

Camp Hill School District Planned Course Document Cover Page

Subject: Science

Grade Level(s): 5



Updated: Mixtures and Solutions (Eileen Denlinger and Karen Anthony)

Updated: Earth and Sun (Tammy DeSanto)

Updated: Living Systems (Quinn Smith)

Updated: Energy Transfers and Waves (Carrie Budman)

Written by: Quinn Smith and Carrie Budman_____

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“The Camp Hill School Community strives to prepare every student with the skills and knowledge necessary to thrive in a global society.”

CAMP HILL SCHOOL DISTRICT

Updated: Mixtures and Solutions

Big Ideas:

- Matter can be understood in terms of the types of atoms present and the interactions both between and within atoms.

<u>Essential Question</u>	<u>Focus for Instruction</u> (What students should be able to do?)	Essential Vocabulary	<u>Planned Learning Experiences and Instructional Strategies</u> (How will you adjust instruction to meet the needs of diverse learners?)	<u>Assessments</u> (How will you know if students have learned? List Summative [S], Formative [F], Benchmark [B], Diagnostic [D])	<u>Technology, Materials and Resources Standards</u>	Suggested Timeframe (If applicable)
How can one explain the structure, properties, and interactions of matter?	<p>Competency Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total mass of matter is conserved.</p> <p>Concepts The amount of matter is conserved when it changes form.</p>	Conservation of Mass	Use learning, interest and readiness profiles to differentiate notes, materials, experiments and assessments.	<p>Summative: Unit Test PSSA</p> <p>Formative: Quizzes Projects Teacher Observation</p>	3.2.5.A6 Click here for resources.	
How can one explain the structure, properties, and interactions of matter?	<p>Competency Plan and conduct an investigation to determine whether the mixing of two or more substances results in new substances (e.g., cooking, baking, burning, etc.).</p>	Chemical change vs. physical change Mass Temperature Volume	Use learning, interest and readiness profiles to differentiate notes, materials, experiments and assessments.	<p>Summative: Unit Test PSSA</p> <p>Formative: Quizzes Projects Teacher Observation</p>	3.2.5.A6 3.2.3 A.4 Click here for resources.	The entire unit should take approximately 7 weeks.

	<p>Concept When two or more different substances are mixed, a new substance with different properties may be formed.</p>					
How can one explain the structure, properties, and interactions of matter?	<p>Competency Develop a model to describe that matter is made of particles too small to be seen.</p> <p>Concept Matter of any type can be subdivided into particles that are too small to see, but even then the matter still exists and can be detected by other means.</p>	Condensation Evaporation Matter Particles	Use learning, interest and readiness profiles to differentiate notes, materials, experiments and assessments.	<p>Summative: Unit Test PSSA</p> <p>Formative: Quizzes Projects Teacher Observation</p>	3.2.5.A6 Click here for resources.	
How can one explain the structure, properties, and interactions of matter?	<p>Competency Make observations and measurements to identify given materials based on their properties.</p> <p>Concept Measurements of a variety of properties can be used to identify materials.</p>	Hardness Mass Moh's scale Porosity Properties Solubility Streak tests Volume	Use learning, interest and readiness profiles to differentiate notes, materials, experiments and assessments.	<p>Summative: Unit Test PSSA</p> <p>Formative: Quizzes Projects Teacher Observation</p>	3.2.5.A6 Click here for resources.	
How can one explain the structure, properties, and interactions of matter?	<p>Competency Measure and graph quantities to provide evidence that regardless of the type of change</p>	Conservation of Mass	Use learning, interest and readiness profiles to differentiate notes, materials, experiments and	<p>Summative: Unit Test PSSA</p> <p>Formative: Quizzes Projects</p>	3.2.5.A6 Click here for resources.	

