[](http://www.google.com/url?sa=i&source=images&cd=&cad=rja&docid=OPfg5JjTnY7cTM&tbnid=zws60NHRoWWEbM:&ved=0CAgQjRwwAA&url=http://old.dmps.k12.ia.us/Media/logosfordownload.htm&ei=xFxtUZbROcqQyAHZ1oHAAQ&psig=AFQjCNEGsbIQNDI85xzVzHXDjEHEWrZQxg&ust=1366208068981271)

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| 6th Grade Science Curriculum Overview | 2020-2021 | |
| <http://science.dmschools.org>  <http://grading.dmschools.org/> | |  |



Proficiency Scale

**Standards-Referenced Grading Basics**

|  |  |
| --- | --- |
| **Evidence shows the student can...** | **Topic Score** |
| Demonstrate all learning targets from Level 3 and Level 4 | 4.0 |
| Demonstrate all learning targets from Level 3 with partial success at Level 4 | 3.5 |
| Demonstrate all learning targets from Level 3 | 3.0 |
| Demonstrate some of the Level 3 learning targets | 2.5 |
| Demonstrate all learning targets from Level 2 but none of the learning targets from Level 3 | 2.0 |
| Demonstrate some of the Level 2 learning targets and none of the Level 3 learning targets | 1.5 |
| Demonstrate none of the learning targets from Level 2 or Level 3 | 1.0 |
| Produce no evidence appropriate to the learning targets at any level | 0 |

The teacher designs instructional activities that grow and measure a student’s skills in the elements identified on our topic scales. Each scale features many such skills and knowledges, also called **learning targets**. These are noted on the scale below with letters (A, B, C) and occur at Levels 2 and 3 of the scale. In the grade book, a specific learning activity could be marked as being 3A, meaning that the task measured the A item at Level 3.

When identifying a Topic Score, the teacher looks at all evidence for the topic. The table to the **right** shows which Topic Score is entered based on what the Body of Evidence shows.

Only scores of 4, 3.5, 3, 2.5, 2, 1.5, 1, and 0 can be entered as Topic Scores.

**Guiding Practices of Standards-Referenced Grading**

**1.** A consistent 4-point grading scale will be used.

**2.** Student achievement and behavior will be reported separately.

**3.** Scores will be based on a body of evidence.

**4.** Achievement will be organized by learning topic and converted to a grade at semester’s end.

**5.** Students will have multiple opportunities to demonstrate proficiency.

**6.** Accommodations and modifications will be provided for exceptional learners.

**Multiple Opportunities**

*It’s not about going back to do a retake, or back to redo something; it’s about going forward, continually scaffolding student learning through multiple opportunities, and noting that improved learning.* Our curriculum builds on itself. “Multiple opportunities” are about taking an assessment and connecting it to past topics. It’s about allowing students to demonstrate their learning multiple times in units subsequent to their current unit, or when learning is scaffolded into future units.

Multiple Opportunities will be noted in the guide to the right of the scales. Here you will see initial thinking of connections to other topics. This is also a place where teachers can add connections through their PLCs.

6th Science Grade Pacing Table

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| --- | --- | --- | --- |
| Unit | Content Topic | Connected NGSS  Performance Expectations | Approximate Schedule |
| Matter and Its Interactions | A. Temperature and Particle Movement | MS-PS1-4 | 11 weeks |
| B. Atomic Composition and Chemical Reactions | MS-PS1-1, MS-PS1-2, MS-PS1-5 |
| E. Thermal Energy | MS-PS1-6 |
| Earth’s Systems &  Earth and Human Activity | F. Earth’s Flow of Materials and Plate Motions | MS-ESS2-1, MS-ESS2-3 | 7 weeks |
| **End of Semester 1 (January 12th)** | | |
| G. Distribution of Natural Resources | MS-ESS3-1 | 6 weeks |
| H. Shaping of Earth’s Crust and Living with Natural Hazards | MS-ESS3-2, MS-ESS2-2 |
| Molecules to Organisms: Structures and Processes | I. Cell Theory and Body Organization | MS-LS1-1, MS-LS1-2, MS-LS1-3, MS-LS1-8 | 12 weeks |
| J. Heredity | MS-LS3-2 |

**6th Grade Science Standards Overview**

Standards/Performance expectations at the 6th level focus on students developing an understanding of the scientific practices, disciplinary core ideas, and crosscutting concepts imbedded in the Iowa Core Science Standards. Your science instruction should go beyond what is stated in the standards when it is required to accurately portray the nature of science and provide a greater context for student understanding. Our instructions should focus on a holistic approach to science by incorporating additional practices, idea, and concepts when they needed to support the student’s understanding of the natural world.

