BARTLETT CITY SCHOOLS

7th Grade Science Curriculum Document Quarter 1

Life Science 1: From Molecules to Organisms: Structure and Process

Time Frame	Learning Outcomes/Activities	Online Resources	Crosscutting Concepts (CCC) Science and Engineering Practices (SEP)
Standard: 7.LS1.1- Develop and construct models that identify and explain the structure and function of major cell organelles as they contribute to the life activities of the cell and organism. **Pearson Lesson(s)- Chapter 5 Lesson 2**			
2-Weeks of Quarter 1	**Sub Objectives:** - We can identify and describe all major organelles of a plant and animal cell. - We can compare the main parts of a cell to the parts of a factory or school. - We can describe how the components of a cell provide structure, obtain food and water, provide energy, or work together to accomplish cellular functions. **Learning Outcomes** - We can develop a model that explains the structure and function of major cell organelles. - We can construct a model that explains the structure and function of major cell organelles. - We can identify the structure and function of major cell organelles. - We can explain the structure and function of major cell organelles as they contribute to the life activities of the cell and organism. **Activities:** - We can create a model of a cell that shows all the major organelles of a plant or animal cell and describes their function.	Cell Rap: https://www.youtube.com/watch?v=-zafJKbMPA8 Plant Cell Tutorial http://www.sheppardsoftware.com/health/anatomy/cell/plant_cell_tutorial.htm Plant Cell Game: http://www.sheppardsoftware.com/health/anatomy/cell/plant_cell_game.htm Animal Cell Tutorial: http://www.sheppardsoftware.com/health/anatomy/cell/cell_tutorial.htm Animal Cell Game: http://www.sheppardsoftware.com/health/anatomy/cell/cell_game.htm Pearson Teacher's Guide: Modeling a Cell: https://www.pearsonrealize.com/community/program/570dcf01-fc67-3fa2-98ce-a30a6ce2c8f7/5/resources/content/61c24e21-fef0-34c8-af85-464ab90ec6e6/5 (You will need your Person Login ^)	**CROSSCUTTING CONCEPT:** **Systems and System Models** *Students develop models for systems which include both visible and invisible inputs and outputs for that system.* **SCIENCE AND ENGINEERING PRINCIPLE:** **Developing and Using Models** *Students create models which are responsive and incorporate features that are not visible in the natural world, but have implications on the behavior of the modeled systems and can identify limitations of their models.*

BARTLETT CITY SCHOOLS

Life Science 1: From Molecules to Organisms: Structure and Process			
Time Frame	**Learning Outcomes/Activities**	**Online Resources**	**Crosscutting Concepts (CCC) Science and Engineering Practices (SEP)**
Standard: 7.LS1.3- Evaluate evidence that cells have structural similarities and differences across kingdoms. **Pearson Lesson(s)- Chapter 5 Lesson 1**			
_1_ Week of Quarter 1	**Sub Objective:** - We can explain how plant and animals share similar organelles. - We can differentiate between prokaryotes and eukaryotes. - We can give examples of prokaryotic cells and eukaryotic cells. **Learning Outcomes:** - We can evaluate evidence that cells have structural similarities and differences across kingdoms. **Activities:** - We can use a double Venn diagram to compare and contrast plant and animal cells. - We can complete a table that shows the similarities between plant and animal cells. - We can use models of plant and animal cells to determine their similarities.	Interactive Cell Models: https://www.cellsalive.com/cells/cell_model.htm Cell Simulation: Plant and Animal Cell Builder http://sepuplhs.org/high/sgi/teachers/cell_sim.html Cell Game: https://www.carolina.com/teacher-resources/Interactive/online-game-cell-structure-cellcraft-biology/tr11062.tr Comparing Cells Quick Lab: https://www.pearsonrealize.com/community/program/570dcf01-fc67-3fa2-98ce-a30a6ce2c8f7/5/resources/content/b2a0e8bc-89d0-3170-b3ec-5fb8dba29821/5 (You will need your Pearson Login ^)	**CROSSCUTTING CONCEPT:** **Pattern** *Students recognize, classify, and record patterns in data, graphs, and charts.* **SCIENCE AND ENGINEERING PRINCIPLE:** **Engaging in argument from evidence** *Students present an argument based on empirical evidence, models, and invoke scientific reasoning.*
Life Science 1: From Molecules to Organisms: Structure and Process			

Time Frame	Learning Outcomes/Activities	Online Resources	Crosscutting Concepts (CCC) Science and Engineering Practices (SEP)
Standard: 7.LS1.4- Diagram the hierarchical organization of multicellular organisms from cells to organism. **Pearson Lesson(s)-Chapter 5 Lesson 2**			
_1_ Week of Quarter 1	**Sub Objective:** - We can describe the levels of organization in living things. - We can explain how groups of organs can work together to form organ systems and these systems interact with other another to support multicellular organisms. **Learning Outcomes** - We can diagram the levels of organization of multicellular organisms from cells to organism. **Activities:** - We can create a flow chart that shows the levels of organization between cells to organism.	Levels of Organization Animation: https://www.cengage.com/biology/discipline_content/animations/organization.html Build an Organ Game: https://www.centreofthecell.org/learn-play/games/build-an-organ/ Explore a Cell: https://www.centreofthecell.org/learn-play/games/explore-a-cell/ What is a Cell: Shows how cells work together https://www.centreofthecell.org/learn-play/games/ Pearson Tissues, Organs, Organ Systems: https://www.pearsonrealize.com/community/program/570dcf01-fc67-3fa2-98ce-a30a6ce2c8f7/5/resources/content/d3374e3a-74b2-316b-bc32-b38be77417d7/5 (You will need your Pearson Login ^)	**CROSSCUTTING CONCEPT:** **Systems and System Models** *Students evaluate the sub-systems that may make up a larger system.* **SCIENCE AND ENGINEERING PRINCIPLE:** **Developing and Using Models** *Students create models which are responsive and incorporate features that are not visible in the natural world, but have implications on the behavior of the modeled systems and can identify limitations of their models.*

