Moon Area School District Curriculum Map

Course: Science 5
Grade Level: 5
Content Area: Science
Frequency: Full-Year Course

Big Ideas

1. ***Life Science Ch 2***: What are the interactions in ecosystems?
2. Life Science Ch 3: How does energy move in an ecosystem?
3. Life Sci Ch 3 (optional): How do worms interact and move energy in an ecosystem?
4. ***Life Science Ch 4:*** How do living things survive and change?
5. ***Life Sci Ch 4***: How are PA Endangered/Threatened Species where they are today and how does this effect the ecosystems; they are a part of?
6. Earth Science Ch 3: How are Rocks and Minerals identified?
7. Earth Sci Ch 3: What are the most common uses of Rocks and Minerals?
8. ***Earth Science Ch 4***: How can we protect Earth's Resources?
9. ***Physical Science Ch 3: How do you describe Force and The Laws of Motion?***
10. Physical Science Ch 4: What are simple machines?
11. ***Physical Science Ch 5:*** How do you describe different forms of energy?

Essential Questions

12. **LIFE SCIENCE UNIT 1:** Identify living and nonliving parts of ecosystems
13. **CH 2**-- Explain how ecosystems allow living things to survive.
14. Contrast the role of predators and prey in an ecosystem.
15. Explain how competition for resources affects species in an ecosystem.
16. Describe three different kinds of symbiotic relationships between species.
17. Describe natural processes that cause ecosystems to change over time.
18. Explain how invasive species can affect the balance of an ecosystem.
19. Explain how human activities affect ecosystems.
20. Identify ways that humans can help the environment.
21. **CH 3**—Recognize that all living things need energy to survive.
22. Recognize that different ecosystems contain different organisms, but energy always flows through the ecosystems from one organism to another.
23. Recognize almost all food eaten by animals can be traced back to green plants.
24. Describe the process of photosynthesis.
25. Recognize that plants (producers) can make their own food, but animals (consumers) cannot make their own food and must eat plants and other animals.
26. Recognize that food chains and food webs are processes by which energy moves through an ecosystem.
27. **CH 4**-- Identify physical characteristics that help plants and animals survive in their environment.
28. Distinguish between inherited and acquired characteristics of living things.
29. Explain how behaviors help animals survive in different environments.
30. Distinguish between instinct and learned behavior.

31. Explain how communication helps animals survive and reproduce.
32. Identify adaptations and behaviors that help organisms survive in changing seasons.
33. Explain how differences among individuals allow some species to adapt to environmental change, while others go extinct.
34. Describe how fossils provide evidence about organisms that lived long ago.
35. Identify physical characteristics that help animals survive in their environment.
36. **EARTH SCIENCE UNIT 2:**
37. **CH 3--** Explain that rocks and soils are made from minerals.
38. Identify the physical properties of minerals.
39. Explain that rocks are classified according to their formations.
40. Identify and explain the processes involved in the rock cycle.
41. **CH 4—**Identify that Earth has both renewable and nonrenewable resources.
42. Explain that Earth's resources are important for human activity, but humans can affect or damage Earth's resources.
43. Identify ways Earth's renewable resources can be maintained.
44. Identify ways Earth's nonrenewable resources can be maintained.
45. Identify ways Earth's nonrenewable energy sources can be maintained
46. Identify Earth's renewable energy sources.
47. **PHYSICAL SCIENCE UNIT 3:**
48. **CH 3—**Describe the motion of an object in terms of position, direction, distance, and time.
49. Recognize that a force is a push or a pull, and can be contact (i.e., friction) or non-contact (i.e., gravity).
50. Identify the forces applied to an object as balanced or unbalanced.
51. Recognize that an object will stay at rest or continue at a constant velocity unless acted on by an unbalanced force.
52. Recognize that when force is applied to an object and it does not move, it is the result of balanced forces being applied to the object.
53. Recognize that for every force applied to an object, there is an equal, but opposite, force applied by the object.
54. **CH 4—**Explain what work is and how work can be applied to objects.
55. Explain how simple machines change the amount of force or the direction of force needed to do work.
56. Describe how friction affects the amount of force needed to do work.
57. Compare the measures of different forces needed to move an object.
58. Describe how a spring scale works
59. Identify and describe simple machines in common tools and household items.
60. **CH 5—**Identify and describe different forms of energy, including mechanical, sound, light, heat, and chemical.
61. Explain that energy is ability to cause motion or to create change.
62. Describe the transmission, reflection, and absorption of sound, and reflection of light (optional- taught in upper grades)
63. Explain that heat moves from warmer objects to cooler ones (optional: taught in upper grades)

