

Earth Science Homework



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CHAPTER

1

MS Earth's Minerals Worksheets

Chapter Outline

- 1.1 MINERALS
 - 1.2 IDENTIFICATION OF MINERALS
 - 1.3 FORMATION OF MINERALS
 - 1.4 MINING AND USING MINERALS
-

1.1 Minerals

Lesson 1.1: True or False

Name _____ Class _____ Date _____

Write true if the statement is true or false if the statement is false.

- _____ 1. Some minerals are chemical compounds.
- _____ 2. Each mineral has a specific chemical composition.
- _____ 3. Minerals are inorganic substances.
- _____ 4. Table salt is an example of a sulfide mineral.
- _____ 5. Fracture is the tendency of a mineral to break along flat surfaces
- _____ 6. Minerals are classified in groups based on their physical properties.
- _____ 7. Scientists use the physical properties of minerals to identify them.
- _____ 8. There are only 40 known minerals.
- _____ 9. The largest mineral group is called the native elements.
- _____ 10. Minerals with similar crystal structures are grouped together.

Lesson 1.1: Multiple Choice

Name _____ Class _____ Date _____

Circle the letter of the correct choice.

- 1. Examples of minerals include
 - a. silver.
 - b. table salt.
 - c. quartz.
 - d. all of the above
- 2. All minerals
 - a. have a definite chemical makeup.
 - b. are pure elements.
 - c. form crystals.
 - d. contain carbon.
- 3. Minerals may form when
 - a. rocks are heated to high temperatures.
 - b. rocks are exposed to high pressure.
 - c. lava cools and hardens.
 - d. all of the above
- 4. The color of a mineral's powder is its
 - a. streak.

- b. luster.
 - c. color.
 - d. cleavage.
5. The mineral gypsum is a common
- a. sulfide.
 - b. sulfate.
 - c. carbonate.
 - d. silicate.
6. Minerals known as salts are classified as
- a. oxides.
 - b. phosphates.
 - c. halides.
 - d. silicates.
7. Oxides include
- a. hematite.
 - b. feldspar.
 - c. calcite.
 - d. none of the above

1.2 Identification of Minerals

Lesson 1.2: True or False

Name _____ Class _____ Date _____

Write true if the statement is true or false if the statement is false.

- _____ 1. You can usually identify a mineral by its color alone.
- _____ 2. The color of a mineral is always same as the color of its powder.
- _____ 3. The streak of a given mineral does not vary.
- _____ 4. A mineral with a vitreous luster appears glassy.
- _____ 5. The mineral pyrite has a non-metallic luster.
- _____ 6. The Mohs hardness scale ranges from 1 to 100.
- _____ 7. The cleavage of a mineral depends on its crystal structure.
- _____ 8. Mica tends to form cubes when it cleaves.
- _____ 9. Some minerals have a distinctive smell.
- _____ 10. Certain minerals are attracted to a magnet.

Lesson 1.2: Multiple Choice

Name _____ Class _____ Date _____

Circle the letter of the correct choice.

- 1. A mineral's physical properties are determined by its
 - a. vitreous luster.
 - b. crystal structure.
 - c. chemical composition.
 - d. two of the above
- 2. Factors that may affect a mineral's color include
 - a. mass.
 - b. streak.
 - c. cleavage.
 - d. weathering.
- 3. To do a streak test, you scrape a mineral across a
 - a. diamond crystal.
 - b. piece of talc.
 - c. porcelain plate.
 - d. cleavage plane.
- 4. What is the least reliable property for identifying minerals?
 - a. streak

- b. hardness
 - c. color
 - d. luster
5. A mineral with which type of luster is soft looking with long fibers?
- a. resinous
 - b. earthy
 - c. silky
 - d. pearly
6. Which of the following minerals has the greatest density?
- a. gold
 - b. pyrite
 - c. quartz
 - d. fool's gold
7. Which sequence shows minerals in the correct order from softer to harder?
- a. gypsum, apatite, corundum
 - b. apatite, gypsum, corundum
 - c. apatite, corundum, gypsum
 - d. corundum, apatite, gypsum

1.3 Formation of Minerals

Lesson 1.3: True or False

Name _____ Class _____ Date _____

Write true if the statement is true or false if the statement is false.