	<p>that occurs when heating, cooling, or mixing substances, the total mass of matter is conserved.</p> <p>Concept The amount of matter is conserved when it changes form.</p>		assessments.	Teacher Observation		
How can one explain the structure, properties, and interactions of matter?	<p>Competency Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total mass of matter is conserved.</p> <p>Concept When two or more different substances are mixed, a new substance with different properties may be formed; such occurrences depend on the substances and the temperature.</p>	Chemical change Mixtures vs. compounds	Use learning, interest and readiness profiles to differentiate notes, materials, experiments and assessments.	<p>Summative: Unit Test PSSA</p> <p>Formative: Quizzes Projects Teacher Observation</p>	3.2.6.A4 3.2.7.A4	Click here for resources.
How can one explain the structure, properties, and interactions of matter?	<p>Competency Plan and carry out investigations to determine the effect on the total mass of a substance when</p>	Chemical change Dissolve Physical changes	Use learning, interest and readiness profiles to differentiate notes, materials, experiments and assessments.	<p>Summative: Unit Test PSSA</p> <p>Formative: Quizzes Projects Teacher Observation</p>	3.2.5.A6	Click here for resources.

	<p>the substance changes shape, phase, and/or is dissolved.</p> <p>Concept No matter what reaction or change in properties occurs, the total mass of the substances does not change.</p>					
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CAMP HILL SCHOOL DISTRICT

Updated: Earth and Sun

Big Ideas:

- The universe is composed of a variety of different objects, which are organized into systems, which develops according to accepted physical processes and laws.
- The Earth is a complex and dynamic set of interconnected systems (e.g. geosphere, hydrosphere, atmosphere, biosphere) that interact over a wide range of temporal and spatial scales.
- Interactions of objects or systems of objects can be predicted and explained using the concept of energy transfer and conservation.

<u>Essential Question</u>	<u>Focus for Instruction</u> (What students should be able to do?)	Essential Vocabulary	<u>Planned Learning Experiences and Instructional Strategies</u> (How will you adjust instruction to meet the needs of diverse learners?)	<u>Assessments</u> (How will you know if students have learned? List Summative [S], Formative [F], Benchmark [B], Diagnostic [D])	<u>Technology, Materials and Resources Standards</u>	Suggested Timeframe (If applicable)
How can one explain and predict interactions between objects within systems?	<p>Competency *Construct and support an argument that the gravitational force exerted by Earth on objects is directed down.</p> <p>Concept *Gravitational force of Earth acting on another object near Earth's surface pulls that object toward the planet's center.</p>	Gravitational force	Use learning, interest and readiness profiles to differentiate notes, materials, experiments and assessments.	<p>Summative: Unit Test PSSA</p> <p>Formative: Quizzes Projects Teacher Observation</p>	<p>3.3.6B1 3.3.7.B1</p> <p>Click here for resources.</p>	The entire unit should take approximately 7 weeks.
What is the universe, and what is Earth's place in it?	<p>Competency *Support an argument that the apparent brightness of the sun and stars is due to their relative distances from</p>	Relative distance Stars Sun	Use learning, interest and readiness profiles to differentiate notes, materials, experiments and assessments.	<p>Summative: Unit Test PSSA</p> <p>Formative: Quizzes Projects Teacher Observation</p>	<p>3.3.8.B1</p> <p>Click here for resources.</p>	

	<p>Earth.</p> <p>Concept The sun is a star that appears larger and brighter than other stars because it is closer.</p>					
<p>What is the universe, and what is Earth's place in it?</p>	<p>Competency Support an argument that the apparent brightness of the sun and stars is due to their relative distances from Earth.</p> <p>Concept Stars range greatly in their distance from Earth.</p>	<p>Apparent brightness Earth Relative distance Stars Sun</p>	<p>Use learning, interest and readiness profiles to differentiate notes, materials, experiments and assessments.</p>	<p>Summative: Unit Test PSSA Formative: Quizzes Projects Teacher Observation</p>	<p>3.3.8.B1</p> <p>Click here for resources.</p>	
<p>What is the universe, and what is Earth's place in it?</p>	<p>Competency Represent data in graphical displays to reveal patterns of daily changes in the length and direction of shadows, day and night, and seasonal appearance of stars in the sky.</p> <p>Concept The orbits of Earth around the sun and of the moon around Earth, together with rotation of Earth about an axis between its north and South poles, cause observable</p>	<p>Data Graphical display Patterns Representation Shadows</p>	<p>Use learning, interest and readiness profiles to differentiate notes, materials, experiments and assessments.</p>	<p>Summative: Unit Test PSSA Formative: Quizzes Projects Teacher Observation</p>	<p>3.3.5.B1</p> <p>Click here for resources.</p>	