Primary Resource(s) & Technology:

National Geographic Science Series, IXL online software, Science Kits, Microsoft Teams, Promethean Boards, Student Laptops/iPads, Microsoft Forms, NewsELA Science Articles, Teachers Pay Teachers Resources

Pennsylvania and/or focus standards referenced at:

www.pdesas.org
www.education.pa.gov

Big Ideas/EQs	Focus Standard(s)	Assessed Competencies (Key content and skills)	Timeline
1, 11, 12, 13, 14, 15, 16, 17, 18, 19	**3.1.5.B6** **3.1.5.A9** **4.1.5.A** **4.2.5.C** **4.4.5.C**	• **Life Science- CH 2** • Lesson 1- Describe how natural processes work where direct human impact is minimal • Describe the effect humans and other organisms have on the balance of the natural world. • Construct explanations of natural phenomena using visual models • Lesson 2- Describe an example of how two species interact in an ecosystem. • Identify Living and nonliving factors in ecosystems • Explain how an ecosystem and its resources enable living things to survive • Describe populations and communities • Explain how populations of species in a community interact • Lesson 3- Explain how the species in a community interact • Compare and contrast the niches of predators and prey • Recognize competition as an interaction between living things that share the same resources • Predict how competition can be beneficial to a species and to an ecosystem • Lesson 4- Describe symbiotic relationships in which both species benefit • Describe a relationship between two species in which one benefits and the other is harmed, and where both species benefit • Summarize how living things interact in symbiotic relationships • Lesson 5- Define the term succession in relation to ecosystems	September- Mid-October

		• Describe the changes that happen during succession in a beaver pond and in a land ecosystem after a fire • Identify examples of invasive species • Describe the effect of invasive species on natural ecosystems • Lesson 6- Give examples of how humans change land ecosystems, water ecosystems, affect the air and climate, and can help the environment • Lesson 7- Explain how rooftop gardens help the environment and people • Lesson 8- Investigate through Guided Inquiry (labs) • Investigate the impact of human activity and technology on various ecosystems • Recognize the characteristics of a fair and unbiased test • Explain why results of an experiment can very and identify reasons for any discrepancies • Chapter Assessment • OPTIONAL Projects: Photosynthesis poster, ecosystem diagram and explanation, observation lab on ecosystems and how they work, articles on photosynthesis	
2, 3, 20, 21, 22, 23, 24, 25	**3.1.5.A2** **3.1.5.A3** **3.1.5.A9** **4.1.5.C** **4.4.5.A** **4.4.5.C** **4.4.5.E**	• **Life Science- CH 3** • *LESSON 1-* Investigate through directed inquiry the role of producers in transforming energy, how animal food can be traced back to plants, distinguish between producers, and discuss how energy flows. • *LESSON 2-* recognize that all living things need energy to survive. • Recognize that plants (producers) make their own food and that animals (consumers) must eat other plants and animals. • Recognize almost all food eaten by animals can be traced back to green plants. • Describe the process of photosynthesis. • Recognize the role of producers in bringing energy into an ecosystem through photosynthesis. • *LESSON 3-* Recognize that herbivores get energy from eating plants. • Recognize that carnivores get energy from eating animals. • Recognize that omnivores get energy from eating both plants and animals.	Mid-October – November

