What's the Dirt on Illinois' Soil? – Grades 4-8

Fourth Grade

Next Generation Science

- 4.ESS1.1 Earth's Place in the Universe: 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 Earth's Materials and Systems: Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation.
- 4.ESS2.A Earth Systems: Rainfall helps to shape the land and affects the types of living things found in a region. Water, ice, wind, living organisms, and gravity break rocks, soils, and sediments into smaller particles and move them around.
- 4.ESS3.1 Earth and Human Activity: Obtain and combine information to describe that energy and fuels are derived from natural resources and that their uses affect the environment.
- 4.ESS3.A Natural Resources: Energy and fuels that humans use are derived from natural sources, and their use affects the environment in multiple ways. Some resources are renewable over time, and others are not.
- 4.ESS3.B Natural Hazards: A variety of hazards result from natural processes (e.g., earthquakes, tsunamis, volcanic eruptions). Humans cannot eliminate the hazards but can take steps to reduce their impacts.

Social Science

- 3-5.IS.2 Creating Supporting Questions: Create supporting questions to help answer essential questions in an inquiry.
- 4.EC.2 Economics and Financial Literacy: Describe how goods and services are produced using human, natural, and capital resources (e.g. tools and machines).
- 4.G.2 Human-Environment Interaction: Analyze how the cultural and environmental characteristics of places in Illinois change over time.
- 4.G.3 Geography: Describe some of the current movements of goods, people, jobs, or information to, from, or within Illinois, and explain reasons for the movements.

ELA-Literature

- K-12.L.R.4 Vocabulary Acquisition and Use: Determine or clarify the meaning of unknown and multiple-meaning words and phrases by using context clues, analyzing meaningful word parts, and consulting general and specialized reference materials, as appropriate.
- K-12.L.R.6 Vocabulary Acquisition and Use: Acquire and use accurately a range of general academic and domain-specific words and phrases sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.
- K-12.SL.2 Comprehension and Collaboration: Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally.

- 4.L.1 Conventions of Standard English: Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
- 4.L.3.a Knowledge of Language: Choose words and phrases to convey ideas precisely.
- 4.L.3 Knowledge of Language: Use knowledge of language and its conventions when writing, speaking, reading, or listening.
- 4.R.F.3 Phonics and Word Recognition: Know and apply grade-level phonics and word analysis skills in decoding words.
- 4.R.I.3 Key Ideas and Details: Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text.
- 4.R.I.4 Craft and Structure: Determine the meaning of general academic and domain-specific words or phrases in a text relevant to a grade 4 topic or subject area.
- 4.R.I.7 Integration of Knowledge and Ideas: Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, timelines, animations, or interactive elements on Web pages) and explain how the information contributes to an understanding of the text in which it appears.
- 4.SL.1 Comprehension and Collaboration: Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led)with diverse partners on grade 4 topics and texts, building on others' ideas and expressing their own clearly.
- 4.SL.1.b Comprehension and Collaboration: Follow agreed-upon rules for discussions and carry out assigned roles.
- 4.SL.1.c Comprehension and Collaboration: Pose and respond to specific questions to clarify or follow up on information, and make comments that contribute to the discussion and link to the remarks of others.
- 4.SL.1.d Comprehension and Collaboration: Review the key ideas expressed and explain their own ideas and understanding in light of the discussion.
- 4.SL.2 Comprehension and Collaboration: Paraphrase portions of a text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.
- 4.W.1.b Text Types and Purposes: Provide reasons that are supported by facts and details.
- 4.W.2.d Text Types and Purposes: Use precise language and domain-specific vocabulary to inform about or explain the topic.
- 4.W.8 Research to Build and Present Knowledge: Recall relevant information from experiences or gather relevant information from print and digital sources; take notes and categorize information, and provide a list of sources.

Math

- 4.MD.A.1 Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec.
- 4.MD.A.2 Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent

measurement quantities using diagrams such as number line diagrams that feature a measurement scale.
- MP.1 Make sense of problems and persevere in solving them.
- MP.2 Reason abstractly and quantitatively.
- MP.3 Construct viable arguments and critique the reasoning of others.