- _____ 1. Minerals are used to make many different products.
- _____ 2. All minerals form in the same way.
- _____ 3. Some places inside Earth are so hot that underground rocks melt.
- _____ 4. The only water on Earth's surface that contains dissolved salts is the ocean.
- _____ 5. Salts easily precipitate out of water.
- _____ 6. The mineral calcite is deposited only when magma cools.
- _____ 7. Water moves through cracks in rocks below Earth's surface.
- _____ 8. Water can dissolve rocks and form a solution.
- _____ 9. Geodes result from the formation of large mineral crystals.
- _____ 10. A vein of minerals forms when lava cools inside a crack in a rock.

Lesson 1.3: Multiple Choice

Name _____ Class _____ Date _____

Circle the letter of the correct choice.

- 1. Ways that minerals form include
 - a. magma cooling.
 - b. salt water evaporating.
 - c. dissolved elements precipitating.
 - d. all of the above
- 2. Dissolved elements in water can form
 - a. lava flows.
 - b. magma pools.
 - c. mineral deposits.
 - d. two of the above
- 3. When water evaporates, any dissolved elements are left behind as mineral deposits. The amount of minerals deposited
 - a. is the same as the original amount of water.
 - b. equals the amount of minerals dissolved in the water.
 - c. is determined by the type of minerals that form.
 - d. depends on the rate at which the water evaporates.
- 4. In a water solution, dissolved elements

- a. can be filtered out of the water.
 - b. are mixed evenly throughout the water.
 - c. may precipitate out of the water.
 - d. two of the above
5. Which type of feature may form in open spaces inside rocks?
- a. vein
 - b. geode
 - c. tufa tower
 - d. none of the above
6. Water in rocks underground can be heated by
- a. the sun.
 - b. magma.
 - c. lava.
 - d. two of the above
7. When underground water is heated, it can
- a. contain fewer dissolved particles.
 - b. dissolve more rocks.
 - c. become a precipitate.
 - d. all of the above

1.4 Mining and Using Minerals

Lesson 1.4: True or False

Name _____ Class _____ Date _____

Write true if the statement is true or false if the statement is false.

- _____ 1. Certain places on Earth are more likely than others to have ore deposits.
- _____ 2. All mines are located deep underground.
- _____ 3. A placer is a type of underground mineral deposit.
- _____ 4. Gold is no longer mined in California.
- _____ 5. Underground mining is more expensive than surface mining.
- _____ 6. Most minerals are a combination of metals and other elements.
- _____ 7. Chemical reactions are used to separate minerals from waste rock.
- _____ 8. It takes more energy to recycle aluminum than to obtain aluminum by mining.
- _____ 9. Electrical wires are made of the metal copper.
- _____ 10. Most diamonds are used as gemstones to make jewelry.

Lesson 1.4: Multiple Choice

Name _____ Class _____ Date _____

Circle the letter of the correct choice.

- 1. All the metals we use were originally extracted from the ground as
 - a. ores.
 - b. geodes.
 - c. placers.
 - d. pure minerals.
- 2. Any rock that contains enough minerals to be mined for profit is called a(n)
 - a. gemstone.
 - b. vein.
 - c. ore.
 - d. none of the above
- 3. What is the first step in obtaining minerals?
 - a. mapping a vein
 - b. digging a mine
 - c. locating an ore deposit
 - d. separating ore from waste rock

4. Blasting is used to break up rocks in
 - a. underground mining.
 - b. open-pit mining.
 - c. strip mining.
 - d. all of the above
5. Which mineral would be obtained from a quarry?
 - a. gold
 - b. silver
 - c. gypsum
 - d. diamond
6. Which products are made of minerals?
 - a. glass
 - b. rock salt
 - c. sheetrock
 - d. all of the above
7. Placer gold mined in California originally came from the
 - a. Pacific Ocean.
 - b. Sierra Nevada Mountains.
 - c. Mississippi River.
 - d. Gulf of Mexico.