		• *LESSON 4-* Recognize that decomposers get energy by consuming dead and decaying plant and animal matter. • *LESSON 5-* Recognize that a food chain is a process by which energy flows from one living thing to another. • Explain a food web is a process that combines many food chains to show how energy moves through an ecosystem and how organisms depend on one another for survival. • *LESSON 6-* Explain that some producers make food without sunlight. • *LESSON 7 (optional)-* investigate through direct inquiry how trace energy flows in nature, explain why similar investigations may not produce similar events, and why scientists use different kinds of investigations depending on the questions they are trying to answer. • *LESSON 9-* Recognize how different scientists' work has contributed to general scientific understanding. • *CHAPTER ASSESSMENT* • OPTIONAL PROJECTS: photosynthesis poster, Food Chain poster and/or matching activity, Worm lab and informational packet	
4, 5, 26, 27, 28, 29, 30, 31, 32, 33, 34	**4.1.5.D** **4.1.5.F** **3.1.5.B1** **3.1.5.B6** **3.1.5.C1** **3.1.5.C2**	• **Life Science- CH 4** • *LESSON 1-* interpret an analyze data in charts and graphs to answer questions and draw conclusions. • Evaluate the strengths and weaknesses of data, claims, and arguments. • Judge whether measurements and computations are reasonable. • Analyze whether evidence supports an explanation and evaluate its reasonableness. • *LESSON 2-* Investigate through direct inquiry the traits of organisms that help them survive in their environment, how scientists use different kinds of ongoing investigations depending on questions they are trying to answer, and recognize curiosity is an attribute of scientists. • *LESSON 3-* Identify inherited physical traits that help plants and animals survive in their environment. • *LESSON 4-* Identify inherited physical traits that help animals and plants survive in their environment.	November – Mid-January

		• Distinguish between inherited and acquired traits in plants and animals. • *LESSON 5*-Explain how behaviors help animals survive in different environments. • Compare and contrast instinct and learning. • Explain how protective behaviors help animals survive in different environments. • Explain how behaviors for raising young help animals survive in different environments. • Infer that migration is a behavioral adaptation. • Explain how communication is a behavior that helps animals survive in different environments. • *LESSON 6*- Identify behaviors and acquired physical traits that help right whales survive in their environment. • Explain how scientists and others are helping to protect right whales. • *LESSON 7*- Identify inherited physical traits that help plants and animals survive in their environment. • Explain how plant and animal life cycles are adaptations to the environment. • *LESSON 8*- Describe how diversity helps plants and animals survive in their environment. • Describe how some plants and animals adapt to environmental change, while others die, move to new locations, or go extinct. • Explain how scientists use fossils to find out about organisms that are now extinct. • *LESSON 9*- investigate through directed inquiry how behavior helps animals survive in their environment and analyze how specific personal and societal choices that humans make affect ecosystems. • *CHAPTER ASSESSMENT* • *CHAPTER PROJECT*: PA Endangered Species project with a special guest speaker from the local Game Commissioners Office and Biologist in the field of Endangered Spcecies. • *OPTIONAL*: Create-A- Creature, National Geo videos from Online (America's National Parks, Great Migrations), Netflix Series- Night on Earth, Tiny Creatues)	
6, 7, 36, 37, 38, 39	3.3.5.A1 3.3.5.A3 3.5.4.A	• **Earth Science CH 3**	Mid-January