Fifth Grade

Next Generation Science

- 5.ESS3.1 Earth and Human Activity: Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.
- 5.ESS3.C Human Impacts on Earth Systems: 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.
- 5.LS1.C Organization for Matter and Energy Flow in Organisms: Food provides animals with the materials they need for body repair and growth and the energy they need to maintain body warmth and for motion.
- 5.LS1.1 From Molecules to Organisms: Structures and Processes: Support an argument that plants get the materials they need for growth chiefly from air and water.
- 5.LS1.C Organization for Matter and Energy Flow in Organisms: Plants acquire their material for growth chiefly from air and water.
- 5.LS2.A Interdependent Relationships in Ecosystems: The food of almost any kind of animal can be traced back to plants. Organisms are related in food webs in which some animals eat plants for food and other animals eat the animals that eat plants. Some organisms, such as fungi and bacteria, break down dead organisms (both plants or plants parts and animals) and therefore operate as "decomposers." Decomposition eventually restores (recycles) some materials back to the soil. Organisms can survive only in environments in which their particular needs are met. A healthy ecosystem is one in which multiple species of different types are each able to meet their needs in a relatively stable web of life. Newly introduced species can damage the balance of an ecosystem.
- 5.LS2.B Cycles of Matter and Energy Transfer in Ecosystems: Matter cycles between the air and soil and among plants, animals, and microbes as these organisms live and die. Organisms obtain gases, and water, from the environment, and release waste matter (gas, liquid, or solid) back into the environment.
- 5.PS1.3 Matter and Its Interactions: Make observations and measurements to identify materials based on their properties.
- 5.PS3.D Energy in Chemical Processes and Everyday Life: The energy released [from] food was once energy from the sun that was captured by plants in the chemical process that forms plant matter (from air and water).

Social Science

- 3-5.IS.2 Creating Supporting Questions: Create supporting questions to help answer essential questions in an inquiry.
- 5.G.3 Geography: Explain how human settlements and technological advancements have impacted natural resources.
- 5.G.4 Geography: Analyze the effects of catastrophic environmental and technological events on human settlements and migration.

ELA/Literacy

- K-12.L.R.4 Vocabulary Acquisition and Use: Determine or clarify the meaning of unknown and multiple-meaning words and phrases by using context clues, analyzing meaningful word parts, and consulting general and specialized reference materials.
- K-12.L.R.6 Vocabulary Acquisition and Use: Acquire and use accurately a range of general academic and domain-specific words and phrases sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.
- K-12.SL.2 Comprehension and Collaboration: Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally.
- 5.L.1 Conventions of Standard English: Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
- 5.L.3 Knowledge of Language: Use knowledge of language and its conventions when writing, speaking, reading, or listening.
- 5.R.F.3 Phonics and Word Recognition: Know and apply grade-level phonics and word analysis skills in decoding words.
- 5.R.I.3 Key Ideas and Details: Explain the relationships or interactions between two or more individuals, events, ideas, or concepts in a historical, scientific, or technical text based on specific information in the text.
- 5.R.I.4 Craft and Structure: Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a grade 5 topic or subject area.
- 5.R.I.7 Integration of Knowledge and Ideas: Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.
- 5.SL.1.b Comprehension and Collaboration: Follow agreed-upon rules for discussions and carry out assigned roles.
- 5.SL.1.d Comprehension and Collaboration: Review the key ideas expressed and draw conclusions in light of information and knowledge gained from the discussions.
- 5.SL.5 Presentation of Knowledge and Ideas: Include multimedia components (e.g., graphics, sound) and visual displays in presentations when appropriate to enhance the development of main ideas or themes.
- 5.W.8 Research to Build and Present Knowledge: Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work, and provide a list of sources.
- 5.W.9 Research to Build and Present Knowledge: Draw evidence from literary or informational texts to support analysis, reflection, and research.

Math

- 5.MD.C.3 Measurement and Data: Recognize volume as an attribute of solid figures and understand concepts of volume measurement.
- MP.1 Make sense of problems and persevere in solving them.
- MP.2 Reason abstractly and quantitatively.
- MP.3 Construct viable arguments and critique the reasoning of others.