**Matter and its Interactions** help students to formulate an answer to the question, “How do atomic and molecular interactions explain the properties of matter that we see and feel?” by building an understanding of what occurs at the atomic and molecular scale. In 6th grade, the PS1 Disciplinary Core Idea from the NRC Framework is broken down into two sub-ideas: the structure and properties of matter, and chemical reactions. By the end of 6th grade, students will be able to apply understanding that pure substances have characteristic physical and chemical properties and are made from a single type of atom or molecule. They will be able to provide molecular level accounts to explain states of matters and changes between states, that chemical reactions involve regrouping of atoms to form new substances, and that atoms rearrange during chemical reactions. Students are also able to apply an understanding of the design and the process of optimization in engineering to chemical reaction systems. The crosscutting concepts of patterns; cause and effect; scale, proportion and quantity; energy and matter; interdependence of science, engineering, and technology; and influence of science, engineering and technology on society and the natural world are called out as organizing concepts for these disciplinary core ideas. In the PS1 performance expectations, students are expected to demonstrate proficiency in developing and using models, analyzing and interpreting data, designing solutions, and obtaining, evaluating, and communicating information. Students use these scientific and engineering practices to demonstrate understanding of the disciplinary core ideas.

**Earth’s Systems**, help students formulate an answer to questions such as: “How do the materials in and on Earth’s crust change over time and How does the movement of tectonic plates impact the surface of Earth?” In 6th grade, the ESS2 Disciplinary Core Idea from the NRC Framework is broken down into two sub-ideas: Earth materials and systems and plate tectonics and large-scale system interactions. Students understand how Earth’s geosystems operate by modeling the flow of energy and cycling of matter within and among different systems. Students investigate the controlling properties of important materials and construct explanations based on the analysis of real geoscience data. The crosscutting concepts of patterns, scale proportion and quantity, and stability and change are called out as organizing concepts for these disciplinary core ideas. In the ESS2 performance expectations, students are expected to demonstrate proficiency in developing and using models, analyzing and interpreting data, and constructing explanations; and to use these practices to demonstrate understanding of the core ideas.

**Earth and Human Activity** help students formulate an answer to questions such as: “How is the availability of needed natural resources related to naturally occurring processes and How can natural hazards be predicted”. In 6th grade, the ESS3 Disciplinary Core Idea from the NRC Framework is broken down into two sub-ideas: natural resources and natural hazards. Students use many different practices to understand the significant and complex issues surrounding human uses of land, energy, mineral, and water resources and the resulting impacts of their development. The crosscutting concepts of patterns and cause and effect are called out as organizing concepts for these disciplinary core ideas. In the ESS3 performance expectations, students are expected to demonstrate proficiency in analyzing and interpreting data and constructing explanations and designing solutions. 6th grade students should use these practices to demonstrate understanding of the core ideas.

**Molecules to Organisms: Structures and Processes** help students formulate an answer to the question, “How can one explain the ways cells contribute to the function of living organisms.” In 6th grade, the LS1 Disciplinary Core Idea from the NRC Framework focuses on Structure and Function and Information Processing. Students can gather information and use this information to support explanations of the structure and function relationship of cells. They can communicate understanding of cell theory. They have a basic understanding of the role of cells in body systems and how those systems work to support the life functions of the organism. Crosscutting concepts of cause and effect, structure and function, and systems and systems models are called out as organizing concepts for the core ideas about processes of living organisms.

**Heredity: Inheritance and Variation of Traits** help students formulate an answer to the question, “How do living organisms pass traits from one generation to the next?” The LS3 Disciplinary Core Idea from the NRC Framework includes two sub-ideas: Inheritance of Traits, and Variation of Traits. Students can use models to describe ways gene mutations and sexual reproduction contribute to genetic variation. The crosscutting concept of cause and effect provide students with a deeper understanding of how reproduction can create variation in organisms.