CHAPTER

2

MS Rocks Worksheets

Chapter Outline

- 2.1** **TYPES OF ROCKS**
 - 2.2** **IGNEOUS ROCKS**
 - 2.3** **SEDIMENTARY ROCKS**
 - 2.4** **METAMORPHIC ROCKS**
-

2.1 Types of Rocks

Lesson 2.1: True or False

Name _____ Class _____ Date _____

Write true if the statement is true or false if the statement is false.

- _____ 1. When a rock changes from one type to another, it usually happens very quickly.
- _____ 2. One type of rock can change to any other type of rock.
- _____ 3. All the processes of the rock cycle take place underground.
- _____ 4. To see the minerals in rock, you always need to use a microscope.
- _____ 5. Rocks are named for the minerals they contain and how the minerals came together.
- _____ 6. A rock formed from pieces of gravel and sand would be classified as an igneous rock.
- _____ 7. A rock resulting from the formation of mineral crystals would be classified as a sedimentary rock.
- _____ 8. Sedimentary rocks include sandstone and shale.
- _____ 9. Plants and animals can act to wear down rocks.
- _____ 10. Metamorphism may change a rock's mineral composition.

Lesson 2.1: Multiple Choice

Name _____ Class _____ Date _____

Circle the letter of the correct choice.

- 1. Major types of rocks include
 - a. sedimentary rocks.
 - b. metamorphic rocks.
 - c. igneous rocks.
 - d. all of the above
- 2. Which rocks may form on Earth's surface?
 - a. sedimentary rocks
 - b. metamorphic rocks
 - c. igneous rocks
 - d. two of the above
- 3. Weathering and erosion occur because of the actions of
 - a. ice.
 - b. wind.
 - c. water.
 - d. all of the above

4. The process in which sedimentary rocks form begins with
 - a. erosion.
 - b. deposition.
 - c. weathering.
 - d. compaction.
 5. The rock called limestone forms when shells of sea organisms settle to the bottom of the water and gradually become pressed and cemented together. Which type of rock is limestone?
 - a. igneous
 - b. metamorphic
 - c. sedimentary
 - d. none of the above
 6. If limestone is buried under the ground and placed under pressure until it becomes extremely hot, it changes to marble. The process in which marble forms from limestone is
 - a. melting.
 - b. compression.
 - c. sedimentation.
 - d. metamorphism.
 7. Which process is involved when a sedimentary rock changes to an igneous rock?
 - a. metamorphism
 - b. melting
 - c. sedimentation
 - d. weathering
- .

2.2 Igneous Rocks

Lesson 2.2: True or False

Name _____ Class _____ Date _____

Write true if the statement is true or false if the statement is false.

- _____ 1. The layer of Earth called the mantle is made entirely of igneous rock.
- _____ 2. Rock on the ocean floor is intrusive igneous rock.
- _____ 3. The Sierra Nevada Mountains in California are composed mainly of granite.
- _____ 4. When melted rock cools more slowly, it forms larger crystals.
- _____ 5. Melted rock cools more quickly underground than on Earth's surface.
- _____ 6. Obsidian forms when magma cools and forms crystals.
- _____ 7. Pumice contains holes because gas bubbles were trapped in lava as it cooled.
- _____ 8. Basalt crystals are too small to see with the unaided eye.
- _____ 9. The combination of minerals in igneous rocks is determined by the composition of the magma or lava.
- _____ 10. Both porphyry and diorite are extrusive igneous rocks.

Lesson 2.2: Multiple Choice

Name _____ Class _____ Date _____

Circle the letter of the correct choice.

