

GEOLOGY

Answer Key: Grades 7–8 Lesson Extensions

Notes:

- This answer key should be used as a guide for basic responses to the questions and instructions found in the grades 7–8 lesson extensions. The children should be encouraged to make their science journals tidy, beautiful, and exceptionally well done.
- Encourage the children to write their answers in their own words, with definitions being a possible exception.
- There are two types of answers provided in this answer key:

Sample answers: Most questions are open ended, so the children’s answers will not match the provided text exactly or include everything provided in the sample answer. However, some answers should match more closely (for example, vocabulary word definitions, copied charts, etc.).

Answers will vary: This is used when there will be great variation in the children’s answers. Refer to the text in the lesson to check these answers.

Lesson 1

2. Write down at least three ways that scientists have discovered what is inside our earth.

Sample answers: Some ways scientists have discovered what’s inside our earth are through observation of rocks found on the surface of the earth, through materials from volcanic eruptions, by using technology to study earthquakes, and by studying magnetism.

3. Write the definition of inference.

Sample answer: Inference is a conclusion reached based on evidence and reasoning.

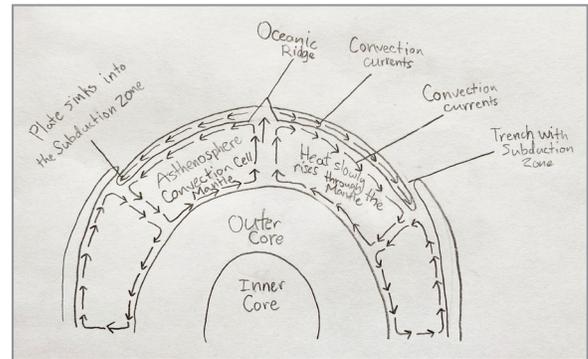
Lesson 2

2. Write down “Plate movement is powered by _____.” Then fill in the blank.

Sample answer: Plate movement is powered by convection.

3. Draw a picture of how Earth’s convection works.

Sample answer:



Lesson 3

Answer the following questions:

- a. How was this earthquake able to trigger a tsunami?

Sample answers: The seafloor was displaced, triggering a tsunami, due to a combination of three things: the quake’s depth being shallow, the quake occurring undersea, and the magnitude of the quake being higher than 6.4.

b. What does magnitude mean?

Sample answer: The magnitude of an earthquake relays how much energy radiated from the focus.

c. What is the difference between surface waves and body waves?

Sample answer: Surface waves run along the surface of the earth's crust, while body waves travel through the body of the earth.

Lesson 4

2. Define the word archipelago.

Sample answer: Chains or groups of islands are called archipelagos.

3. Describe how hot spots formed the Hawaiian Archipelago.

Sample answers: The Hawaiian Archipelago islands all began as seamounts, deep under the ocean. When magma emerged from a hot spot and then cooled, a seamount formed. As it grew, the seamount rose up above the water's surface and became an island. Then, the island moved with the Pacific Plate as it moved in a northwest direction. The spot where the magma first emerged remained in place and the cycle repeated, forming new seamounts again and again.

Lesson 5

1. Choose to write about one of the following in your science journal:

- Creatively write a brief newspaper article about the 1980 eruption of Mount St. Helens.
- Write about how God has turned difficult or hard experiences into something good and beautiful in your life.

Answers will vary. Answers should reflect information found in the lesson extension or personal experience.

Lesson 6

2. Describe what a mud pot and a travertine terrace are and how minerals play a role in these hydrothermal features.

Sample answers:

Mud pot: These acidic, hydrothermal hot springs can break down rock that surrounds them. This creates mud that rumbles and pops, resembling boiling oatmeal. Mud pots can be different colors, such as pink, beige, and gray, depending on the minerals they contain.

Travertine terrace: These contain hot water that dissolves minerals, such as limestone or calcium carbonate. The minerals rise with the water and then collect on land. As the water evaporates, the minerals then solidify. This results in beautiful terraces. Minerals are necessary to create the terraces that result once the water evaporates.

Lesson 7

2. Write down three of the crystal minerals listed below and include 2–3 facts about each one.

Sample answers:

Feldspar: the most abundant geological mineral in the world; found in granite and many other types of rocks; used to make flooring tiles and also to make porcelain dishes

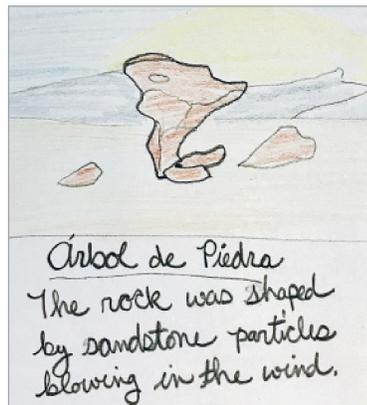
Mica: lightweight and very soft; heat resistant and does not conduct electricity; a great ingredient for paints, plastics, rubber, and cosmetics

Corundum: ranks 9 on the Mohs Hardness Scale; the impurities present in the corundum determine whether it is ruby red or sapphire blue

Lesson 8

2. Choose one formation to sketch and write one fact about it in your science journal.

Sample answer:



3. Share with someone what you found most interesting about each formation. (optional)

Answers will vary. Answers should reflect information found in the lesson extension.