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| Topic: Temperature and Particle Movement | | | Semester 1 | |
| Driving Questions: What happens to matter when you make it hotter or colder? | | | | |
| Crosscutting Concept: Cause and effect relationships. | | | | |
| Science and Engineering Practices: Develop a model to predict and/or describe phenomena. | | | | |
| Performance Expectation: [MS-PS1-4](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/MS-PS1-4%20Evidence%20Statements%20June%202015%20asterisks.pdf) | | | | |
| Key Vocabulary: solid, liquid, gas, temperature, kinetic energy, thermal energy, particles, pure substance, pressure, physical change | | | | |
| Level 4 | Level 3 | Level 2 | | Level 1 |
| In addition to score 3.0 performance, the student demonstrates in-depth inferences and applications that go beyond what was taught. | ***In response to observed phenomena, students will…***   1. Develop a model that predicts and describes changes in particle movement when thermal energy is added or removed. 2. Develop a model that predicts and describes the cause and effect relationship in changes in temperature when thermal energy is added or removed 3. Develop a model that predicts and describes changes in the state of a pure substance when thermal energy is added or removed   **COVID-19 note: In 20-21 plan to add enrichments for:**  **Practices: Make graphs to show patterns and describe and graph areas and volumes to answer science questions.**  **Cross Cutting Concepts: classify with similarities and differences when analyzing simple rates of change**. | ***In response to observed phenomena, students will…***   1. 1. Illustrate and describe the three states of matter.   2. Identify different changes in state of matter.  3. Describe what pure substances are.   1. Relate the temperature to the motion and pressure of particles. 2. Describe how the collision of gas particles exerts a force called pressure. | | Student’s performance reflects insufficient progress towards foundational skills and knowledge. |

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| Topic: Atomic Composition and Chemical Reactions | | | Semester 1 | |
| Driving Questions: How do particles combine to form different things? | | | | |
| Crosscutting Concept: Scale, Proportion and Quantity, Patterns, Energy and Matter | | | | |
| Science and Engineering Practices: Developing and Using Models, Analyze and Interpret Data | | | | |
| Performance Expectation: [MS-PS1-1](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/MS-PS1-1%20Evidence%20Statements%20June%202015%20asterisks.pdf) [MS-PS1-2](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/MS-PS1-2%20Evidence%20Statements%20June%202015%20asterisks.pdf) [MS-PS1-5](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/MS-PS1-5%20Evidence%20Statements%20June%202015%20asterisks.pdf) | | | | |
| Key Vocabulary: atom, molecule, pure substance, element, composition, extended structure, interaction, physical property, chemical property, physical change, chemical change, melting point, boiling, point, solubility, flammability, density, odor | | | | |
| Level 4 | Level 3 | Level 2 | | Level 1 |
| In addition to score 3.0 performance, the student demonstrates in-depth inferences and applications that go beyond what was taught. | ***In response to observed phenomena, students will…***   1. Develop models at the appropriate scale to describe the atomic composition of simple molecules (such as ammonia or methanol given a formula. ([MS-PS1-1](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/MS-PS1-1%20Evidence%20Statements%20June%202015%20asterisks.pdf)) - 2. Develop models to describe the atomic composition of extended structures (such as crystals or extended polymers. ([MS-PS1-1](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/MS-PS1-1%20Evidence%20Statements%20June%202015%20asterisks.pdf)) 3. Analyze and interpret patterns in data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred. ([MS-PS1-2](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/MS-PS1-2%20Evidence%20Statements%20June%202015%20asterisks.pdf)) 4. Develop and use a model that describes the conservation of Energy and Matter and how the total number of atoms does not change in a chemical reactions and mass is conserved. ([MS-PS1-5](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/MS-PS1-5%20Evidence%20Statements%20June%202015%20asterisks.pdf))   **COVID-19 note: In 20-21 plan to add enrichments for:**  **Cross Cutting Concepts:** [**create models**](https://static1.squarespace.com/static/59c3bad759cc68f757a465a3/t/5b50df742b6a288bae22add3/1532026740849/Models.pdf) **for systems to show components and interactions of those components and explain change using** [**cause, mechanism, effect**](https://static1.squarespace.com/static/59c3bad759cc68f757a465a3/t/5bc6e511ec212dd54a822f0e/1539761426906/Cause+Effect+-+Small.pdf) **as a thinking tool.** **Emphasize the** [**scale of atoms**](https://www.youtube.com/watch?v=7WhRJV_bAiE) **to show things exist to the very small and very large.** | ***In response to observed phenomena, students will…***    A. Identify and describe the differences between individual atoms, molecules, and extended structures with repeating subunits.  B. Compare and contrast pure substances to elements.  C. Organize data and identify patterns of the chemical and physical properties of each substance before and after a chemical interaction.  D1: Identify that chemical reactions recombine atoms to form  new molecules.  D2: Recognize that atoms have mass and it is the same for all atoms of that type.  D3: Recognize indicators of a chemical reaction.  D4: Account for the number of atoms in the reactants and products of a chemical reaction. | | Student’s performance reflects insufficient progress towards foundational skills and knowledge. |