- 1. Igneous rocks are classified by
 - a. the size of their crystals.
 - b. the type of sediments they contain.
 - c. their mineral composition.
 - d. two of the above
- 2. How many different kinds of igneous rocks are there?
 - a. only 7
 - b. about 70
 - c. more than 700
 - d. between 70 and 100
- 3. Granite is used to make
 - a. countertops.
 - b. buildings.
 - c. statues.
 - d. all of the above

4. How is pumice used?
 - a. to smooth rough skin
 - b. to stonewash jeans
 - c. to make vases
 - d. two of the above
5. The rock that makes up the ocean floor is
 - a. granite.
 - b. basalt.
 - c. diorite.
 - d. peridotite.
6. One property of pumice is
 - a. a smooth glassy texture.
 - b. very large crystals.
 - c. the ability to float on water.
 - d. none of the above
7. Many mountain ranges are made of
 - a. granite.
 - b. gabbro.
 - c. andesite.
 - d. komatite.

2.3 Sedimentary Rocks

Lesson 2.3: True or False

Name _____ Class _____ Date _____

Write true if the statement is true or false if the statement is false.

- _____ 1. Sandstone is very porous so water can move easily through it.
- _____ 2. Sedimentary rocks may contain fossils.
- _____ 3. Avalanches produce horizontal layers of sediments.
- _____ 4. Particles of silt are smaller than particles of clay.
- _____ 5. Fossils are always the remains of bones or teeth.
- _____ 6. Sediments are pieces of rock.
- _____ 7. Sediments on a beach may include cobbles and pebbles.
- _____ 8. All sedimentary rocks form from sediments.
- _____ 9. Shale may contain hardened mud.
- _____ 10. Limestone is a chemical sedimentary rock.

Lesson 2.3: Multiple Choice

Name _____ Class _____ Date _____

Circle the letter of the correct choice.

- 1. Types of sediments that may make up sedimentary rocks include
 - a. pebbles.
 - b. silt.
 - c. clay.
 - d. all of the above
- 2. A river deposits sediments when the water
 - a. slows down.
 - b. enters a lake.
 - c. reaches the ocean.
 - d. all of the above
- 3. Which of the following sedimentary rocks contains the smallest sediments?
 - a. conglomerate
 - b. sandstone
 - c. siltstone
 - d. shale

4. Which of the following rocks is not a clastic sedimentary rock?
 - a. limestone
 - b. breccia
 - c. halite
 - d. two of the above
5. The White House in Washington, D.C., is made of
 - a. clastic rock.
 - b. sedimentary rock.
 - c. sandstone.
 - d. all of the above
6. When sediments settle out of water, they form
 - a. chemical rocks.
 - b. horizontal layers.
 - c. precipitates.
 - d. none of the above
7. Which sedimentary rock is formed of rounded stones that have been cemented together?
 - a. breccia
 - b. sandstone
 - c. conglomerate
 - d. limestone

2.4 Metamorphic Rocks

Lesson 2.4: True or False

Name _____ Class _____ Date _____

Write true if the statement is true or false if the statement is false.

- _____ 1. When a rock undergoes metamorphism, it becomes an entirely new type of rock.
- _____ 2. During metamorphism, ions may move and new minerals may form.
- _____ 3. There are two types of metamorphism.
- _____ 4. Contact metamorphism causes rock to melt and form magma.
- _____ 5. The most commonly used metamorphic rocks are slate and gneiss.
- _____ 6. Quartzite is a relatively soft metamorphic rock.
- _____ 7. Gneiss forms by contact metamorphism.
- _____ 8. Schist is sometimes used as a landscaping material.
- _____ 9. In the 1500s, Michelangelo carved statues from marble.
- _____ 10. Metamorphic rocks cannot undergo further metamorphism and change to different types of rocks.

Lesson 2.4: Multiple Choice

Name _____ Class _____ Date _____

Circle the letter of the correct choice.