	3.5.4.B	• *LESSON 1*—Investigate through Directed Inquiry soil and its contents • Observe that rocks and soils are made of several substances or minerals. • Use the appropriate scientific tools and techniques to collect data and solve problems. • Identify sources of error and limitations of data. • Identify how scientists use different kinds of ongoing investigations depending on the questions they are trying to answer. • *LESSON 2*—identify rocks and minerals as materials on Earth's surface. • Explain that rocks and soils are made of minerals. • Identify the main characteristics of minerals. • *LESSON 3*—Identify the physical properties of minerals. • Explain luster, hardness, crystal, and streak as properties of minerals. • Explain cleavage and color as properties of minerals. • Explain that rocks and soils are made of minerals. • *LESSON 4*—Explain that rocks are classified according to their formations. • Identify and describe igneous rocks, sedimentary rocks, and metamorphic rocks. • Explain that fossils are usually found in sedimentary rock. • *LESSON 5*—Identify and explain the processes involved in the rock cycle. • *LESSON 6*—Identify the physical properties of minerals. • *LESSON 7*—Investigate fossils through Directed Inquiry • Investigate how sedimentary rock that contains fossils can be used to study Earth's changing surface and environment. • Present and defend everyday observations so they can be understood by others. • Analyze whether evidence supports proposed explanations. • **OPTIONAL PROJECTS**: • Mineral Me- designed to evaluate how certain minerals are used, find scientific formula, discuss how used in everyday life and how they were found	Thru Mid-March

		• Rock My World (or other forms)—designed to evaluate how certain rocks are used, find scientific formula, discuss how used in everyday life and how they were found • Birthstones—designed to find your birthstone, discuss what it is mineral or rock, how it come about, and what is its story or myth. • Rock and Mineral lab—designed to test the properties of the minerals and rocks, evaluate and analyze your results and try to guess the names, and test to see how reliable color really is. • **CH 3 Assessment- online** through FORMS or paper copies could be made available.	
8, 40, 41, 42, 43, 44, 45	3.3.5.A2 3.4.5.A1 3.4.5.B1 3.4.5.B3 3.4.5.B4 3.4.5.C3	• **Earth Science CH 4** • *LESSON 1*—Investigate Recycling through Directed Inquiry. • Investigate ways Earth's renewable resources can be maintained. • Compare the relative effectiveness of reducing, reusing, and recycling in actual situations. • Analyze how human choices affect ecosystems. • *LESSON 2*—identify that Earth has natural resources that people need. • Identify that Earth has both renewable and nonrewable resources. • *LESSON 3*—Identify ways Earth's renewable resources can be maintained. • Explain how water is an important renewable resource for human activity. • Propose solutions to problems related to water quality. • *LESSON 4*—Identify some nonrewable resources, including rock and metals. • Identify ways that nonrewable resources are used. • Identify ways Earth's nonrewable resources can be maintained. • Explain how glass, metal, and other products made from oil can be recycled. • *LESSON 5*—Identify ways Earth's nonrewable energy resources can be maintained. • Explain that people use a lot of energy resources. • Explain how fossil fuels are a major source of energy. • *LESSON 6*—Identify Earth's renewable energy sources.	

		• Identify solar and wind as examples of renewable energy resources as well as moving water and biomass. • Explain the pros and cons of different energy sources. • *LESSON 7*—Identify how Earth's renewable and nonrenewable resources can be maintained. • *LESSON 8 (optional)*—Investigate through guided inquiry solar energy and other alternative energies. • Investigate the use of solar energy to make water cleaner. • Identify needs and design technological solutions that apply scientific principles and solve issues of general or social interest. • Propose solutions to problems related to water quality and availability that result from human activity. • **Ch 4 Assessment online or paper** • ***OPTIONAL PROJECTS:*** • **Recycle Me** project based on taking recycled items around the house and creating something that can be used in everyday life, **Alternative Energy** demo if supplies are present, etc.	
48, 49, 50, 51, 52, 53	3.4.4.B 3.4.4.C	• **Physical Science CH3—** • *LESSON 1*—Describe ways technology extends, enhances, and potentially challenges human abilities for scientific purposes • Describe how measuring instruments are used to gather info to design things that work properly • Measure force to the nearest Newton (optional) • *LESSON 2*—Investigate and explain equal and opposing forces through Direct Inquiry (LIFE SAVERS CARS, CATAPULT, and/or CARS labs) • Investigate in which predictions and accurate measurements using basic tools are made. • Collect, organize, and interpret data that result from investigations. • *LESSON 3*—Identify familiar forces that cause objects to move. • Explain that a force is a push or pull. • Define contact force. • Define the motion of an object in terms of position, direction, distance, and time.	