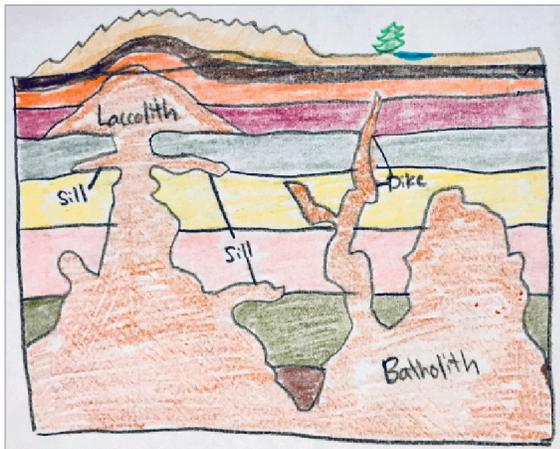
Lesson 9

2. Write 2–4 statements comparing and contrasting sills, dikes, laccoliths, and batholiths.

Sample answers: Sills form when magma seeps between layers of rock and solidifies as sheets of horizontal layers. Dikes also form from magma that seeps between rock but forms vertical sheets. Laccoliths form when magma domes and pushes rock layers upward. Batholiths are formed when magma pushes into other layers of rock and cuts across the rock bed, similar to dikes.

3. Copy the diagram of igneous intrusions; you do not have to make your sketch look three-dimensional.

Sample answer:



Lesson 10

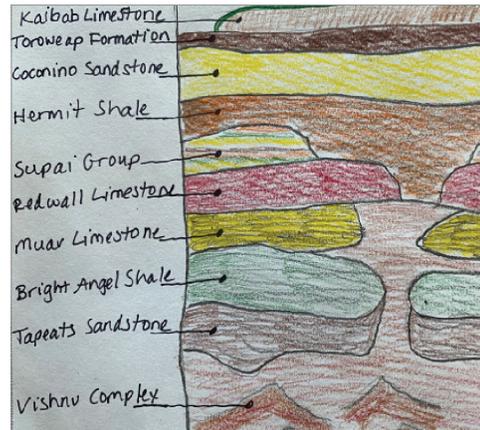
1. Complete one of the following activities:

- a. Explain to a family member or peer how the Colorado River is able to downcut the Grand Canyon.

Answers will vary. Answers should reflect information found in the lesson extension.

- b. Draw a rough sketch of the Grand Canyon and label the layers, using the image as a guide.

Sample answer:



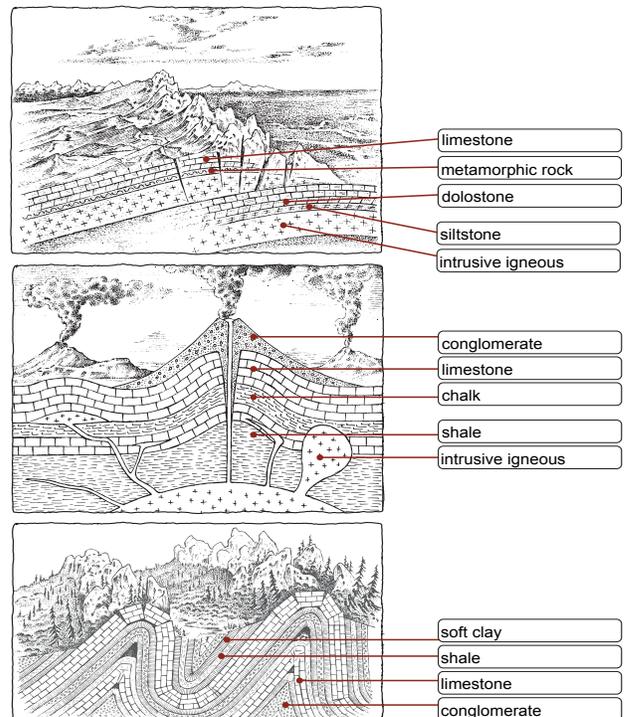
Lesson 11

2. In your science journal, explain three uses for lithological maps.

Sample answers: Lithological maps can be used to educate, to predict natural disasters and identify active faults, and to show volcanic debris deposits and rock deposits prone to landslide hazards.

3. Using the lithology key, label the correct names of the rock types on the “Lithology Maps” page.

Sample answer:





Lesson 12

1. In your science journal, create a timeline, marking the dates of theories or creations made by these notable geologists.

Sample answers:

- 1815 William Smith creates geological map of England and Wales
- 1840 Louis Agassiz develops theory of the Ice Age
- 1912 Alfred Wegener proposes theory of continental drift
- 1957 Marie Tharp and Bruce Heezen publish map of Atlantic Ocean floor, including Mid-Atlantic Ridge.
- 1977 Tharp and Heezen map and publish *The World Ocean Floor*

2. The discoveries by many geologists were sometimes met with criticism. In your science journal, write down some character traits you believe they possessed in order to continue with their work despite these difficulties.

Answers will vary. Answers should reflect character traits the child believes to be possessed by the geologists.

Lesson 13

2. In your science journal, write 1–2 sentences for each water feature (streams, floods, glaciers, and caves), describing how that feature can change the earth's surface.

Sample answers:

Streams can change the earth's surface by weathering and eroding rock. They can cut deep grooves, valleys, and canyons and also build new land through deposition. The water also dissolves minerals and carries them away.

Floods can change the earth's surface when their fast-moving waters lead to erosion. They can also deposit sediment.

Glaciers can change the earth's surface by picking up debris and chunks of rock through erosion as they move. The ice and rock scrape the earth, changing the landscape.

Caves are the result of a change in the earth when water washes against limestone over long periods of time. The acid in the water dissolves the rock, leaving large holes and empty spaces.

Lesson 14

2. In your science journal, list the nonrenewable resources discussed and provide an example of how each one is used.

Sample answers:

Coal: used to power electric plants today

Silicon: used to create the integrated circuits that run electronic devices

Copper: used for wiring and is in every electronic device