Time Frame	Learning Outcomes/Activities	Online Resources	Crosscutting Concepts (CCC) Science and Engineering Practices (SEP)
Standard: 7.LS1.2- Conduct an investigation to demonstrate how the cell membrane maintains homeostasis through the process of passive transport **Pearson Lesson(s)- Chapter 5 Lesson 4**			
_1_ Weeks of Quarter	**Sub Objectives:** - We can explain how materials move into and out of the cell. - We can differentiate between osmosis and diffusion. **Learning Outcomes:** - We can conduct an investigation to show how the cell membrane maintains homeostasis through passive transport. **Activities:** - We can complete a scientific investigation to determine how materials move during passive transport.	Gummy Bear Osmosis Lab: https://ny24000063.schoolwires.net/cms/lib/NY24000063/Centricity/Domain/208/GummyBearOsmosisLab.pdf Osmosis Video: Amoeba Sisters: https://www.youtube.com/watch?v=IaZ8MtF3C6M Diffusion Video: Amoeba Sisters https://www.youtube.com/watch?v=Ptmlvtei8hw Diffusion Video Handout: https://www.amoebasisters.com/uploads/2/1/9/0/21902384/video_recap_of_cell_transport_by_amoeba_sisters.pdf Diffusion Animation: https://authoring.concord.org/activities/12/pages/77/88a8dd15-8b14-4cb0-af05-e07ba893e091 Pearson: Active and Passive Transport Interactive Video/Quiz https://www.pearsonrealize.com/community/program/570dcf01-fc67-3fa2-98ce-a30a6ce2c8f7/5/resources/content/5b41faa9-13d0-31b7-a716-7d929bfceca3/5 (You will need your Pearson Login for this ^)	**CROSSCUTTING CONCEPT:** **Stability and Change** *Students make explanations of stability and change discussing molecular components of a system.* **SCIENCE AND ENGINEERING PRINCIPLE:** **Planning and carrying out controlling investigations** *Students begin to investigate independently, select appropriate independent variables to explore a dependent variable and recognize the value of failure on revision in the experimental process.*

BARTLETT CITY SCHOOLS

Time Frame	Learning Outcomes/Activities	Online Resources	Crosscutting Concepts (CCC) Science and Engineering Practices (SEP)
Standard: 7.LS1.9- Construct a scientific explanation based on compiled evidence for the processes of photosynthesis of cellular respiration, and anaerobic respiration in the cycling of matter and flow of energy into and out of organisms. **Pearson Lesson(s)- Chapter 6 Lessons 1 and 2**			
_1_ Week of Quarter 1 y	**Sub Objectives:** - We can explain how plants get their energy from the Sun. - We can explain what happens in plant and animal cells during cellular respiration. **Learning Outcomes:** - We can construct a scientific explanation based on evidence for the process of photosynthesis in the cycling of matter and flow of energy into and out of organisms. - We can construct a scientific explanation based on evidence for the process of cellular respiration in the cycling of matter and flow of energy into and out of organisms. - We can construct a scientific explanation based on evidence for the process of anaerobic respiration in the cycling of matter and flow of energy into and out of organisms **Activities:** - We can use models to describe what happens during photosynthesis. - We can use models to explain what happens during cellular respiration. - We can use a diagram to explain the how plants and animals depend on each other.	Amoeba Sister Photosynthesis Video: https://www.youtube.com/watch?v=uixA8ZXx0KU Amoeba Sisters Respiration Video: https://www.youtube.com/watch?v=4Eo7JtRA7lg Photosynthesis and Respiration Game: https://biomanbio.com/HTML5GamesandLabs/PhotoRespgames/photorespHtml5page.html Pearson: Photosynthesis Interactivity https://www.pearsonrealize.com/community/program/570dcf01-fc67-3fa2-98ce-a30a6ce2c8f7/5/resources/content/5c2c8cf4-d443-3008-ae3f-d14297b668d1/5 (You will need your Pearson Login for this ^) Pearson: Opposite Processes Interactivity https://www.pearsonrealize.com/community/program/570dcf01-fc67-3fa2-98ce-a30a6ce2c8f7/5/resources/content/9b2a679a-cace-35d5-b9e5-ad3062ead02c/5 (You will need your Pearson Login for this ^)	**CROSSCUTTING CONCEPT:** **Systems and System Models** *Students develop models for systems which include both visible and invisible inputs and outputs for that system.* **SCIENCE AND ENGINEERING PRINCIPLE:** **Planning and carrying out controlled investigations** *Students begin to investigate independently, select appropriate independent variables to explore a dependent variable, and recognize the value of failure and revision in the experimental process.*

Time Frame	Learning Outcomes/Activities	Online Resources	Crosscutting Concepts (CCC) Science and Engineering Practices (SEP)
Standard: 7.LS2.1- Develop a model to depict the cycling of matter, including carbon and oxygen, including the flow of energy among biotic and abiotic parts of an ecosystem **Pearson Lesson(s)- Chapter 6 Lessons 1 and 2**			
_1_ Week of Quarter 1	**Sub Objectives:** - We can describe how the Carbon and Oxygen cycles are related. **Learning Outcomes:** - We can develop a model to show the cycling of Carbon Dioxide and Oxygen in an ecosystem. - We can develop a model to show the flow of energy among biotic and abiotic parts of an ecosystem. **Activities:** - We can use a diagram to explain how carbon and oxygen are recycled.	Abiotic and biotic factors in an ecosystem: https://www.youtube.com/watch?v=E1pp_7-yTN4&feature=youtu.be Pearson: Cycles of Matter Interactivity https://www.pearsonrealize.com/community/program/570dcf01-fc67-3fa2-98ce-a30a6ce2c8f7/5/resources/content/41537f36-d1b2-3b6f-8050-0a6c29e21898/5 (You will need your Pearson Login for this ^)	**CROSSCUTTING CONCEPT:** **Energy and Matter** *Students demonstrate conservation of mass in physical and chemical changes.* **SCIENCE AND ENGINEERING PRINCIPLE:** **Developing and Using Models** *Students create models which are responsive and incorporate features that are not visible in the natural world, but have implications on the behavior of the modeled systems and can identify limitations of their models.*