	patterns (e.g., day and night, length and direction of shadows, different positions of sun, moon, and stars).					
How and why is Earth constantly changing?	<p>Competency Construct and analyze models to describe systems interactions among the geosphere, hydrosphere, atmosphere, and biosphere.</p> <p>Concept All Earth processes are the result of energy flowing and matter cycling within and among the planet's systems. The energy is derived from the sun and the earth's interior. These flows and cycles produce chemical and physical changes in Earth's materials and living organisms.</p>	Atmosphere Biosphere Chemical change Energy flow Geosphere Hydrosphere Model Physical change	Use learning, interest and readiness profiles to differentiate notes, materials, experiments and assessments.	<p>Summative: Unit Test PSSA</p> <p>Formative: Quizzes Projects Teacher Observation</p>	3.3.4.A4 3.3.4.A5	Click here for resources.
How and why is Earth constantly changing?	<p>Competency Through the creation of a model, explain that the chemical and physical processes that cycle earth materials and form rocks.</p>	Atmosphere Biosphere Chemical change Energy flow Geosphere Hydrosphere Model Physical change	Use learning, interest and readiness profiles to differentiate notes, materials, experiments and assessments.	<p>Summative: Unit Test PSSA</p> <p>Formative: Quizzes Projects Teacher Observation</p>	3.3.4.A4 3.3.4.A5	Click here for resources.

	<p>Concept All Earth processes are the result of energy flowing and matter cycling within and among the planet's systems. The energy is derived from the sun and the earth's interior. These flows and cycles produce chemical and physical changes in Earth's materials and living organisms.</p>					
How can one explain and predict interactions between objects within systems?	<p>Competency *Construct and support an argument that the gravitational force exerted by Earth on objects is directed down. (5-PS2-1)</p> <p>Concept *Gravitational force of Earth acting on another object near Earth's surface pulls that object toward the planet's center. (PS2.B) *Earth and Space Science</p>	Gravitational force	Use learning, interest and readiness profiles to differentiate notes, materials, experiments and assessments.	<p>Summative: Unit Test PSSA</p> <p>Formative: Quizzes Projects Teacher Ob</p>	3.4.7.C 3.4.7.D 3.3.6B1 3.3.7.B1 S8.C.3.1 S8.D.3.1 S8.D.3.1.1 S8.D.3.1.2	

CAMP HILL SCHOOL DISTRICT

Updated: Living Systems

Big Ideas:

- Interactions of objects or systems of objects can be predicted and explained using the concept of energy transfer and conservation.
- All organisms are made of cells and can be characterized by common aspects of their structure and functioning

<u>Essential Question</u>	<u>Focus for Instruction</u> (What students should be able to do?)	<u>Essential Vocabulary</u>	<u>Planned Learning Experiences and Instructional Strategies</u> (How will you adjust instruction to meet the needs of diverse learners?)	<u>Assessments</u> (How will you know if students have learned? List Summative [S], Formative [F], Benchmark [B], Diagnostic [D])	<u>Technology, Materials and Resources Standards</u>	<u>Suggested Timeframe</u> (If applicable)
How is energy transferred and conserved?	Competency **Use a model to describe that energy in animal's food was once energy from the sun. (5-PS3-1) **Life Science Concept **Energy released from food was once energy from the sun that was captured by plants in the chemical process that forms plant matter. (PS3.D) **Life Science	Energy flow Flow chart Model Photosynthesis	Use learning, interest and readiness profiles to differentiate notes, materials, experiments and assessments.	Summative: Unit Test PSSA Formative: Quizzes Projects Teacher Ob	4.1.7.C S8.B.3.1.1 S8.B.3.1.2 S8.B.3.1.3 S8.C.2.1 S8.C.2.1.1 S8.C.2.2.1	
How do organisms live, grow, respond to their environment, and reproduce?	Competency Use a model to describe that energy in animal's food was once	Food chain Food web	Use learning, interest and readiness profiles to differentiate notes, materials, experiments and	Summative: Unit Test PSSA Formative: Quizzes Projects	3.1.7.A8 S8.B.3.1.1 S8.B.3.1.3 S8.A.3.2.1 S8.A.3.2.3	

