Moon Area School District Curriculum Map

Course: 6th grade Science
Grade Level: 6th
Content Area:
EARTH SCIENCE
Frequency: Full-Year Course

Big Ideas

Topic 1-Scientific Method, Safety, Metric System:

1. Science classroom laboratories are a safe space where reliable experiments are performed, and observations are made that lead to scientific discovery.

Topic 2- Astronomy-Sun, Moon, and Earth

2. The solar system consists of the sun, moon, and a collection of objects including planets, their moons, and other small bodies that are held in orbit around the sun by its gravitational pull on them.

Topic 3-Earth's Atmosphere/Weather/Climate:

3. The complex patterns of changes and the movement of water and air in the atmospheric layers determine winds, landforms, and ocean temperatures and are major determinants of local weather patterns and global climate.

Topic 4- Earth's Interior/Plate Tectonics

4. Earth is a complex system of interacting rock, water, air, and life that is continuously changing over time.

Topic 5-Earth's Water Systems:

5. Water movements, both on the land and underground-cause weathering and erosion, which change the land's surface features and create underground formations.

Essential Questions

Topic 1-Scientific Method, Safety, Metric System:

6. What are the steps to the scientific method and how do those steps lead to scientific discovery?
7. What safety measures should be taken in a classroom laboratory?
8. What is scientific knowledge and how do we apply it in lab situations?
9. How can one process knowledge while making and interpreting observations?
10. How can using scientific inquiry lead to solving problems?
11. What role does the metric system have in the science classroom?

Topic 2- Astronomy-Sun, Moon, and Earth

12. How do the sun and the moon affect Earth?
13. What kind of data and evidence help us to understand the universe?

14. What are the essential ideas about the composition and structure of the universe and the Earth's place in it?
15. How do scientists study space?
16. How do the various items in space differ from each other?
17. How does gravity affect the items in space?
18. What are the phases of the moon and how does the moon affect the tides?

Topic 3-Earth's Atmosphere/Weather/Climate:

19. How does energy move throughout Earth's atmosphere and ocean?
20. What determines the weather on Earth?
21. What are the effects of a changing climate on Earth?
22. What are the causes and effects of winds, precipitation, clouds, and the water cycle in predicting weather?
23. How can one use data provided by clouds and winds to predict weather?
24. What weather instruments are used to forecast weather?
25. What types of severe weather exist and how does one stay safe in a severe weather situation?

Topic 4- Earth's Interior/Plate Tectonics

26. How can events in Earth's past be organized?
27. What are the layers of the Earth's interior and what do they consists of?
28. What processes change Earth's surface over time?
29. How are the distributions of natural resources the result of geological processes?
30. How and why is Earth constantly changing?
31. How does continental drift and sea floor spreading contribute to plate tectonics?

Topic 5-Earth's Water Systems:

32. How does a watershed is an area of land feed all other forms of water running under it and draining off of it and into another body of water?
33. How do watersheds form a network of rivers and streams that progressively drain into larger water areas?
34. How does Earth's topography determine where and how water flows?
35. How are watersheds different depending on land structure, land surface, and soil characteristics?
36. How do watersheds affect our daily lives and relate to the world in which we live?

Primary Resource(s) & Technology:

Textbook Series: Pearson-Elevate Science, IXL online software, Microsoft Teams, Promethean Boards, Student Laptops/iPads

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
1,6,7, 8,9, 10,11	3.2.7 A 3.2.7 B 3.2.7 C	Topic 1-Scientific Method, Safety, Metric System: • Describe and use the steps to the scientific method. • Discuss the importance of a variable and control in a scientific experiment. • Distinguish between scientific theories, beliefs, and laws. • Know the procedures for emergencies in a science lab classroom. • List and explain lab safety and the symbols with which they are associated. • Review metric units and the tools. • Identify laboratory tools and their functions. • Identify observations and inferences in a discussion of common items. • Complete labs combining the scientific method, metric system, lab safety and scientific tools.	6 weeks

Big Ideas/ EQs	Focus Standard(s)	Assessed Competencies (Key content and skills)	Timeline
2,12, 13,14, 15,16, 17,18	3.4.7 D	Topic 2- Astronomy-Sun, Moon, and Earth • Identify differentiating characteristics of each of the planets. • Describe star types, including the sun. • Explain how nuclear fusion powers the stars. • Identify comets, asteroids, and meteors. • Explain the role gravity plays in the movement of the solar system. • Illustrate apparent change of stars. • Identify equipment and instruments used to explore space. • Identify scientists, past and present, who have made great contributions to the study of astronomy. • Identify and explain monthly patterns in the phases of the Moon. • Use models of the Earth-Sun-Moon system to support explanations.	9 weeks

Big Ideas/ EQs	Focus Standard(s)	Assessed Competencies (Key content and skills)	Timeline
3, 19,20, 21,22, 23,24, 25	3.5.7 C 3.5.7 D	Topic 3-Earth's Atmosphere/Weather/Climate: • Explain forecasts by interpreting data and symbols. • Explain the ocean's impact on local/global weather. • Identify how cloud types, wind direction, and air pressure changes are associated with weather patterns. • Explain the water cycle and the process of cloud formation/precipitation. • Describe and illustrate the layers of earth's atmosphere. • Identify air masses and local/global wind patterns. • Explain how air masses and wind patterns relate to weather patterns in different regions of the U.S.	9 weeks

Big Ideas/ EQs	Focus Standard(s)	Assessed Competencies (Key content and skills)	Timeline
4,26, 27,28, 29,30, 31	3.5.7.A 4.3.7.B	Topic 4- Earth's Interior/Plate Tectonics • Describe major layers of the earth. • Describe how earthquakes and the folding and faulting associated with them are involved in the creation of geologic features. • Describe how volcanoes are involved in the creation of geologic features. • Describe rapid surface changes such as landslides and earthquakes. • Describe slow surface changes such as erosion and weathering. • Construct an explanation based on evidence for how various processes have changed Earth's surface at varying time and spatial scales (e.g., short-term deposition vs. mountain building, short-term weathering and erosion vs. canyon or valley formation.) • Develop and use models of past plate motions to support explanations of existing patterns in the fossil and rock record, continental shapes, and sea floor structures. • Incorporate a variety of data including geological evidence from maps and representations of current plate motions to predict future plate motions. • Use models to explain how the flow of energy (convection of heat) drives the cycling of matter between Earth's surface and deep interior.	6 weeks

Big Ideas/ EQs	Focus Standard(s)	Assessed Competencies (Key content and skills)	Timeline
5, 32,33, 34,35, 36	4.1.7.A 4.1.7.B 4.1.7.D 4.1.7.E 4.3.7.B	Topic 5-Earth's Water Systems: • Review the water cycle and how it relates to a watershed. • Identify and explain what determines the boundaries of a watershed. • Explain factors that affect water quality and flow through a watershed. • Identify the geological characteristics of a wetland. • Describe the different types and functions of a wetland. • Explain the impact of watersheds and wetlands in flood control, wildlife habitats, and pollution abatement. • Identify land use practices and their relation to environmental health.	6 weeks