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| Topic: Thermal Energy | | | Semester 1 | |
| Driving Questions: How can we design something that can warm something up or cool something down using a chemical reaction? | | | | |
| Crosscutting Concept: Energy and matter | | | | |
| Science and Engineering Practices: Construction explanations and design solutions (Undertake a design solution) | | | | |
| Performance Expectation: [MS-PS1-6](http://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/MS-PS1-6%20Evidence%20Statements%20June%202015%20asterisks.pdf) , [ETS1-3](http://www.nextgenscience.org/dci-arrangement/ms-ets1-engineering-design) Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success. | | | | |
| Key Vocabulary: thermal energy, endothermic, exothermic, chemical reaction, constraints | | | | |
| Level 4 | Level 3 | Level 2 | | Level 1 |
| In addition to score 3.0 performance, the student demonstrates in-depth inferences and applications that go beyond what was taught. | ***In response to observed phenomena, students will…***   1. Construct a device that either releases or absorbs thermal energy by chemical processes. 2. Test a device that either releases or absorbs thermal energy by chemical processes while tracking energy flow through the device. 3. Evaluate design solutions to determine how well they meet the criteria and constraints of the problems. 4. Modify a device that either releases or absorbs thermal energy by chemical processes.   \**Students are expected to engage in an* [*engineering* ***design cycle****.*](https://d43fweuh3sg51.cloudfront.net/media/media_files/8b08eb24-72e1-4f7d-8845-3eacbc363052/b0a95283-03e7-4c5c-b177-2158717e5bcb.pdf)  [*(sample student notebook for engineering link)*](https://cdn.kqed.org/wp-content/uploads/sites/38/2017/10/Engineering-for-Good-Student-Notebook.pdf)*.*  **COVID-19 note: In 20-21 plan to add enrichments for:**  **Cross Cutting Concepts:** [**create models**](https://static1.squarespace.com/static/59c3bad759cc68f757a465a3/t/5b50df742b6a288bae22add3/1532026740849/Models.pdf) **for systems to show components and interactions of those components and explain change using** [**cause, mechanism, effect**](https://static1.squarespace.com/static/59c3bad759cc68f757a465a3/t/5bc6e511ec212dd54a822f0e/1539761426906/Cause+Effect+-+Small.pdf) **as a thinking tool.** **Emphasize the** [**scale of atoms**](https://www.youtube.com/watch?v=7WhRJV_bAiE) **to show things exist to the very small and very large.** | ***In response to observed phenomena, students will…***   1. 1. Identify reactions that absorb or give off thermal energy.   2. Identify when a chemical reaction has occurred.   1. Identify where thermal energy is release or absorbed in a chemical reaction. 2. Identify criteria and constraints (examples: criteria of amount, time, cost, and temperature of substance in testing the device) for a design problem. 3. Respond to the critic from the evaluation stage to make adjustments in the device. | | Student’s performance reflects insufficient progress towards foundational skills and knowledge. |