- 1. During metamorphism, rocks may change
 - a. chemically.
 - b. physically.
 - c. permanently.
 - d. two of the above
- 2. Metamorphism begins with
 - a. magma.
 - b. sediments.
 - c. lava.
 - d. rock.
- 3. What type of change in rock is foliation?
 - a. physical change
 - b. chemical change
 - c. mineral change
 - d. two of the above

4. A metamorphic rock may undergo foliation when pressure is
 - a. exerted from just one direction.
 - b. exerted from all directions.
 - c. relatively weak.
 - d. absent.
5. Slate is a metamorphic rock that is used for
 - a. building.
 - b. landscaping.
 - c. statues.
 - d. two of the above
6. Which of the following types of rocks can undergo metamorphism?
 - a. sedimentary rock
 - b. igneous rock
 - c. metamorphic rock
 - d. all of the above
7. All of the following are metamorphic rocks except
 - a. schist.
 - b. quartzite.
 - c. gneiss.
 - d. granite.

CHAPTER

3**MS Plate Tectonics
Worksheets****Chapter Outline**

- 3.1** **INSIDE EARTH**
 - 3.2** **CONTINENTAL DRIFT**
 - 3.3** **SEAFLOOR SPREADING**
 - 3.4** **THEORY OF PLATE TECTONICS**
-

3.1 Inside Earth

Lesson 3.1: True or False

Name _____ Class _____ Date _____

Write true if the statement is true or false if the statement is false.

- _____ 1. The mantle is divided into the inner mantle and outer mantle.
- _____ 2. Earthquakes send waves of energy through rocks inside Earth.
- _____ 3. Meteorites formed a long time ago in the early solar system.
- _____ 4. Earth's crust is made of solid rock.
- _____ 5. Lava flows formed the oceanic crust.
- _____ 6. The continental crust contains only igneous rock.
- _____ 7. Heat travels from the top to the bottom of the mantle.
- _____ 8. Earth's core is very dense.
- _____ 9. Convection currents occur in the inner core.
- _____ 10. Plate tectonics is the theory that the lithosphere is divided into plates that move over Earth's surface.

Lesson 3.1: Multiple Choice

Name _____ Class _____ Date _____

Circle the letter of the correct choice.

- 1. Compared with the other layers of Earth, the crust is very
 - a. thick.
 - b. warm.
 - c. brittle.
 - d. two of the above
- 2. Seismic waves reveal information about Earth's interior because they travel
 - a. at different speeds through different materials.
 - b. only through liquids and gases.
 - c. at the same speed as sound.
 - d. only in straight lines.
- 3. Earth's layers differ from one another in
 - a. chemical makeup.
 - b. temperature.
 - c. state of matter.
 - d. all of the above

4. Compared to oceanic crust, continental crust is
 - a. denser.
 - b. thicker.
 - c. less variable.
 - d. all of the above
5. Earth's magnetic field is created by movements in Earth's
 - a. inner core.
 - b. outer core.
 - c. mantle.
 - d. crust.
6. The lithosphere is
 - a. solid.
 - b. rigid.
 - c. able to flow.
 - d. two of the above
7. The consistency of the asthenosphere is most like
 - a. hard plastic.
 - b. frozen water.
 - c. silly putty.
 - d. solid metal.

3.2 Continental Drift

Lesson 3.2: True or False

Name _____ Class _____ Date _____

Write true if the statement is true or false if the statement is false.

- _____ 1. The theory of plate tectonics was developed before the idea of continental drift.
- _____ 2. Wegener believed that all the continents were once joined together.
- _____ 3. Wegener's hypothesis of continental drift was widely accepted as soon as it was introduced.
- _____ 4. Wegener and his supporters provided a lot of evidence for continental drift.
- _____ 5. Wegener found rocks of the same type and age on both sides of the Atlantic Ocean.
- _____ 6. Wegener suggested that Pangaea broke up a short time ago.
- _____ 7. Wegener developed a theory to explain how continents can drift.

Lesson 3.2: Multiple Choice

Name _____ Class _____ Date _____

Circle the letter of the correct choice.

