tendency it has to resist changes in its</p> <p>TSWBT: <ul style="list-style-type: none"> • define momentum • calculate momentum • understand and state conservation of momentum </p>	<p>Teacher Developed: <ul style="list-style-type: none"> -PowerPoints -Physical Science Textbook -Teacher developed workbook Document -Camera -Smart Board -Student White Board </p>		
---	--	---	--	--	--

<p>5.1n Centripetal force is the net force which produces centripetal acceleration. In uniform circular motion, the centripetal force is perpendicular to the tangential velocity.</p> <p>5.1o Kinetic friction is a force that opposes motion.</p> <p>5.1q According to Newton's Third Law, forces occur in action/reaction pairs. When one object exerts a force on a second, the second exerts a force on the first that is equal in magnitude and opposite in direction.</p>	<p>because they are in free fall.</p> <p>Gravity</p> <ul style="list-style-type: none"> - explain gravity and its effects - - calculate force, acceleration and velocity - - explain and demonstrate Newton's Laws of Motion - - understand the relationship of force, mass and acceleration <p>Newton's Third Law of Motion</p> <p>When one object exerts a force on a second object, the second object exerts an equal but opposite force on the first.</p>	<p>TSWBT: Understand: Forces: For every action, there is an equal and opposite reaction. come in pairs - equal and opposite action-reaction force pairs Action-reaction</p>	<p>Teacher Developed:</p> <ul style="list-style-type: none"> -PowerPoints -Physical Science Textbook -Teacher developed workbook Document -Camera -Smart Board -Student White Board 		<p>Gravity and Newton's Laws 2 weeks May 11-May 24</p>
--	---	---	--	--	--

<p>5.1t Gravitational forces are only attractive, whereas electrical and magnetic forces can be attractive or repulsive.</p>					
<p>Energy may be converted among mechanical, electromagnetic, nuclear, and thermal forms.</p> <p>4.1j Energy may be stored in electric or magnetic fields. This energy may be transferred through conductors or space and may be converted to other forms of energy.</p> <p>4.1k Moving electric charges produce magnetic fields. The</p>	<p>Electricity and Magnetism : Electricity and Magnetism What is a magnetic field? What is electricity? What is an electrical circuit? How are electricity and magnetism related? How is electrical energy transformed into other forms of Energy? Standard 4 4.1 (a-f) 4.4 d 4.5 (a,</p>	<p>SWBAT understand the movement of electrons and how they apply to electric circuits; electrical conductors and insulators SWBAT understand an overview of magnetism</p>	<p>Teacher Developed: - PowerPoints - Physical Science Textbook - Teacher developed workbook Document - Camera - Smart Board - Student White Board</p>	<p>Tests – tests are written using Wizard Test Maker and Prentice Hall Science Explorer software. Some questions are also utilized from previous NYS 8th grade Science Tests and teacher generated. Quizzes – Wizard Test Maker, Prentice Hall, NYS 8th grade Science Test, teacher generated. Homework – assignments from textbook, assignments from teacher generated workbook, guided reading. Lab activities</p>	<p>Electricity and Magnetism 1 week May 25-June 7</p>

<p>relative motion between a conductor and a magnetic field may produce a potential difference in the conductor.</p> <p>4.3g Electromagnetic radiation exhibits wave characteristics. Electromagnetic waves can propagate through a vacuum.</p> <p>4.3k All frequencies of electromagnetic radiation travel at the same speed in a vacuum.</p> <p>5.1t Gravitational forces are only attractive, whereas electrical and magnetic forces can be attractive or repulsive.</p>	<p>b) 4.3a, 4.4d</p> <p>Space MS-ess1-3,Ms-2</p>				
---	---	--	--	--	--