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| Topic: Earth’s Flow of Materials and Plate Motion | | | Semester 1 | |
| Driving Questions: What causes the cycling of earth materials? | | | | |
| Crosscutting Concept: Stability and Change | | | | |
| Science and Engineering Practices: Developing and Using Models | | | | |
| Performance Expectation: [MS-ESS2-1](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/MS-ESS2-1%20Evidence%20Statements%20June%202015%20asterisks.pdf) ; [MS-ESS2-3](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/MS-ESS2-3%20Evidence%20Statements%20June%202015%20asterisks.pdf) | | | | |
| Key Vocabulary: melting, crystallization, weathering, erosion, deformation, sedimentation, chemical change, physical change, landform, energy, convection, mantle, core, crust, fossil, rock, continents, tectonic plates, seafloor, crust, ridge, trench, fracture zone, pattern, | | | | |
| Level 4 | Level 3 | Level 2 | | L 1 |
| In addition to score 3.0 performance, the student demonstrates in-depth inferences and applications that go beyond what was taught. | ***In response to observed phenomena, students will…***   1. Develop a model to describe the flow of energy and the cycling of matter in the Earth’s interior and on the Earth' surface focusing on stability and change. ([MS-ESS2-1](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/MS-ESS2-1%20Evidence%20Statements%20June%202015%20asterisks.pdf)) 2. Analyze and interpret patterns and data on the distribution of fossils and rocks to provide evidence of the past plate motions. ([MS-ESS2-3](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/MS-ESS2-3%20Evidence%20Statements%20June%202015%20asterisks.pdf)) 3. Analyze and interpret patterns and data on continental shapes to provide evidence of the past plate motions. ([MS-ESS2-3](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/MS-ESS2-3%20Evidence%20Statements%20June%202015%20asterisks.pdf)) 4. Analyze and interpret patterns and data on the distribution of seafloor structures to provide evidence of the past plate motions. ([MS-ESS2-3](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/MS-ESS2-3%20Evidence%20Statements%20June%202015%20asterisks.pdf))   **COVID-19 note: In 20-21 plan to add enrichments for:**  **Core Ideas: Describe how Earth systems, geosphere, hydrosphere, atmosphere, biosphere interact.** | ***In response to observed phenomena, students will…***   1. 1. Differentiate between the types of rock and how they form.   2. Describe the sources of energy for Earth’s interior processes and processes on Earth’s surface.  B. 1. Describe how fossil and rock evidence suggests past  movement of plates.  2. Recognize patterns in fossils that suggests past movement of plates.  C. 1. Describe how the shapes of continents suggests that  land masses were once joined.  D. 1. Describe how seafloor evidence suggests the  movement of plates.  2. Describe how the distribution of seafloor structures supports new crust forms at ridges, then moves away when new crust is formed. | | Student’s performance reflects insufficient progress towards foundational skills and knowledge. |

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| Topic: Distribution of Natural Resources | | | Semester 2 | |
| Driving Questions: Why are resources unevenly distributed throughout the world? | | | | |
| Crosscutting Concept: Cause and Effect | | | | |
| Science and Engineering Practices: Constructing Explanations and Designing Solutions | | | | |
| Performance Expectation: [MS-ESS3-1](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/MS-ESS3-1%20Evidence%20Statements%20June%202015%20asterisks.pdf) | | | | |
| Key Vocabulary: renewable resource, nonrenewable resource, distribution, geological processes, groundwater resources, environment, minerals, energy, extraction, | | | | |
| Level 4 | Level 3 | Level 2 | | Level 1 |
| In addition to score 3.0 performance, the student demonstrates in-depth inferences and applications that go beyond what was taught. | ***In response to observed phenomena, students will…***   1. Construct a scientific explanation based on evidence for how the uneven distributions of Earth’s mineral, energy and groundwater resources are the result of past and current geoscience processes. (cause and effect) ([MS-ESS3-1](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/MS-ESS3-1%20Evidence%20Statements%20June%202015%20asterisks.pdf))   **COVID-19 note: In 20-21 plan to add enrichments for:**  **Practices: Obtain and combine information from books and/or other reliable media to explain phenomena or solutions to a design problem.**  **Core Ideas: Human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space. But individuals and communities are doing things to help protect Earth’s resources and environments.** | ***In response to observed phenomena, students will…***  A.  1. Describe the distributions of the Earth’s minerals, energy, and groundwater resources.  2. Describe the geoscience processes that caused the distribution of resources throughout the world.  3. Describe how the distribution of natural resources are impacted by humans. | | Student’s performance reflects insufficient progress towards foundational skills and knowledge. |