BARTLETT CITY SCHOOLS

Life Science 1: From Molecules to Organisms: Structure and Process			
Time Frame	**Learning Outcomes/Activities**	**Online Resources**	**Crosscutting Concepts (CCC) Science and Engineering Practices (SEP)**
Standard: 7.LS1.8- Construct an explanation demonstrating that the function of mitosis for multicellular organisms is for growth and repair through the production of genetically identical daughter cells Pearson Lesson(s) Chapter 6 Lesson 3.			
_2_ Weeks of Quarter 2	**Sub Objectives:** - We can explain why mitosis occurs. - We can explain why organisms grow larger. - We can describe what occurs during each phase of Mitosis. **Learning Outcomes:** - We can construct an explanation that the function of mitosis in multicellular organisms is for growth and repair by making genetically identical daughter cells. **Activities:** - We can use diagrams to sequence the phases of the cell cycle and describe what is occurring in each phase. - We can explain how the law of conservation of energy applies to mitosis.	Mitosis Animation: https://biomanbio.com/HTML5GamesandLabs/Genegames/mitosismoverpage.html Stages of Mitosis Game: https://www.purposegames.com/game/stages-of-mitosis-quiz Oreo Mitosis Lab: http://studylib.net/doc/6894429/oreo-mitosis-student-worksheet-materials-needed--6-oreo-c... Amoeba Sisters Mitosis Video: https://www.youtube.com/watch?v=f-ldPgEfAHI Amoeba Sisters Mitosis Handout: https://www.amoebasisters.com/uploads/2/1/9/0/21902384/video_recap_of_mitosis_v._2_by_amoeba_sisters.pdf Pearson: Cell Growth and Division https://www.pearsonrealize.com/community/program/570dcf01-fc67-3fa2-98ce-a30a6ce2c8f7/5/resources/content/cbea9c77-7883-38e3-9f58-d86cf14a3322/5 (You will need your Pearson Login for this ^)	**CROSSCUTTING CONCEPT: Energy and Matter** *Students demonstrate conservation of mass in physical and chemical changes.* **SCIENCE AND ENGINEERING PRINCIPLE: Constructing explanations and designing solutions** *Students form explanations using source (including student-developed investigations) which show comprehension of parsimony, utilize quantitative and qualitative models to make predictions, and can support or cause revisions of a particular conclusion.*
Life Science 3: Heredity: Inheritance and Variation of Traits			

Time Frame	Learning Outcomes/Activities	Online Resources	Crosscutting Concepts (CCC) Science and Engineering Practices (SEP)
Standard: 7.LS3.2- Distinguish between mitosis and mitosis and meiosis and compare the resulting daughter cells **Pearson Lesson(s)- Chapter 7 Lesson 4.**			
_1_ Week of Quarter 2	**Sub Objectives:** - We can explain what type of cells are created during Mitosis and Meiosis. - We can differentiate between mitosis and meiosis. - We can recall the number of daughter cells created during mitosis and meiosis. **Learning Outcomes:** - We can distinguish between mitosis and meiosis. - We can compare the resulting daughter cells in mitosis and meiosis. **Activities:** - We can explain the events that occur during mitosis using a cause and effect relationship. - We can create a model of mitosis and explain what is occurring during each phase and how many daughter cells are created. - We can compare Mitosis and Meiosis using a T chart.	Mitosis vs Meiosis Information and Quizzes: http://www.softschools.com/difference/mitosis_vs_meiosis/130/ Pearson: Quick Lab- Chromosomes and Inheritance https://www.pearsonrealize.com/community/program/570dcf01-fc67-3fa2-98ce-a30a6ce2c8f7/5/tier/f0fa97e3-7d13-3540-b846-c5cd8f90ef23/5/lesson/7459b1da-3d2d-3be7-8aee-08429574873b/5/content/d25d1144-964e-31c8-8889-781660b853ef/5 (You will need your Person Login for this ^)	**CROSSCUTTING CONCEPT:** **Cause and Effect** *Students infer and identify cause and effect relationships from patterns.* **SCIENCE AND ENGINEERING PRINCIPLE:** **Developing and using models** *Students create models which are responsive and incorporate features that are not visible in the natural world, but have implications on the behavior of the modeled systems and can identify limitations of their models.*

