Iowa Essential Elements for Science

Grade 8 linked and Grades 6-8 grade banded

Physical

1 Matter and Its Interactions PS1

A Structure and Properties of Matter PS1.A

2 Target Level: Interpret and analyze data on the properties (e.g., color, texture, odor, and state of matter) of substances before and after chemical changes have occurred. EE.MS-PS1-2

2 Precursor Level: Gather data on the properties (e.g., color, texture, odor, and state of matter) of substances before and after chemical changes have occurred. EE.MS-PS1-2

2 Initial Level: Observe and identify examples of change (e.g., state of matter, color, temperature, and odor). EE.MS-PS1-2

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2 Motion and Stability: Forces and Interactions PS2

A Forces and Motion PS2.A

2 Target Level: Investigate and predict the change in motion of objects based on the forces acting on those objects. EE.MS-PS2-2

2 Precursor Level: Investigate and identify ways to change the motion of an object (e.g., change an incline's slope to make an object go slower, faster, farther). EE.MS-PS2-2

2 Initial Level: Identify ways to change the movement of an object (e.g., faster, slower, stop). EE.MS-PS2-2

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3 Energy PS3

B Conservation of Energy and Energy Transfer PS3.B

3 Target Level: Test and refine a device to either minimize or maximize thermal energy transfer. EE.MS-PS3-3

3 Precursor Level: Investigate objects/materials and predict their ability to maximize or minimize thermal energy transfer. EE.MS-PS3-3

3 Initial Level: Identify objects/materials used to minimize or maximize thermal energy transfer. EE.MS-PS3-3

4 Waves and Their Applications in Technologies for Information Transfer PS4

A Wave Properties PS4.A

2 Target Level: Use a model to show how light or sound waves are reflected, absorbed, or transmitted through various materials. EE.MS-PS4-2

2 Precursor Level: Investigate changes in vibrations and sources of sound in everyday life. EE.MS-PS4-2

2 Initial Level: Use a model to recognize that sound waves are transmitted by vibrations. EE.MS-PS4-2

Life

1 From Molecules to Organisms: Structures and Processes LS1

A Structure and Function LS1.A

3 Target Level: Make a claim about how a structure (e.g., organs and organ systems) and its related function supports survival of animals. EE.MS-LS1-3

3 Precursor Level: Use a model to demonstrate how organs are connected in major organ systems. EE.MS-LS1-3

3 Initial Level: Recognize major organs of animals. EE.MS-LS1-3

B Growth and Development of Organisms LS1.B

5 Target Level: Interpret data to show that environmental resources (e.g., food, light, space, water) influence growth of organisms. EE.MS-LS1-5

5 Precursor Level: Identify factors that influence growth of organisms. EE.MS-LS1-5

5 Initial Level: Match organisms to their habitats. EE.MS-LS1-5

2 Ecosystems: Interactions, Energy, and Dynamics LS2

A Interdependent Relationships in Ecosystems LS2.A

2 Target Level: Use models of food chains/webs to identify producers and consumers in aquatic and terrestrial ecosystems. EE.MS-LS2-2

2 Precursor Level: Classify animals based on what they eat (e.g., herbivore, omnivore, carnivore). EE.MS-LS2-2

2 Initial Level: Identify food that animals eat. EE.MS-LS2-2

3 Heredity: Inheritance and Variation of Traits LS3

B Variation of Traits LS3.B

2 Target Level: Make a claim supported by evidence that offspring inherit traits from their parents. EE.MS-LS3-2

2 Precursor Level: Identify similarities and differences between plant and animal parents and their offspring. EE.MS-LS3-2

2 Initial Level: Recognize that organisms differ within the same species. EE.MS-LS3-2

Earth and Space

1 Earth's Place in the Universe ESS1

B Earth and the Solar System ESS1.B

- 1 Target Level: Use an Earth-Sun-Moon model to show that Earth's orbit around the Sun corresponds to a calendar year and the orbit of the Moon around Earth corresponds to a month. EE.MS-ESS1-1
- 1 Precursor Level: Use a model to show that Earth's Moon moves around Earth, and Earth and its Moon move around the Sun. EE.MS-ESS1-1
- 1 Initial Level: Recognize models of the Earth, Moon, and Sun system. EE.MS-ESS1-1

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2 Earth's Systems ESS2

A Earth's Materials and Systems ESS2.A

- 1 Target Level: Use a model to describe the change within the rock cycle between igneous, metamorphic, and sedimentary rock. EE.MS-ESS2-1
- 1 Precursor Level: Use a model to describe the change from igneous to sedimentary rock. EE.MS-ESS2-1
- 1 Initial Level: Identify the process that forms igneous rock (e.g., volcanoes). EE.MS-ESS2-1
- 2 Target Level: Explain how geoscience processes that occur daily (e.g.,wind, rain, runoff) slowly change the surface of Earth, while catastrophic events (e.g., earthquakes, tornadoes, floods) can quickly change the surface of Earth. EE.MS-ESS2-2
- 2 Precursor Level: Identify geoscience processes (e.g., wind, rain, runoff) that have an impact on landforms (e.g., landslides, erosion such as gullies). EE.MS-ESS2-2
- 2 Identify differences in weather conditions from day to day. EE.MS-ESS2-2

D Weather and Climate ESS2.D

- 6 Target Level: Interpret basic weather information (e.g., radar, map) to make predictions about future conditions. EE.MS-ESS2-6
- 6 Precursor Level: Interpret basic weather information (e.g., radar, map) to compare weather conditions. EE.MS-ESS2-6
- 6 Initial Level: Interpret basic weather information (e.g., radar, map) to identify weather conditions. EE.MS-ESS2-6

3 Earth and Human Activity ESS3

A Natural Resources ESS3.A

- 1 Target Level: Interpret, based on evidence, how geoscience processes create resources. EE.MS-ESS3-1
- 1 Precursor Level: Identify the geoscience process that produces a natural resource. EE.MS-ESS3-1
- 1 Initial Level: Identify a natural resource. EE.MS-ESS3-1

C Human Impacts on Earth Systems ESS3.C

- 3 Target Level: Develop a plan to monitor and minimize a human impact on the local environment. EE.MS-ESS3-3
- 3 Precursor Level: Recognize ways in which humans impact the environment. EE.MS-ESS3-3
- 3 Initial Level: Recognize resources in the local environment that are important for human life. EE.MS-ESS3-3