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| Topic: Shaping of the Earth’s Crust and Living with Natural Hazards | | | Semester 2 | |
| Driving Questions: How can we predict and survive future natural hazard? | | | | |
| Crosscutting Concept: Scale Proportion and Quantity and Patterns—Graphs, charts, and images can be used to identify patterns in data. | | | | |
| Science and Engineering Practices: Analyze and interpret data to determine similarities and differences in findings. | | | | |
| Performance Expectation: [MS-ESS 3-2](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/MS-ESS3-2%20Evidence%20Statements%20June%202015%20asterisks.pdf)  [MS-ESS 2-2](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/MS-ESS2-2%20Evidence%20Statements%20June%202015%20asterisks.pdf) | | | | |
| Key Vocabulary: plate tectonics, landslide, earthquake, volcano, erosion, weathering, deposition, meteor impact, geoscience processes, natural hazards, forecast, tsunami, hurricane, tornado, flood, drought, forest fire, earthquake, volcanic eruption | | | | |
| Level 4 | Level 3 | Level 2 | | Level 1 |
| In addition to score 3.0 performance, the student demonstrates in-depth inferences and applications that go beyond what was taught. | ***In response to observed phenomena, students will…***   1. Construct an explanation based on evidence for how geoscience processes can cause the Earth to change quickly, looking at the **Scale proportion and quantity** of the events. (tsunamis, earth quakes, volcanic eruptions, landslides, avalanche). ([MS-ESS 2-2](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/MS-ESS2-2%20Evidence%20Statements%20June%202015%20asterisks.pdf)**)** 2. Construct an explanation based on evidence for how geoscience processes can cause the Earth to change slowly, looking at the **Scale proportion and quantity** of the events. (plate tectonics, mountain building, uplift, erosion)([MS-ESS 2-2](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/MS-ESS2-2%20Evidence%20Statements%20June%202015%20asterisks.pdf)) 3. Analyze and interpret patterns in data on natural hazards to forecast future catastrophic events. ([MS-ESS 3-2](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/MS-ESS3-2%20Evidence%20Statements%20June%202015%20asterisks.pdf) ) 4. Use data to propose solutions to mitigate the effects of a natural hazard. [MS-ESS 3-2](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/MS-ESS3-2%20Evidence%20Statements%20June%202015%20asterisks.pdf)   **COVID-19 note: In 20-21 plan to add enrichments for:**  **Core Ideas: Describe how Earth systems, geosphere, hydrosphere, atmosphere, biosphere interact.** | ***In response to observed phenomena, students will…***  A & B   1. Describe geological processes that take place over differing scales of time and how these processes can create mountains, trenches, rift valleys, earthquakes, and volcanoes. 2. Describe how Earth processes can effect changes in the Earth’s surface currently and in the past.   C. 1. Organize data that represent the type of natural  hazard including location, magnitude, frequency of  events, other signs of disaster.  2. Analyze data to identify location, frequency, severity, damage, and timing of a natural hazard.  3. Forecast future natural hazards using patterns in the data.  D. Identify and describe examples of the technologies that  engineers have developed to mitigate the effects of  natural hazards. | | Student’s performance reflects insufficient progress towards foundational skills and knowledge. |