Time Frame	Learning Outcomes/Activities	Online Resources	Crosscutting Concepts (CCC) Science and Engineering Practices (SEP)
Standard: 7.LS1.7- Evaluate and communicate evidence that compares and contrasts the advantages and disadvantages of sexual and asexual reproduction **Pearson Lesson(s)- Chapter 10 Lesson 5**			
_1_ Week of Quarter 2 y	**Sub Objectives:** - We can identify and describe methods of sexual and asexual reproduction and give evidence to support our claim. - We can identify the method that an organism reproduces as sexual or asexual. - We can describe the advantages and disadvantages of sexual and asexual reproduction using cause and effect relationships. **Learning Outcomes** - We can evaluate and communicate evidence that compares and contrasts the advantages and disadvantages of asexual reproduction. - We can evaluate and communicate evidence that compares and contrasts the advantages and disadvantages of sexual reproduction	Amoeba Sisters Video: Sexual and Asexual Reproduction https://www.youtube.com/watch?v=fcGDUcGjcyk&list=PLwL0Myd7Dk1F0iQPGrjehze3eDpco1eVz&index=44&t=0s Amoeba Sisters Video Handout: https://www.amoebasisters.com/uploads/2/1/9/0/21902384/video_recap_of_asexual_and_sexual_reproduction_by_amoeba_sisters_newheader.pdf Sexual vs Asexual Reproduction Animation: http://learn.genetics.utah.edu/content/basics/reproduction/ Investigating Reproductive Strategies: http://teach.genetics.utah.edu/content/evolution/files/ReproductiveStrategies.pdf Pearson: How Animals Reproduce https://www.pearsonrealize.com/community/search/content/2f506efd-87ee-3801-b179-36ebbbc4c02d/5?keywords=sexual%20reproduction (You will need your Pearson Login for this ^)	**CROSSCUTTING CONCEPT:** **Cause and Effect** *Students infer and identify cause and effect relationships from patterns.* **SCIENCE AND ENGINEERING PRINCIPLE:** **Obtaining, evaluating, and communicating information** *(Observe) Students can evaluate text, media, and visual displays of information with the intent of clarifying claims and reconciling explanations. Students can communicate scientific information in writing utilizing embedded tables, charts, figures, graphs*

Time Frame	Learning Outcomes/Activities	Online Resources	Crosscutting Concepts (CCC) Science and Engineering Practices (SEP)
Standard: 7.LS3.3- Predict the probability of individual dominant and recessive alleles to be transmitted from each parent to offspring during sexual reproduction and represent the genotypic and phenotypic patterns using ratios. **Pearson Lesson(s)- Chapter 7 Lessons 1 and 2**			
_2_ Weeks of Quarter 2	**Sub Objectives:** - We can describe and identify dominant and recessive traits. - We can describe and identify homozygous and heterozygous traits. - We can describe and identify genotypes and phenotypes. - We can differentiate between dominant and recessive traits, genotypes and phenotypes, and dominant and recessive traits. - We can complete a Punnett Square and determine the genotypic and phenotypic ratio. **Learning Outcomes:** - We can predict the probability of dominant and recessive alleles transferred from each parent to offspring during sexual reproduction and represent the genotype in ratios. - We can predict the probability of dominant and recessive alleles transferred from each parent to offspring during sexual reproduction and represent the phenotype in ratios. **Activities:** - We can complete a Punnett Square to determine the genotypic and phenotypic ratio using dominant and recessive alleles.	Punnett Square Animation: http://bcs.whfreeman.com/webpub/biology/Bres1e/Animations/resources/0802_punnettsqexample.html Interactive Punnett Square Virtual Lab: http://www.glencoe.com/sites/common_assets/science/virtual_labs/E09/E09.html Pearson: Alleles and Inheritance https://www.pearsonrealize.com/community/search/content/2e6688c6-0e46-3000-9e37-10bd3cde2fdd/5?keywords=dominant%20allel (You will need your Pearson login for this ^) Pearson: It Must Be Dominant! Scenario-Based Act https://www.pearsonrealize.com/community/search/content/a9d234a5-b226-3720-a6f1-ca627291d984/5?keywords=dominant%20allel (You will need your Pearson login for this^)	**CROSSCUTTING CONCEPT:** **Pattern** *Students recognize, classify, and record patterns for macroscopic phenomena based on microscopic structure.* **SCIENCE AND ENGINEERING PRINCIPLE:** **Analyzing and interpreting data** *Students should create and analyze graphical presentations of data to identify linear and non-linear relationships, consider statistical features within data and evaluate multiple data sets for a single phenomenon*

Time Frame	Learning Outcomes/Activities	Online Resources	Crosscutting Concepts (CCC) Science and Engineering Practices (SEP)
Standard: 7.LS3.1- Hypothesize that the impact of structural changes to genes (i.e., mutations) located on chromosomes may result in harmful, beneficial, or neutral effects to the structure and function of the organism. **Pearson Lesson(s)- Chapter 8 Lesson 3**			
_2_ Weeks of Quarter 2	**Sub Objectives:** - We can locate genes and chromosomes. - We can explain how mutations occur. - We can explain how mutations can be harmful, beneficial, or neutral to an organism. **Learning Outcomes:** - We can hypothesize that structural changes to genes may result in harmful, beneficial, or neutral effects to the structure of an organism. - We can hypothesize that structural changes to genes may result in harmful, beneficial, or neutral effects to the function of an organism. **Activities:** - We can explain how mutations can be harmful, beneficial, or neutral to and organism and support our claim with evidence. - We can research a genetic mutation to determine if it is harmful, beneficial, or neutral to the organism.	Amoeba Sisters Video: Mutations https://youtu.be/vl6Vlf2thvI Amoeba Sisters Video Handout: https://www.amoebasisters.com/uploads/2/1/9/0/21902384/mutations_updated_recap_by_amoeba_sisters.pdf Mutations Lab: https://betterlesson.com/lesson/637426/exploring-mutations-lab# Mutations Telephone Game: https://www.teachengineering.org/activities/view/uoh_mutations_lesson01_activity1 Pearson: Mutation Mystery https://www.pearsonrealize.com/community/program/79f6427c-eb47-3ea8-bb7f-cb8ad2bd9ebd/0/tier/d8139c3b-ad3f-3e97-8f5e-0993985fb572/0/lesson/351abecb-ddfa-3d2b-a250-1c3bfda950ec/0/content/e19b86fb-76ad-3d3a-9ec5-e3b6b30b9f32/6 (You will need your Pearson login for this ^) Pearson: How Can Mutations Affect and Organism https://www.pearsonrealize.com/community/search/content/53f2808e-1413-39aa-9cc9-645f5ac3d42b/5?keywords=mutation (You will need your Pearson login for this ^)	**CROSSCUTTING CONCEPT:** **Structure and Function** *Students begin to attribute atomic structure and interactions between particles to the properties of a material.* **SCIENCE AND ENGINEERING PRINCIPLE:** **Obtaining, evaluating, and communicating information** *(Observe) Students can evaluate text, media, and visual displays of information with the intent of clarifying claims and reconciling explanations. Students can communicate scientific information in writing utilizing embedded tables, charts, figures, graphs*