- 1. To develop the theory of plate tectonics, scientists first had to accept the idea that
 - a. Earth's core consists of molten metals.
 - b. some organisms can cross the oceans.
 - c. Earth's continents are able to move.
 - d. all of the above
- 2. The idea of continental drift was first proposed in the early
 - a. 1700s.
 - b. 1800s.
 - c. 1900s.
 - d. 2000s.
- 3. Evidence for continental drift comes from ancient
 - a. magnetic compasses.
 - b. maps of Pangaea.
 - c. coal seams.
 - d. all of the above
- 4. Wegener observed that the Appalachian Mountains in eastern North America matched mountain ranges in
 - a. western North America.
 - b. South America.
 - c. Greenland.

- d. Africa.
5. What was Alfred Wegener's role in the development of the theory of plate tectonics?
- a. He proposed the hypothesis of continental drift.
 - b. He provided evidence that continents have moved.
 - c. He identified magnetic evidence for plate tectonics.
 - d. two of the above
6. In Pangaea, the present continent of South America was attached to present-day
- a. Australia.
 - b. Eurasia.
 - c. Africa.
 - d. India.

3.3 Seafloor Spreading

Lesson 3.3: True or False

Name _____ Class _____ Date _____

Write true if the statement is true or false if the statement is false.

- _____ 1. An echo sounder with just one beam can create a three-dimensional map of the ocean floor.
- _____ 2. A mid-ocean ridge runs from east to west through the center of the Atlantic Ocean.
- _____ 3. Deep-sea trenches are found near the west coast of Central and South America.
- _____ 4. The only mountains on the ocean floor are part of mid-ocean ridges.
- _____ 5. Magnetometers were first used on ships to search for submarines.
- _____ 6. Polar reversals have occurred only twice in Earth's history.
- _____ 7. Magnetic stripes on the ocean floor end abruptly at the edges of continents.
- _____ 8. The rocks currently found at mid-ocean ridges have reversed polarity.
- _____ 9. The seafloor is older than the continents.
- _____ 10. The seafloor is spreading away from mid-ocean ridges.

Lesson 3.3: Multiple Choice

Name _____ Class _____ Date _____

Circle the letter of the correct choice.

- 1. Before World War II, people thought the seafloor
 - a. had huge mountain ranges.
 - b. contained deep trenches.
 - c. was flat and featureless.
 - d. had active volcanoes.
- 2. Echo sounders were first developed to
 - a. map the ocean floor.
 - b. locate enemy submarines.
 - c. determine the depth of the ocean.
 - d. find evidence for seafloor spreading.
- 3. The deepest place on Earth is
 - a. 11 km below sea level.
 - b. 110 km below sea level.
 - c. 1100 km below sea level.
 - d. none of the above

4. Reversed polarity means that the north and south magnetic poles are
 - a. located in the same positions as they are right now.
 - b. located opposite their present positions.
 - c. both in the same location.
 - d. no longer magnetic.
5. The alternating magnetic stripes on the ocean floor show
 - a. how Earth first formed.
 - b. why the seafloor spreads.
 - c. when polar reversals occurred.
 - d. where sediments were deposited.
6. New seafloor forms at
 - a. deep-sea trenches.
 - b. mid-ocean ridges.
 - c. continental edges.
 - d. two of the above
7. Old seafloor sinks into the mantle at
 - a. deep-sea trenches.
 - b. mid-ocean ridges.
 - c. continental edges.
 - d. two of the above

3.4 Theory of Plate Tectonics

Lesson 3.4: True or False

Name _____ Class _____ Date _____

Write true if the statement is true or false if the statement is false.

- _____ 1. The locations of earthquakes have been used to identify plate boundaries.
- _____ 2. The movement of Earth's plates is called plate tectonics.
- _____ 3. The lithosphere is divided into just three major plates.
- _____ 4. Most geologic activity takes place far from plate boundaries.
- _____ 5. Mid-ocean ridges occur at convergent plate boundaries.
- _____ 6. Many volcanoes occur along subduction zones.
- _____ 7. The tallest mountains in the world formed at a transform plate boundary.
- _____ 8. Geologic features called faults occur at divergent plate boundaries.
- _____ 9. Scientists think that Pangaea was the first supercontinent.
- _____ 10. The Aleutian Islands formed at a plate boundary.