	<p>energy from the sun.</p> <p>Concept Food provides animals with materials needed for body repair and growth.</p>		assessments.	Teacher Ob		
How do organisms live, grow, respond to their environment, and reproduce?	<p>Competencies Use a model to describe that energy in animal's food was once energy from the sun.</p> <p>Concept Food provides animals with materials needed for energy and to maintain body warmth and for motion.</p>	Food chain Food web	Use learning, interest and readiness profiles to differentiate notes, materials, experiments and assessments.	<p>Summative: Unit Test PSSA</p> <p>Formative: Quizzes Projects Teacher Ob</p>	3.1.7.A8 S8.B.3.1.1 S8.B.3.1.3 S8.A.3.2.1 S8.A.3.2.3	
How do organisms live, grow, respond to their environment, and reproduce?	<p>Competencies Using evidence, present an argument that plants get the materials they need for growth</p> <p>Concept Plants acquire their material for growth primarily from air and water.</p>	Argument Evidence Minerals	Use learning, interest and readiness profiles to differentiate notes, materials, experiments and assessments.	<p>Summative: Unit Test PSSA</p> <p>Formative: Quizzes Projects Teacher Ob</p>	3.1.7.A8 S8.B.3.1.1 S8.B.3.1.3 S8.A.3.2.1 S8.A.3.2.3	
How do organisms live, grow, respond to their environment, and reproduce?	<p>Competencies Construct and communicate models of food webs that demonstrate the transfer of matter</p>	Ecosystem Food webs	Use learning, interest and readiness profiles to differentiate notes, materials, experiments and assessments.	<p>Summative: Unit Test PSSA</p> <p>Formative: Quizzes Projects Teacher Ob</p>	S8.B.3.1.1 S8.B.3.1.3 S8.A.3.2.1 S8.A.3.2.3	

	<p>and energy among organisms within an ecosystem.</p> <p>Concept Animals and plants alike take in gases and water and release waste matter into the environment; animals must take in food, and plants need light and minerals.</p>					
How and why do organisms interact with their environment and what are the effects of these interactions?	<p>Competencies Ask researchable questions about the ways organisms obtain matter and energy across multiple and varied ecosystems.</p> <p>Concept Organisms can survive only in environments in which their particular needs are met.</p>	Researchable Species Web of life	Use learning, interest and readiness profiles to differentiate notes, materials, experiments and assessments.	<p>Summative: Unit Test PSSA</p> <p>Formative: Quizzes Projects Teacher Ob</p>	3.1.6.A2 S8.B.3.1.1	
How and why do organisms interact with their environment and what are the effects of these interactions?	<p>Competencies Construct a model of a food web to demonstrate the transfer of matter and energy among organisms within an ecosystem.</p> <p>Concept A healthy ecosystem is one in which multiple species of different</p>	Ecosystem Transfer energy	Use learning, interest and readiness profiles to differentiate notes, materials, experiments and assessments.	<p>Summative: Unit Test PSSA</p> <p>Formative: Quizzes Projects Teacher Ob</p>	3.1.6.A2 S8.B.3.1.1	

	types are each able to meet their needs in a relatively stable web of life. (LS2.A)					
How and why do organisms interact with their environment and what are the effects of these interactions?	<p>Competencies Identify a newly introduced species to an ecosystem and provide evidence that it is an invasive species or noninvasive species.</p> <p>Concept Newly introduced species can damage the balance of an ecosystem. (LS2.A)</p>	Ecosystem Invasive Noninvasive Species System	Use learning, interest and readiness profiles to differentiate notes, materials, experiments and assessments.	<p>Summative: Unit Test PSSA</p> <p>Formative: Quizzes Projects Teacher Ob</p>	3.1.6.A2 S8.B.3.1.1 S8.B.3.1.2 S8.B.3.1.3	
How and why do organisms interact with their environment and what are the effects of these interactions?	<p>Competencies Use models to trace the cycling of particles of matter between the air and soil and among plants, animals, and microbes.</p> <p>Concept Matter cycles between the air and soil and among plants, animals, and microbes as these organisms live and die.</p>	Cycles Matter Microbes	Use learning, interest and readiness profiles to differentiate notes, materials, experiments and assessments.	<p>Summative: Unit Test PSSA</p> <p>Formative: Quizzes Projects Teacher Ob</p>	3.1.6.A2 S8.B.3.1.1 S8.B.3.1.2	
How and why do organisms interact with their	<p>Competencies Use models to describe how</p>	Decomposers Decomposition Microbes	Use learning, interest and readiness profiles to	<p>Summative: Unit Test PSSA</p>	3.1.6.A2 S8.B.3.1.1	