		• *LESSON 4*—Recognize that friction is a force that can cause objects to slow down or stop. • Recognize that air resistance is a force that can cause objects to slow down and stop. • Define non-contact force • Recognize that gravity is a non-contact force that causes objects to be pulled toward Earth. • *LESSON 5*—Recognized how different scientists' work was contributed to general scientific understanding. • *LESSON 6*—Define balanced and unbalanced forces. • Recognize that an object will stay at rest or continue at constant velocity unless acted on by an unbalanced force. • Recognize that when force is applied to an object and it does not move, it is the result of balanced forces being applied to the object. • Understand the relationship between forces, mass, and acceleration. • Recognize that for every force applied to an object, there is an equal, but opposite, force applied by the object. • *LESSON 7*—Recognize that force is directly related to an objects mass and acceleration. The greater the force, the greater the change. (AIRPLANE LAB) • **CH 3 ASSESMENT**	
9, 47, 48, 49, 50, 51, 52	3.2.5.B1 3.2.5.B2 3.2.5.B3 3.2.5.B4 3.2.5.B5 3.2.4.B6 3.2.5.B7	• **Physical Science CH4—** • *LESSON 1*—Investigate through direct inquiry how work can be done on an object and how friction affects the force needed • Use appropriate tools such as spring scales to solve problems about the natural world. • *LESSON 2*—Recognize that simple machines allow work to be done with less effort • Explain what work is and how work can be applied to an object • *LESSON 3*—Explain how simple machines change the amount of force or the direction of force is needed to do work. • Identify and describe a lever, inclined plane. Screw, wedge, and a wheel and axle as simple machines.	

		• Describe how friction affects the amount of force needed to do work • Identify and describe a pully as a simple machine • *LESSON 4*—Compare the measures of different forces needed to lift an object • Describe how a spring scale works. • Identify and describe simple machines in common tools and household items. • *LESSON 5*—Describe how an inventor's work uses simple machines and contributes to technology. • *Catapult lab or book lab:* Investigate through guided inquiry how simple machines are used to make load easier to carry or transport. (if doing catapult- see kit for directions) • *LESSON 7*—Describe the development and growth of scientific knowledge and technical innovations. • Identify the helpful and harmful effects of inventions or technological advances. • Design a solution to a problem using technology. • Use print, electronic, and human information resources to obtain ideas. • Create a design to better the invention, current or new, to help better it with today's tech and knowledge. • Explain how solutions may create other problems. • ***CHAPTER TEST- on forms*** • ***Optional labs-*** Life Savers car or modified cars, Catapult with marshmallows, etc	
10, 53, 54, 55, 56	3.4.4.B 3.4.4.C	• **Physical Science CH 5—** • *LESSON 1*—Investigate mechanical energy through directed inquiry. • Identify and explain ways that science and technology influence the lives of people. • Judge measurements and computations of quantities. See TE pgs 173e-173h (optional or substitute lab) • *LESSON 2*—Identify and describe different forms of energy, including mechanical, sound, light, heat, and chemical • Explain that energy is the ability to cause motion or cause change. • *LESSON 3*—Identify and describe mechanical and sound energy.	

		• Describe the transmission of sound. • Describe the reflection and absorption of sound • *LESSON 4*—(optional) Identify and describe light energy • Describe the transmission and reflection of light • Describe the refraction of light • *LESSON 5*—(optional) Identify and describe heat energy • Define temperature and describe the way it is measured • Explain that heat moves from warmer objects to cooler ones. • *LESSON 6*—(optional) Identify and describe chemical energy • Recognize that chemical energy changes into other forms of energy • *CH 5 Assessment*	