Time Frame	Learning Outcomes/Activities	Online Resources	Crosscutting Concepts (CCC) Science and Engineering Practices (SEP)
Standard: 7.LS1.5- Explain that the body is a system comprised of subsystems that maintain equilibrium and support life through digestion, respiration, excretion, circulation, sensation (nervous and integumentary) and locomotion (musculoskeletal) **Pearson Lesson(s)- Chapter 11 Lessons 1 and 2**			
_2_ Weeks of Quarter 2	**Sub Objectives:** - We can explain how body systems work together to help us move, breath, and move materials within the body. - We can define homeostasis. - We can explain how the body systems interact to maintain homeostasis. **Learning Outcomes:** - We can explain that the body is made up of subsystems that maintain equilibrium and support life through digestion. - We can explain that the body is made up of subsystems that maintain equilibrium and support life through respiration. - We can explain that the body is made up of subsystems that maintain equilibrium and support life through excretion. - We can explain that the body is made up of subsystems that maintain equilibrium and support life through circulation. - We can explain that the body is made up of subsystems that maintain equilibrium and support life through sensation. - We can explain that the body is made up of subsystems that maintain equilibrium and support life through locomotion.	Amoeba Sisters: Video: Body Systems https://www.youtube.com/watch?v=gEUu-A2wfSE Amoeba Sisters Video Handout: https://www.amoebasisters.com/uploads/2/1/9/0/21902384/video_recap_of_human_body_systems_by_amoeba_sisters_2.pdf Tour of the Human Body- Information and activities: http://www.educationworld.com/a_lesson/lesson065.shtml Resources Human Body Systems: https://www.carolina.com/teacher-resources/Interactive/human-body-systems/tr40161.tr Reaction Time Lab: http://www.nsta.org/publications/news/story.aspx?id=48510 Heart Rate Lab: https://middleschoolscience.com/2015/01/27/heart-rate-lab/ Pearson Body Systems Interactivity https://www.pearsonrealize.com/community/search/content/d14fb3d0-f343-3383-807f-c0ab4bcf1b20/5?keywords=human%20body (You will need your Pearson Login for this ^)	**CROSSCUTTING CONCEPT:** **Systems and System Models** *Students evaluate the sub-systems that may make up a larger system.* **SCIENCE AND ENGINEERING PRINCIPLE:** **Constructing explanations and designing solutions.** *Students form explanations using source (including student-developed investigations) which show comprehension of parsimony, utilize quantitative and qualitative models to make predictions, and can support or cause revisions of a particular conclusion.*

BARTLETT CITY SCHOOLS

Life Science 1: From Molecules to Organisms: Structure and Process			
Time Frame	**Learning Outcomes/Activities**	**Online Resources**	**Crosscutting Concepts (CCC)** **Science and Engineering Practices (SEP)**
Standard: 7.LS1.6- Develop an argument based on empirical evidence and scientific reasoning to explain how behavioral and structural adaptations in animals and plants affect the probability of their survival and reproductive success. **Pearson Lesson(s)- Chapter 9 Lessons 3 and 5 and Chapter 10 Lessons 3-6**			
_1_ Week of Quarter 3	**Sub Objectives:** - We can identify and describe behavioral adaptations in plants. - We can identify and describe structural adaptations in plants - We can identify and describe structural adaptations in animals. - We can identify and describe structural adaptations in animals. - We can explain how the behavior or plants and animals have an effect on reproductive success. **Learning Outcomes:** - We can develop an argument based on evidence and scientific reasoning to explain how behavioral adaptations in animals affect the probability of their survival and reproductive success. - We can develop an argument based on evidence and scientific reasoning to explain how structural adaptations in animals such as coloration or patterns affect the probability of their survival and reproductive success. - We can develop an argument based on evidence and scientific reasoning to explain how behavioral adaptations in plants affect the probability of their survival and reproductive success.	Amoeba Sister Video: Plant Structure and Adaptations: https://www.youtube.com/watch?v=DGpPHrLF-5M&list=PLwL0Myd7Dk1F0iQPGrjehze3eDpco1eVz&index=46&t=0s Free Bird Beak Adaptation Lab: https://www.teacherspayteachers.com/Product/Bird-Beak-Adaptation-Lab-Middle-School-3292079 Plant Adaptations Activities: https://www.handsontheland.org/grsa/resources/curriculum/elem/lesson28.htm Pearson: What is it Adapted to? https://www.pearsonrealize.com/community/search/content/eb27b4a6-3639-38e5-b6cd-335fe4b42231/5?keywords=adaptations (You will need your Pearson login for this ^)	**CROSSCUTTING CONCEPT:** **Cause and Effect** *Students infer and identify cause and effect relationships from patterns* **SCIENCE AND ENGINEERING PRINCIPLE:** **Engaging in argument from evidence.** *Students present an argument based on empirical evidence models and invoke scientific reasoning.*

	- We can develop an argument based on evidence and scientific reasoning to explain how structural adaptations in plants such as structures to attract pollinators and seeds with features that aid in dispersion by wind or interactions with animals affect the probability of their survival and reproductive success. **Activities:** - We can give examples of how plants and animals are adapted to survive and support our claim with evidence. - We can use deductive reasoning to determine the adaptions of an organism.		

