# Rock Query

Correlated Standards by Grade

## Grade 2

**NGSS**

2-ESS2-2. Develop a model to represent the shapes and kinds of land and bodies of water in an area.
2-LS4-1. Make observations of plants and animals to compare the diversity of life in different habitats.
2-PS1-1. Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.
2-ESS1-1. Use information from several sources to provide evidence that Earth events can occur quickly or slowly.

**ACOS**

SC.2.9. Create models to identify physical features of Earth.
SC.2.7. Obtain information from literature and other media to illustrate that there are many different kinds of living things and that they exist in different places on land and in water.
SC.2.1. Conduct an investigation to describe and classify various substances according to physical properties.
SC.2. 8. Make observations from media to obtain information about Earth's events that happen over a short period of time or over a time period longer than one can observe.

**MSF**

1.ES.4. Develop an understanding of the properties of Earth materials, objects in the sky, and changes in Earth and sky. A.
2.ES.4.B Describe the three layers of the Earth.
3.ES.4.B. Compare and contrast changes in Earth's surface that are due to slow processes and rapid processes.

**TASS**

2.ESS2,3, Compare simple maps of different land areas to observe the shapes and kinds of land and water.
2.ESS1,1, Recognize that some of Earth's natural processes are cyclical, while others have a beginning and end. Some events happen quickly, while others occur slowly over time.

**GSE**

S2L1.A. Ask questions to determine the sequence of the life cycle of common animals in your area.
S2P1. Obtain, evaluate, and communicate information about the properties of matter and changes that occur in objects.
S2E3. Obtain, evaluate, and communicate information about how weather, plants, animals, and humans cause changes to the environment.

**GPS**.

S2P1. Students will investigate the properties of matter and changes that occur in objects.

## Grade 3

**NGSS**

3-LS4-1. Analyze and interpret data from fossils to provide evidence of the organisms and environments in which they lived long ago.

**ACOS**

SC.3.9. Analyze and interpret data from fossils to provide evidence of organisms and the environments in which they lived long ago.

**MSF**

3.ES.4.G. Explain how fossil records are used to learn about the past, identify characteristics of selected fossils, and describe why they may be found in many places.

**GSE**

S3E2. Obtain, evaluate, and communicate information on how fossils provide evidence of past organisms.

**GPS**

S3E2. Students will investigate fossils as evidence of organisms that lived long ago.

## Grade 4

**NGSS**

4-ESS1-1. Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time.
4-ESS2-1. Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation.

**ACOS**

SC.4.12.Construct explanations by citing evidence found in patterns of rock formations and fossils in rock layers that Earth changes over time through both slow and rapid processes.
SC.4.14. Explore information to support the claim that landforms are the result of a combination of constructive forces, including crustal deformation, volcanic eruptions, and sediment deposition, as well as the result of deconstructive forces, including erosion and weathering.
SC.4.15. Analyze and interpret data to determine effects of weathering and rate of erosion by water, ice, wind, and vegetation using one single form of weathering or erosion at a time.

**MSF**

4.ES.4. A. Classify sedimentary, metamorphic, and igneous rocks. B. Compare and contrast Earth's geological features and the changes caused by external forces**.**
4.ES.4.B. Compare and contrast Earth's geological features and the changes caused by external forces.

**TASS**

4.ESS2.4. Analyze and interpret data on the four layers of the Earth, including thickness, composition, and physical states of these layers.
4.ESS1.1. Generate and support a claim with evidence that over long periods of time, erosion and deposition have changed landscapes and created new landforms.

4.ESS2.1. Collect and analyze data from observations to provide evidence that rocks, soils, and sediments are broken into smaller pieces through mechanical weathering.

**GPS**
S5E1. Students will identify surface features of the Earth caused by constructive and destructive processes.

## Grade 5

**NGSS**
5-ESS3-1. Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.
5-PS1-3. Make observations and measurements to identify materials based on their properties.

**ACOS**
SC.5.16. Collect and organize scientific ideas that individuals and communities can use to protect Earth's natural resources and its environment.
SC.5.3. Examine matter through observations and measurements to identify materials.

**MFS**
5.ES.4.G. Conclude that the supply of many Earth resources is limited and critique a plan to extend the use of Earth's resources.
1.P.2.E. Differentiate between the properties of light as reflection, refraction, and absorption. F. Describe physical properties of matter including mixtures and solutions.

**GSE**
S5E1. Obtain, evaluate, and communicate information to identify surface features on the Earth caused by constructive and/or destructive processes.

## Middle School

**NGSS**
MS-ESS2-2. Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.
MS-ESS2-3. Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of past plate tectonics.
MS-LS2-3. Develop a model to describe the cycling of matter and flow of energy among living and non-living parts of an ecosystem.
MS-ESS3-1. 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.
MS-PS1-3. Gather and make sense of information to describe that synthetic materials come from natural resources and impact society.

**ACOS**
SC.6.8. Plan and carry out investigations that demonstrate the chemical and physical processes that form rocks and cycle Earth's materials.