<p>environment and what are the effects of these interactions?</p>	<p>decomposition eventually restores (recycles) some materials back to the soil for plants to use. Concept Matter cycles between the air and soil and among plants, animals, and microbes as these organisms live and die.</p>		<p>differentiate notes, materials, experiments and assessments.</p>	<p>Formative: Quizzes Projects Teacher Ob</p>	<p>S8.B.3.1.2 S8.B.3.1.3</p>	
<p>How and why do organisms interact with their environment and what are the effects of these interactions?</p>	<p>Competencies Describe a healthy ecosystem as a system in terms of the components and interactions. Concept A healthy ecosystem is one in which multiple species of different types are each able to meet their needs in a relatively stable web of life.</p>	<p>Ecosystem Components System System models</p>	<p>Use learning, interest and readiness profiles to differentiate notes, materials, experiments and assessments.</p>	<p>Summative: Unit Test PSSA Formative: Quizzes Projects Teacher Ob</p>	<p>3.1.6.A2 S8.B.3.1.1 S8.B.3.1.2 S8.B.3.1.3</p>	

CAMP HILL SCHOOL DISTRICT

Updated: Energy and Waves

Big Ideas:

- Interactions of objects or systems of objects can be predicted and explained using the concept of energy transfer and conservation.
- Waves are a repeating pattern of motion that transfers energy from place to place without overall displacement of matter.

<u>Essential Question</u>	<u>Focus for Instruction</u> (What students should be able to do?)	Essential Vocabulary	<u>Planned Learning Experiences and Instructional Strategies</u> (How will you adjust instruction to meet the needs of diverse learners?)	<u>Assessments</u> (How will you know if students have learned? List Summative [S], Formative [F], Benchmark [B], Diagnostic [D])	<u>Technology, Materials and Resources Standards</u>	Suggested Timeframe (If applicable)
How can one explain and predict interactions between objects within systems?	<p>Competencies Construct and support an argument that the gravitational force exerted by Earth on objects is directed down.</p> <p>Concept Gravitational force of Earth acting on another object near Earth's surface pulls that object toward the planet's center.</p>	Gravitational force	Use learning, interest and readiness profiles to differentiate notes, materials, experiments and assessments.	<p>Summative: Unit Test PSSA</p> <p>Formative: Quizzes Projects Teacher Ob</p>	3.3.6B1 3.3.7.B1 S8.C.3.1 S8.D.3.1 S8.D.3.1.1 S8.D.3.1.2	
How is energy transferred and conserved?	<p>Competencies Use a model to describe that energy in animal's food was once energy from the sun.</p> <p>Concept Energy released from food was</p>	Energy flow Flow chart Model Photosynthesis	Use learning, interest and readiness profiles to differentiate notes, materials, experiments and assessments.	<p>Summative: Unit Test PSSA</p> <p>Formative: Quizzes Projects Teacher Ob</p>	4.1.7.C S8.B.3.1.1 S8.B.3.1.2 S8.B.3.1.3 S8.C.2.1 S8.C.2.1.1 S8.C.2.2.1	

	once energy from the sun that was captured by plants in the chemical process that forms plant matter.					
How are waves used to transfer energy and information?	<p>Competency: Investigate and provide evidence that the color people see depends on the color of the available light sources as well as the properties of the surface of the object reflecting the light.</p> <p>Concept: An object can be seen when light reflected from its surface enters the eyes.</p>		Use learning, interest and readiness profiles to differentiate notes, materials, experiments and assessments.	<p>Summative: Unit Test PSSA</p> <p>Formative: Quizzes Projects Teacher Ob</p>	3.2.3.B5 3.2.4.B5 (4th Grade Standard carried over)	