Time Frame	Learning Outcomes/Activities	Online Resources	Crosscutting Concepts (CCC) Science and Engineering Practices (SEP)
Standard: 7.PS1.1- Develop and use models to illustrate the structure of atoms, including the subatomic particles with their relative positions and charges **Pearson Lesson(s) Chapter 3 Lesson 1** **3D Lesson Objective: The student will develop and use models in order to show the structure of atoms highlighting structure and function.**			
_1_ Week of Quarter 3	**Sub Objectives:** - We can identify and describe the subatomic parts of an atom including protons, neutrons, and electrons based on their positions and charges. - We can describe how protons, neutrons, and electrons are used in the arrangement of the periodic table. **Learning Outcomes:** - We can develop models to illustrate the structure of atoms and include the subatomic particles with their positions and charges. - We can use models to identify the subatomic particles by their positions and charges. **Activities:** - We can identify and describe the subatomic parts of an atom including protons, neutrons, and electrons using the Plum Pudding Model and Bohr Models. - We can create a model that represent the sub atomic particles of an atom, their positions, and charges.	Build an Atom: https://phet.colorado.edu/sims/html/build-an-atom/latest/build-an-atom_en.html Article and Quiz about the parts of an atom: http://www.chem4kids.com/files/atom_structure.html Pearson: Build an Atom https://www.pearsonrealize.com/community/search/content/eeb109a5-2743-3160-8c47-a782c8940db6/5?keywords=atoms (You will need your Pearson login for this ^)	**CROSSCUTTING CONCEPT:** **Structure and Function** *Students begin to attribute atomic structure and interactions between particles to the properties of a material.* **SCIENCE AND ENGINEERING PRINCIPLE:** **Developing and using models** *Students create models which are responsive and incorporate features that are not visible in the natural world, but have implications on the behavior of the modeled systems and can identify limitations of their models*
Physical Science 1: Matter and its Interactions			

Time Frame	Learning Outcomes/Activities	Online Resources	Crosscutting Concepts (CCC) Science and Engineering Practices (SEP)
Standard: 7.PS1.6- Create and interpret models of substances whose atoms represent the states of matter with respect to temperature and pressure **Pearson Lesson(s)- Chapter 2 Lessons 1 and 2** **3D Lesson Objective- The student will develop and use models in order to show the states of matter with respect to temperature and pressure highlighting cause and effect.**			
_1_ Week of Quarter 3	**Sub Objectives:** - We can describe how matter and atoms are related. - We can compare the arrangement of atoms to the states of matter. - We can explain how changes in pressure have an effect on thermal energy. **Learning Outcomes** - We can create and interpret a model of a substance whose atoms represent the states of matter with respect to temperature. - We can create and interpret a model of a substance whose atoms represent the states of matter with respect to pressure. **Activities**: - We can describe how pressure and temperature effect the state of matter of a substance using cause and effect. - We can create a model of the arrangement of atoms in the different states of matter with temperature and pressure.	Remedial States of Matter game: http://www.abcya.com/states_of_matter.htm Matter sorter: https://www.brainpop.com/games/mattersorter/ Atoms and states of matter: https://learn.concord.org/resources/3/states-of-matter Harcourt School States of Matter: (Atom arrangement in the states of matter) https://www.harcourtschool.com/activity/states_of_matter/ Chem 4 Kids: http://www.chem4kids.com/files/matter_states.html Animation and information about pure substances and mixtures: https://courses.lumenlearning.com/boundless-chemistry/chapter/classification-of-matter/	**CROSSCUTTING CONCEPT:** **Cause and Effect** *Students infer and identify cause and effect relationships from patterns.* **SCIENCE AND ENGINEERING PRINCIPLE:** **Developing and using models** *Students create models which are responsive and incorporate features that are not visible in the natural world, but have implications on the behavior of the modeled systems and can identify limitations of their models.*

BARTLETT CITY SCHOOLS

Time Frame	Learning Outcomes/Activities	Online Resources	Crosscutting Concepts (CCC) Science and Engineering Practices (SEP)
Standard: 7.PS1.5- Use the periodic table as a model to analyze and interpret evidence relating to physical and chemical properties to identify a sample of matter **Pearson Lesson(s)- Chapter 3 Lessons 2-4** **3D Lesson Objective- The student will analyze and interpret data in order to identify a sample of matter highlighting patters in physical and chemical properties.**			
_2_ Weeks of Quarter 3	**Sub Objectives:** - We can use the periodic table to identify an element. - We can describe the properties of metals, nonmetals, and metalloids. - We can differentiate between a ionic and a covalent bond. **Learning Outcomes:** - We can use the periodic table to identify a sample of matter by its physical properties. - We can use the periodic table to identify a sample of matter by its chemical properties. **Activities** - We can use the periodic table to identify a substance based on its physical and chemical properties - We can describe the common patterns that form in the periods, rows, and families in the Periodic Table of Elements. - We can identify similarities in physical and chemical properties of compounds formed from a metal and non-metal (ionic) and a compound formed from two nonmetals (covalent bond).	Information about all elements on the periodic table: https://education.jlab.org/itselemental/index.html Chemistry: Challenges and Solutions: https://www.learner.org/series/chemistry-challenges-and-solutions/ Interactive Covalent bonding: https://tn.pbslearningmedia.org/resource/lsps07.sci.phys.matter.covalentbond/covalent-bonding/#.WwRsVbYlQXo Pearson: Periodic Table Interactivity Interactive Art https://www.pearsonrealize.com/community/search/content/fbb11ed7-345e-317b-adc9-a3b3499a5396/5?keywords=Periodic (You will need your Pearson login for this ^)	**CROSSCUTTING CONCEPT:** **Pattern** *Students recognize, classify, and record patterns for macroscopic phenomena based on microscopic structure.* **SCIENCE AND ENGINEERING PRINCIPLE:** **Analyzing and interpreting data** *Students should create and analyze graphical presentations of data to identify linear and non-linear relationships, and consider statistical features within data and evaluate multiple data sets for a single phenomenon.*