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| Topic: Cell Theory and Body Systems | | | Semester 2 | |
| Driving Questions: What are living things made of? How do cells work? | | | | |
| Crosscutting Concept: Structure and Function /Scale, Proportion, and Quantity/Cause and Effect/Systems and System Models | | | | |
| Science and Engineering Practices: Developing and using models, Planning and Carrying Out Investigations, Engaging in Argument from Evidence, | | | | |
| Performance Expectation: [MS-LS1-1](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/MS-LS1-1%20Evidence%20Statements%20June%202015%20asterisks.pdf) , [MS-LS1-2](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/MS-LS1-2%20Evidence%20Statements%20June%202015%20asterisks.pdf) , [MS-LS-1-3](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/MS-LS1-3%20Evidence%20Statements%20June%202015%20asterisks.pdf), [MS-LS1-8](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/MS-LS1-8%20Evidence%20Statements%20June%202015%20asterisks.pdf) | | | | |
| Key Vocabulary | | | | |
| Level 4 | Level 3 | Level 2 | | Level 1 |
| In addition to score 3.0 performance, the student demonstrates in-depth inferences and applications that go beyond what was taught. | ***In response to observed phenomena, students will…***   1. Conduct an investigation to provide evidence that living things are made of cells. ([MS-LS1-1](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/MS-LS1-1%20Evidence%20Statements%20June%202015%20asterisks.pdf)) 2. Develop and use a model to describe the function of a cell as a whole and ways parts (structures) of cells contribute to the function. ([MS-LS1-2](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/MS-LS1-2%20Evidence%20Statements%20June%202015%20asterisks.pdf)) 3. Use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells. ([MS-LS-1-3](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/MS-LS1-3%20Evidence%20Statements%20June%202015%20asterisks.pdf)) 4. Gather and Synthesize information that sensory receptors respond to stimuli by sending messages to the brain for immediate behavior or storage as memories. (Cause and Effect)( [MS-LS1-8](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/MS-LS1-8%20Evidence%20Statements%20June%202015%20asterisks.pdf))   **COVID-19 note: In 20-21 plan to add enrichments for:**  **Practices: support an** [**argument**](https://static1.squarespace.com/static/59c3bad759cc68f757a465a3/t/5cf84ae6fbc9d70001158493/1559775974448/Engaging+in+Argument+from+Evidence+Graphic+Organizer+%282%29.pdf) **with evidence and** [**model**](https://static1.squarespace.com/static/59c3bad759cc68f757a465a3/t/5b50e028aa4a99d8b864133e/1532026920409/Systems.pdf)**.** | ***In response to observed phenomena, students will…***   1. 1. Describe evidence that would support that all living things are made of one or more cells (cell theory)   2. Describe how the tools and methods included in experimental design will test your hypothesis  3. Distinguish between living and non-living things   1. 1. Describe how different parts of a cell, separately and together, provide energy for the cell’s internal process.   2. Describe how different parts of a cell, separately and together, contribute to maintaining the structure of the cell and controlling what enters and leaves the cell.  3. Describe how plant cells are different from animal cells.   1. 1. Identify and describe how cells work together to make tissues, organs, organ systems, and organisms   2. Use reasoning to connect appropriate evidence to the claim.  3. Use oral or written arguments to support or refute an explanation or model of a phenomenon.   1. 1. Identify different types of sensory receptors and the types of inputs (electromagnetic, mechanical, and chemical) to which they respond.   2. Use a model to show how sensory information is transmitted along nerve cells to the brain.  3. Explain how the brain processes and responds to the stimuli. | | Student’s performance reflects insufficient progress towards foundational skills and knowledge. |

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| Topic: Heredity | | | Semester 2 | |
| Driving Questions: Why do living things look the way they do? | | | | |
| Crosscutting Concept: Cause and Effect | | | | |
| Science and Engineering Practices: Developing and Using Models | | | | |
| Performance Expectation: [MS-LS3-2](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/MS-LS3-2%20Evidence%20Statements%20June%202015%20asterisks.pdf) | | | | |
| Key Vocabulary: asexual, sexual, offspring, genetic variation, genes, chromosomes, Punnett square, dominant, recessive | | | | |
| Level 4 | Level 3 | Level 2 | | Level 1 |
| In addition to score 3.0 performance, the student demonstrates in-depth inferences and applications that go beyond what was taught. | ***In response to observed phenomena, students will…***   1. Develop and use a model to describe why asexual reproduction typically results in offspring with identical genetic information. (Cause and effect)   [MS-LS3-2](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/MS-LS3-2%20Evidence%20Statements%20June%202015%20asterisks.pdf)   1. Develop and use a model to describe why sexual reproduction results in offspring with significant genetic variation. (Cause and effect) [MS-LS3-2](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/MS-LS3-2%20Evidence%20Statements%20June%202015%20asterisks.pdf) | ***In response to observed phenomena, students will…***     1. 1. Show how genetic material is transferred to offspring during asexual reproduction.   2. Describe how variation is unlikely but can occur during asexual reproduction.   1. 1. Show how genetic material is transferred to offspring during sexual reproduction   2. Predict the genetic variation of offspring when provide with traits of the parents.  3. Explain why sexual reproduction has more genetic variation than asexual reproduction. | | Student’s performance reflects insufficient progress towards foundational skills and knowledge. |