SC.6.9. Use models to explain how the flow of Earth's internal energy drives a cycling of matter between the Earth's surface and deep interior causing plate movements.
ESS.HS.13. Analyze and interpret data of interactions between the hydrologic and rock cycles to explain the mechanical impacts and chemical impacts of Earth materials by water's properties.
SC.7.7. Use empirical evidence from patterns and data to demonstrate how changes to physical or biological components of an ecosystem can lead to shifts in populations.
SC.6.10. Use research-based evidence to propose a scientific explanation regarding how the distribution of Earth's resources such as minerals, fossil fuels, and groundwater are the result of ongoing geoscience processes.

**MFS**
6.ESS.4.B. Draw conclusions about the historical processes that contribute to the shaping of planet Earth.
7.ESS.4.B. Explain the causes and effects of historical processes shaping the planet Earth.
8ESS.4.B. Describe the cause and effect relationship between the composition of and movement within the Earth's lithosphere.
7.LS,3.E. Compare and contrast how organisms obtain and utilize matter and energy.
6.ESS.4.G. Research and cite evidence of current resources in Earth's systems.
7.ESS.4.A. Justify the importance of Earth materials to humans.

**TASS**
6.ESS3.1.Differentiate between renewable and nonrenewable resources by asking questions about their availability and sustainability.
8.LS4.1. Analyze and interpret data for patterns in the fossil record that document the existence, diversity, extinction, and change in life forms throughout Earth's history.

## High School

**NGSS**
HS-LS2-5. Develop a model to illustrate the role of photosynthesis and cellular respiration in the cycling of carbon among the biosphere, atmosphere, hydrosphere, and geosphere.
4-ESS3-1. Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.
HS-ESS2-2. Analyze geoscience data to make the claim that one change to Earth's surface can create feedbacks that cause changes to other Earth systems.

**ACOS**
ESS.HS.13. Analyze and interpret data of interactions between the hydrologic and rock cycles to explain the mechanical impacts and chemical impacts of Earth materials by water's properties.
ES.HS.2. Use models to illustrate and communicate the role of photosynthesis and cellular respiration as carbon cycles through the biosphere, atmosphere, hydrosphere, and geosphere.
ES.HS.17. Obtain, evaluate, and communicate geological and biological information to determine the types of organisms that live in major biomes.
ES.HS.8. Engage in an evidence-based argument to explain how change occurs over time in Earth's systems.

BIO.HS.10. Construct an explanation and design a real-world solution to address changing conditions and ecological succession cause by density-dependent and/or density-independent factors.
ESS.HS.7. Analyze and interpret evidence regarding the theory of plate tectonics, including geologic activity along plate boundaries and magnetic patterns in undersea rocks, to explain the ages and movements of continental and oceanic crusts.
ESS.HS.8. Develop a time scale model of Earth's biological and geological history to establish relative and absolute age of major events in Earth's history.
ESS.HS.10. Construct an explanation from evidence for the processes that generate the transformation of rocks in Earth's crust, including chemical composition of minerals and characteristics of sedimentary, igneous, and metamorphic rocks.

**MSF**

4.ES.4.G. Summarize the process that results in deposits of fossil fuels and conclude why fossil fuels are classified as nonrenewable resources.
HS.ESS.2. Develop an understanding of the history and evolution of the universe and Earth.
HS.ESS.3. Discuss factors which are used to explain the geological history of the Earth.

**TASS**

ESS.ESS2.1. Given an environmental disaster, analyze its effect upon the geosphere, hydrosphere, atmosphere, and/or biosphere, including sphere to sphere interactions. Analysis should conclude with an identification of future research to improve our ability to predict such interactions.
ESS.ESS2.5. Develop a visual model to illustrate the formation and reformation of rocks over time including processes such as weathering, sedimentation, and plate movement. The model should include a comparison of the physical properties of various rock types, common rock-forming minerals, and continental rocks versus oceanic crust.
ESS.ESS2.6. Make and defend a claim based on evidence to describe the formation and on-going availability of mined resources such as phosphorus, platinum, rare minerals, rare earth elements, and/or fossil fuels.

**GSE**

SES3. Obtain, evaluate, and communicate information to explore the actions of water, wind, ice, and gravity as they relate to landscape change.
SB4. Obtain, evaluate, and communicate information to illustrate the organization of interacting systems within single-celled and multi-celled organisms.
S6E6. Obtain, evaluate, and communicate information about the uses and conservation of various natural resources and how they impact the Earth.
SES4. Obtain, evaluate, and communicate information to understand how rock relationships and fossils are used to reconstruct Earth's past.
SES2. Obtain, evaluate, and communicate information to understand how plate tectonics creates certain geologic features, landforms, Earth materials, and geologic hazards.
SES6. Obtain, evaluate, and communicate information about how life on Earth responds to and shapes Earth's systems.
SES4. Obtain, evaluate, and communicate information to understand how rock relationships and fossils are used to reconstruct Earth's past.

**GPS**

SB3. Students will derive the relationship between single-celled and multi-celled organisms and the increasing complexity of systems. A. Explain the cycling of energy through the process of photosynthesis and respiration.

S6E6. Students will describe various sources of energy and with their uses and conservation.

HS.SG2. Students will interpret the geologic conditions and processes that form different rocks and minerals.

SG3. Students will investigate the evidence for plate tectonics; evaluate the importance of Earth's internal processes and assess the relationship between plate tectonic boundary type and certain disasters such as earthquakes and volcanic eruptions.

SG1. Students will interpret the geologic history of the Earth.