Time Frame	Learning Outcomes/Activities	Online Resources	Crosscutting Concepts (CCC) Science and Engineering Practices (SEP)
Standard: 7.PS1.2- Compare and contrast elemental molecules and compound molecules **Pearson Lesson(s)- Chapter 3 Lesson 4** **3D Lesson Objective- The student will analyze and interpret data to compare and contrast elements and compounds highlighting scale, proportion, and quantity.**			
_1/2_ Week of Quarter 3	**Sub Objectives:** - We can identify and describe elemental molecules and compound molecules. - We can explain that some elements consist in a molecular form with more than one atom bonded together in a pure form. **Learning Outcomes:** - We can compare and contrast elemental molecules and compound molecules. **Activities:** - We can compare and elemental molecules and compound molecules using a double Venn Diagram.	Pearson: What is Matter Made Of? https://www.pearsonrealize.com/community/search/content/3547bc00-2fb7-39e0-972e-0a725c1095a0/5?keywords=elemental%20molecule (You will need your Pearson login for this ^) Elements, Compounds, Mixtures: https://www.chem.purdue.edu/gchelp/atoms/elements.html Atoms, Elements, Molecules, and Compounds https://fl-pda.org/independent/courses/elementary/science/section4/4c6.htm	**CROSSCUTTING CONCEPT:** **Scale, Proportion, and Quantity** *Students develop models to investigate scales that are beyond normal experiences.* **SCIENCE AND ENGINEERING PRINCIPLE:** **Analyzing and interpreting data.** *Students form explanations using sources (including student-developed investigations) which show comprehension of parsimony, utilize quantitative and qualitative models to make predictions, and can support or cause revisions of a particular conclusion*

Time Frame	Learning Outcomes/Activities	Online Resources	Crosscutting Concepts (CCC) Science and Engineering Practices (SEP)
Standard: 7.PS1.3- Classify matter as pure substances or mixtures based on composition. **Pearson Lesson(s)- Chapter 1 Lesson 2** **3D Lesson Objective- The student will engage in argument from evidence in order to show matter can be classified as pure substances or mixtures highlighting patterns in pure substances and mixtures.**			
_1/2_ Week of Quarter 3	**Sub Objectives:** - We can describe the properties of a pure substance and mixture. - We can give examples of pure substances and mixtures. - We can differentiate between a heterogeneous mixture and a homogenous mixture. **Learning Outcomes:** - We can classify matter as a pure substance or mixture based on its composition. **Activity:** - We can classify matter as a mixture or pure substance and give evidence to support our claim.	Animation and information about pure substances and mixtures: https://courses.lumenlearning.com/boundless-chemistry/chapter/classification-of-matter/ Animation mixtures and pure substances: https://mocomi.com/pure-substances-and-mixtures/ Tutorial mixture and pure substances: http://www.cpalms.org/Public/PreviewResourceStudentTutorial/Preview/164890 Pearson: What Are Two Types of Mixtures? https://www.pearsonrealize.com/community/search/content/4708dc1f-1f04-3eab-a55f-bfb66c5350fe/5?keywords=mixture (You will need your Pearson login for this^)	**CROSSCUTTING CONCEPT:** **Pattern** *Students recognize, classify, and record patterns for macroscopic phenomena based on microscopic structure.* **SCIENCE AND ENGINEERING PRINCIPLE:** **Engaging in argument from evidence** *Students present an argument based on empirical evidence, models, and invoke scientific reasoning.*

BARTLETT CITY SCHOOLS

Physical Science 1: Matter and its Interactions			
Time Frame	**Learning Outcomes/Activities**	**Online Resources**	**Crosscutting Concepts (CCC) Science and Engineering Practices (SEP)**
Standard: 7.PS1.4- Analyze and interpret chemical reactions to determine if the total number of atoms in the reactants and products support the Law of Conservation of Mass. Pearson Lesson(s)- Chapter 4 Lesson 2 3D Lesson Objective-The student will analyze and interpret data from chemical reactions to determine if the total number of atoms supports the Law of Conservation of Mass highlighting that energy and matter are conserved.			
_2_ Weeks of Quarter 4	**Sub Objectives:** - We can use models to identify information included in chemical equations and balance the chemical equation. - We can explain the Law of Conservation of Mass. **Learning Outcomes:** - We can interpret chemical reactions to determine if the total number of atoms in the reactions and products support the Law of Conservation of Mass. - We can analyze chemical reactions to determine if the total number of atoms in the reactants and products support the Law of Conservation of Mass. **Activities**: . - We can explain how balancing chemical equations and calculating the mass of the products and reactants supports the Law of Conservation of Mass.	Balancing equations game: https://phet.colorado.edu/sims/html/balancing-chemical-equations/latest/balancing-chemical-equations_en.html Law of Conservation of Matter: https://www.troup.org/userfiles/929/My%20Files/Science/MS%20Science/8th%20Science/Matter/conservation_matter/conservation_mass_lab2.pdf?id=8053 Pearson: Balancing Equations https://www.pearsonrealize.com/community/search/content/deda5aac-7fd5-3934-ba9c-63684a37655d/5?keywords=balancing%20equation (You will need your Pearson Login for this^) Using LEGOs and PhET Simulation to Teach Conservation of Matter https://betterlesson.com/lesson/637633/using-legos-and-phet-simulation-to-teach-conservation-of-matter An Interactive Study: Laws of Conservation of Mass and Definite Proportions https://serc.carleton.edu/sp/process_of_science/examples/conservation_mass.html	**CROSSCUTTING CONCEPT: Energy and Matter** *Students demonstrate conservation of mass in physical and chemical changes.* **SCIENCE AND ENGINEERING PRINCIPLE: Analyzing and interpreting data.** *Students should create and analyze graphical presentations of data to identify linear and non-linear relationships, consider statistical features within data and evaluate multiple data sets for a single phenomenon.*
Earth and Space Science 3: Earth and Human Activity			

