

4th Grade Informational Writing Prompt

PROMPT

After reading “Rock into Soil” and “How Soil Forms,” write 1-3 paragraphs in which you explain weathering and its influence on the formation of soil. Be sure to use evidence and examples from the texts to support your ideas.

TARGETED STANDARDS CONNECTION

Science Standard 3

Students will understand the basic properties of rocks, the processes involved in the formation of soils, and the needs of plants provided by soil.

Objective 2: Explain how the processes of weathering and erosion change and move materials that become soil.

- a) Identify the processes of physical weathering that break down rocks at the Earth's surface (i.e., water movement, freezing, plant growth, wind).

Objective 3: Observe the basic components of soil and relate the components to plant growth.

- a) Observe and list the components of soil (i.e., minerals, rocks, air, water, and living/dead organisms) and distinguish between the living, nonliving, and once living components of soil.

Writing

W.4.2 Write informative/explanatory texts to examine a topic and convey ideas and information clearly.

W.4.2.A Introduce a topic clearly and group related information in paragraphs and sections; include formatting (e.g., headings), illustrations, and multimedia when useful to aiding comprehension.

W.4.2.B Develop the topic with facts, definitions, concrete details, quotations, or other information and examples related to the topic.

W.4.2.C Link ideas within categories of information using words and phrases (e.g., *another*, *for example*, *also*, *because*).

W.4.2.D Use precise language and domain-specific vocabulary to inform about or explain the topic.

W.4.2.E Provide a concluding statement or section related to the information or explanation presented.

W.4.9 Draw evidence from literary or informational texts to support analysis, reflection, and research.

For those typing their responses: **W.4.6** With some guidance and support from adults, use technology, including the Internet, to produce and publish writing as well as to interact and collaborate with others; demonstrate sufficient command of keyboarding skills to type a minimum of one page in a single sitting.

LEARNING EXPERIENCE

Materials:

Book: Rocks and Minerals: Soil by Rebecca E. Hirsch (Lexile: 770L)—full text available on [Epic Books](#)

Book: Real World Science: Soil by Katie Sharpe (excerpt Lexile: 670L)—full text available on [Epic Books](#)
Typed up text from books for students to refer to for evidence

Instructional Sequence:

1. Teacher hands out the typed up prompt and text.
2. The teacher introduces the writing prompt and explains that students will be listening to, or reading, two texts and using those texts to answer the prompt.
3. The teacher reads aloud pages 13-16 from *Rocks and Minerals: Soil*, and pages 9-13 from *Real World Science: Soil* to the students. As the teacher reads, students may be underlining or highlighting information that they may find useful for responding to the prompt.
4. Upon finishing the read aloud, students will be provided with paper to respond to the prompt.

After reading “Rock into Soil” and “How Soil Forms,” write at least 3 paragraphs in which you explain weathering and its influence on the formation of soil. Be sure to use evidence and examples from the texts to support your ideas.

Rock into Soil By Rebecca E. Hirsch

Have you ever recycled an object? Nature recycles too. In nature, rocks form, are destroyed, and form again. This recycling process is called the rock cycle.

Rocks form when a volcano erupts. The molten, or liquid, rock cools and hardens, making new rocks. This bare rock is not yet soil. But it can become soil if it breaks down into small particles. This process takes a long, long time.

When rocks sit at the Earth's surface, they break down in several ways. This process is called weathering, and it can take millions of years. Weathering breaks down rocks into smaller particles. As a result, the mineral part of soil forms. The soil contains the same minerals as the original rock.

Sun, wind, rain, ice, and plants cause weathering. Sometimes rain beats down on a rock, dissolving bits of it. The water may trickle into a crack and freeze. As the water freezes, it pushes outward and cracks the rock.

Sometimes plants grow on rocks. The roots seek out cracks in the rock where water and nutrients are stored. As the roots grow they wedge the rocks apart. This is another example of weathering.

How Soil Forms

Plants grow in the new soil created by weathering. They dig deep roots, creating holes for air and water. They drop dead leaves, needles, and twigs onto the soil. Animals, such as earthworms, ants, and rodents live in the soil. They mix the organic plant matter into the soil and create tunnels where water and air flow. Microbes help decompose the remains of living things. They add organic matter to the minerals in the soil. The decayed plants and animals become a brown or black material known as humus.

Soil may take thousands or even millions of years to form. Soil forms more quickly in warm, moist places. It forms slowly in cold or dry places. This is why a rain forest often has deeper soil than a desert.

As time passes, soil changes. In fact, soil never stays the same. The parts of soil—minerals, water, air, organic matter, and living creatures—are always changing.

How Soil Forms

By Katie Sharpe

Earth is covered with different types of soil. The ocean floor has wet, sandy soil. Rich farmland soil is dark and moist. And deserts have a blanket of dry, sandy soil. No matter where it is, or what it looks like, soil always has the same ingredients. All soil is made up of pieces of rock, bits of plant and animal matter, air, and water.

The main ingredient in all soil is rock. Scientists call the rock that soil comes from parent material. Look closely at a handful of soil. You will see tiny pieces of rock. Those pieces are called particles. And all of those particles were once part of a bigger rock.

Many natural forces work to break rocks into particles. One is the sun. The sun heats the surface of rocks. This causes the outer layers to expand, or grow. At night, when the rock cools, it contracts, or shrinks. After numerous cycles of cool nights and hot days, the outer layers of rock break off. These pieces become part of the soil.

Ice also breaks rock into particles. Water seeps into the cracks of rocks. When the temperature drops to freezing, the water becomes ice. Ice takes up more space than water, so it causes the cracks to grow. Over time, bits and pieces of rock break off from these cracks.

Water and wind wear away at rocks, too. Rain, snow, and flowing water pound away at the outer layer of rock. Wind causes rocks to hit against each other. Bits and pieces of rock break away.

Living things break rocks apart, too. For instance, tree roots snake into rocks. This causes the rocks to crack, and particles of rock fall away.

Another ingredient in soil is humus. Humus is a mixture of the remains of dead plants and other organisms. It also contains the waste of living things that eat those remains. When plants and animals die, their remains decompose, or decay. Living things such as earthworms, fungi, and bacteria feed on the remains. Their waste then becomes part of the soil. Because plants and animals contain nutrients, these nutrients become part of the soil, too. This enriches the soil for future plants and animals.

Particles of rock and humus come together in clumps. Between these clumps are spaces for soil's other ingredients: water and air. These are vital to everything that lives and grows in soil.