Sixth – Eighth Grades

Next Generation Science

- MS.ESS2.A Earth's Materials and Systems: The planet's systems interact over scales that range from microscopic to global in size, and they operate over fractions of a second to billions of years. These interactions have shaped Earth's history and will determine its future.
- MS.ESS2.B Plate Tectonics and Large-Scale System Interactions: Maps of ancient land and water patterns, based on investigations of rocks and fossils, make clear how Earth's plates have moved great distances, collided, and spread apart.
- MS.ESS2.C The Roles of Water in Earth's Surface Processes: The complex patterns of the changes and the movement of water in the atmosphere, determined by winds, landforms, and ocean temperatures and currents, are major determinants of local weather patterns.
- MS.ESS2.C The Roles of Water in Earth's Surface Processes: Water's movements—both on the land and underground—cause weathering and erosion, which change the land's surface features and create underground formations.
- MS.ESS3.1 Earth and Human Activity: 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.ESS3.2 Earth and Human Activity: Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.
- MS.ESS3.3 Earth and Human Activity: Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.
- MS.ESS3.A Natural Resources: Humans depend on Earth's land, ocean, atmosphere, and biosphere for many different resources. Minerals, fresh water, and biosphere resources are limited, and many are not renewable or replaceable over human lifetimes. These resources are distributed unevenly around the planet as a result of past geologic processes.
- MS.ESS3.B Natural Hazards: Mapping the history of natural hazards in a region, combined with an understanding of related geologic forces can help forecast the locations and likelihoods of future events.
- MS.LS2.1 Ecosystems: Interactions, Energy, and Dynamics: Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.

- MS.LS2.A Interdependent Relationships in Ecosystems: Organisms, and populations of organisms, are dependent on their environmental interactions both with other living things and with nonliving factors.
- MS.LS2.B Cycle of Matter and Energy Transfer in Ecosystems: Food webs are models that demonstrate how matter and energy is transferred between producers, consumers, and decomposers as the three groups interact within an ecosystem. Transfers of matter into and out of the physical environment occur at every level. Decomposers recycle nutrients from dead plant or animal matter back to the soil in terrestrial environments or to the water in aquatic environments. The atoms that make up the organisms in an ecosystem are cycled repeatedly between the living and nonliving parts of the ecosystem.
- MS.LS2.C Ecosystem Dynamics, Functioning, and Resilience: Ecosystems are dynamic in nature; their characteristics can vary over time. Disruptions to any physical or biological component of an ecosystem can lead to shifts in all its populations.
- MS.LS2.C Ecosystem Dynamics, Functioning, and Resilience: Biodiversity describes the variety of species found in Earth's terrestrial and oceanic ecosystems. The completeness or integrity of an ecosystem's biodiversity is often used as a measure of its health.
- MS.LS4.D Biodiversity and Humans: Changes in biodiversity can influence humans' resources, such as food, energy, and medicines, as well as ecosystem services that humans rely on—for example, water purification and recycling.
- MS.PS1.3 Matter and Its Interactions: Gather and make sense of information to describe that synthetic materials come from natural resources and impact society.

Social Science

- 6-8.IS.2 Creating and Supporting Questions: Ask essential and focused questions that consider multiple perspectives and will lead to independent research.
- 6-8.G.4 Human/Environment Interaction: Explain how humans and their environment affect one another.
- 6-8.LC.G.4 Global Interconnections: Identify how cultural and environmental characteristics vary among regions of the world.
- 6-8.LC.H.4 Causation and Argumentation: Explain multiple causes and effects of historical events.
- 6-8.MdC.G.2 Human/Environment Interaction: Compare and contrast the cultural and environmental characteristics of different places or regions.
- 6-8.MC.G.4 Global Interconnections: Analyze how the environmental characteristics of places and production of goods influence patterns of world trade.
- 6-8.MdC.H.1 Change, Continuity, and Context: Analyze connections among events and developments in broader historical contexts.

ELA/Literacy

- K-12.L.R.4 Vocabulary Acquisition and Use: Determine or clarify the meaning of unknown and multiple-meaning words and phrases by using context clues, analyzing meaningful word parts, and consulting general and specialized reference materials, as appropriate.
- K-12.L.R.6 Vocabulary Acquisition and Use: Acquire and use accurately a range of general academic and domain-specific words and phrases sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate

independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.

- K-12.SL.2 Comprehension and Collaboration: Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally.
- 6-8.R.H.4 Craft and Structure: Determine the meaning of words and phrases as they are used in a text, including vocabulary specific to domains related to history/social studies.
- 6-8.R.H.7 Integration of Knowledge and Ideas: Integrate visual information (e.g., in charts, graphs, photographs, videos, or maps) with other information in print and digital texts.
- 6-8.R.ST.4 Craft and Structure: Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6–8 texts and topics.
- 6-8.R.ST.7 Integration of Knowledge and Ideas: Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).
- 6-8.R.ST.9 Integration of Knowledge and Ideas: Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.
- 6-8.W.HST.8 Research to Build and Present Knowledge: Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.

Math

- MP.1 Make sense of problems and persevere in solving them.
- MP.2 Reason abstractly and quantitatively.
- MP.3 Construct viable arguments and critique the reasoning of others.
- RP.A.3 Ratios and Proportional Relationships: Use ratio and rate reasoning to solve real-world and mathematical problems.