BARTLETT CITY SCHOOLS

Time Frame	Learning Outcomes/Activities	Online Resources	Crosscutting Concepts (CCC) Science and Engineering Practices (SEP)
Standard: 7.ESS3.1- Graphically represent the composition of the atmosphere as a mixture of gases and discuss the potential for atmospheric change. **Pearson Lesson(s)- Chapter 13 Lesson 1**			
_1_ Week of Quarter 4	**Sub Objective:** - We can describe the composition of Earth's atmosphere. - We can explain how natural biogeochemical cycles and human impacts determine the composition of Earth's atmosphere. - We can describe and identify green house gasses and the mechanism by which these gasses affect climate change. **Learning Outcomes** - We can graphically represent the composition of the atmosphere as a mixture of gases. - We can discuss the potential for atmospheric change. **Activities:** - We can create a graph that represents the mixture of gases in Earth's atmosphere and use it to explain the potential for atmospheric change.	Earth's atmosphere interactive diagram: http://earthguide.ucsd.edu/earthguide/diagrams/atmosphere/index.html Animation: Where do Earth's Atmospheric Layers End and Space begin? https://laughingsquid.com/where-does-space-begin/ Interactive Earth's Atmospheric Layers: http://sepuplhs.org/middle/iaes/students/simulations/sepup_atmosphere.html Structure of Earth's Atmosphere: http://www.glencoe.com/sites/common_assets/science/virtual_labs/ES14/ES14.html Info on Earth's Atmosphere: https://www.space.com/17683-earth-atmosphere.html Pearson: Layers of the Atmosphere https://www.pearsonrealize.com/community/search/content/92c65b09-a05c-319b-875d-634a07c526d0/5?keywords=atmosphere (You will need your Pearson login for this^)	**CROSSCUTTING CONCEPT:** **Stability and Change** *Students make explanations of stability and change discussing molecular components of a system.* **SCIENCE AND ENGINEERING PRINCIPLE:** **Analyzing and interpreting data.** *Students should create and analyze graphical presentation of data to identify linear and non-linear relationships, consider statistical features within data and evaluate multiple data sets for a single phenomenon.*

Time Frame	Learning Outcomes/Activities	Online Resources	Crosscutting Concepts (CCC) Science and Engineering Practices (SEP)
Standard: 7.ESS3.2- Engage in a scientific argument through graphing and translating data regarding human activity and climate **Pearson Lesson(s)- Chapter 14 Lessons 1 and 2.**			
_1_ Week of Quarter 4	**Sub Objective:** - We can develop a scientific explanation based on evidence to support how human activity (release of green house gasses) effect the climate. - We can explain how industrialization and the processing of natural resources has had an effect on migration patterns, life cycles of organisms, and changes to glaciers and arctic ice. - We can interpret data patterns that show levels of Carbon Dioxide in the atmosphere, temperature of the Earth, levels of energy use, efficiency of energy use, glacial land areas, ocean water levels, areas of polar ice, and areas of forest land. **Learning Outcomes** - We can engage in a scientific argument by graphing and translating data relating to human activity. - We can engage in a scientific argument by graphing and translating data relating to climate. **Activities:** - We can debate how human activity has had and will continue to have an effect on the climate.	Climate Change Information: https://climate.nasa.gov/evidence/ Climate Change Animation: https://www.weforum.org/agenda/2017/12/this-visualization-shows-20-years-of-earths-seasons-and-the-disturbing-impact-of-climate-change/ Climate Time Machine: https://climatekids.nasa.gov/time-machine/ Climate Game: https://games4sustainability.org/gamepedia/climate-game/ Pearson: Climate Change- Causes, Effects, Solutions Interactive Art https://www.pearsonrealize.com/community/search/content/566faf72-0bb6-35a4-8de6-61c5cc39203c/5?keywords=climate%20change (You will need your Pearson login for this^)	**CROSSCUTTING CONCEPT:** **Pattern** *Students recognize, classify, and record patterns in data, graphs, and charts.* **SCIENCE AND ENGINEERING PRINCIPLE:** **Engaging in argument from evidence** *Students present an argument based on empirical evidence, models, and invoke scientific reasoning.*

Time Frame	Learning Outcomes/Activities	Online Resources	Crosscutting Concepts (CCC) Science and Engineering Practices (SEP)
Standard: 7.ETS2.1- Examine a problem from the medical field pertaining to biomaterials and design a solution taking into consideration the criteria, constraints, and relevant scientific principles of the problem that may limit possible solutions. **Pearson Lesson(s)- None**			
_1_ Week of Quarter 4 y	**Sub Objectives:** - We can identify a problem in the medical field that relates to biotechnology/bioengineering. - We can design a solution to help people with human genetic disorders or mutations. **Learning Outcomes:** - We can examine a problem from the medical field pertaining to biomaterials and design a solution that considers the criteria, constraints, and scientific principles that may limit possible solutions. **Activities:** - We can design a solution to a problem in the medical field pertaining to biotechnology by creating a model/illustration that also identifies the criteria the solution will address and constraints of the solution.	Medical Innovations for Kids: http://kidsahead.com/subjects/17-medical-innovations Biomedical Technology for Kids: http://encyclopedia.kids.net.au/page/me/Medical_technology Information Bioengineering/Biomedical Engineer: https://www.engineergirl.org/6066/BioengineeringBiomedical-Engineer Medical Technology: https://mashable.com/category/medical-technology/ Engineering Design Process for Kids: https://www.eie.org/overview/engineering-design-process	**CROSSCUTTING CONCEPT:** **Scale, Proportion, and Quantity** *Students recognize that phenomena are not necessarily observable at all scales.* **SCIENCE AND ENGINEERING PRINCIPLE:** **Constructing explanations and designing solutions** *Students can design as well as test devices meant to meet specific design criteria, with the objective of increasing the effectiveness of multiple solutions.*