Lesson 3.4: Multiple Choice

Name _____ Class _____ Date _____

Circle the letter of the correct choice.

- 1. Plate tectonics helps to explain
 - a. how mountains form.
 - b. where new seafloor is created.
 - c. why earthquakes occur where they do.
 - d. all of the above
- 2. The Pacific Ring of Fire is a ring around the Pacific ocean where
 - a. volcanoes are common.
 - b. tectonic plates interact.
 - c. many hot spots occur.
 - d. two of the above
- 3. Plates move over Earth's surface at a rate of
 - a. 100 kilometers per year.
 - b. a few kilometers per year.
 - c. a few centimeters per year.
 - d. a couple of millimeters per year.

4. Plates move over Earth's surface because of
 - a. conduction within the crust.
 - b. subduction in the outer core.
 - c. radiation from the inner core.
 - d. convection within the mantle.
5. Magma from the mantle rises up through Earth's crust at
 - a. deep-sea trenches.
 - b. mid-ocean ridges.
 - c. hot spots.
 - d. all of the above
6. The edge of a plate sinks into the mantle
 - a. where two plates diverge.
 - b. at a subduction zone.
 - c. at a transform boundary.
 - d. none of the above
7. Continental plates do not subduct because they
 - a. are very thick and low in density.
 - b. do not collide with other plates.
 - c. have only intraplate activity.
 - d. two of the above

CHAPTER

4

MS Earthquakes Worksheets

Chapter Outline

- 4.1 STRESS IN EARTH'S CRUST
 - 4.2 NATURE OF EARTHQUAKES
 - 4.3 MEASURING AND PREDICTING EARTHQUAKES
 - 4.4 STAYING SAFE IN EARTHQUAKES
-

4.1 Stress in Earth's Crust

Lesson 4.1: True or False

Name _____ Class _____ Date _____

Write true if the statement is true or false if the statement is false.

- _____ 1. Any force applied to rock is a stress.
- _____ 2. When confining stress occurs, rock deforms.
- _____ 3. Compression is the most common stress at convergent plates.
- _____ 4. Stress is the cause of joints in rock.
- _____ 5. A syncline is a fold that arches upward.
- _____ 6. An area where faults are clustered is called a fault zone.
- _____ 7. Movement of rock at faults is the cause of earthquakes.
- _____ 8. Normal faults are caused by compression stress.
- _____ 9. Strike-slip faults result from shear stress.
- _____ 10. Only the process of folding creates mountain ranges.

Lesson 4.1: Multiple Choice

Name _____ Class _____ Date _____

Circle the letter of the correct choice.

- 1. The most common stress at divergent plate boundaries is
 - a. tension stress.
 - b. compression stress.
 - c. shear stress.
 - d. confining stress.
- 2. Stresses change rock by causing
 - a. folds.
 - b. faults.
 - c. fractures.
 - d. all of the above
- 3. A fold that bends downward is known as a(n)
 - a. monocline.
 - b. syncline.
 - c. anticline.
 - d. incline.

4. A place where rock breaks but doesn't move it is called a
 - a. fold.
 - b. fault.
 - c. joint.
 - d. confinement.
5. A fracture becomes a fault only if rock
 - a. cracks.
 - b. moves.
 - c. folds.
 - d. deforms.
6. Which statement about the San Andreas fault is false?
 - a. It is a transform fault.
 - b. It is a strike-slip fault.
 - c. It occurs at a plate boundary.
 - d. none of the above
7. Most of the world's largest mountains formed at
 - a. convergent plate boundaries.
 - b. divergent plate boundaries.
 - c. transform plate boundaries.
 - d. confining plate boundaries

4.2 Nature of Earthquakes

Lesson 4.2: True or False

Name _____ Class _____ Date _____

Write true if the statement is true or false if the statement is false.

- _____ 1. The energy released by an earthquake travels in seismic waves.
- _____ 2. Only transform plate boundaries have earthquakes.
- _____ 3. Earthquakes deep underground cause the most damage.
- _____ 4. Earthquakes at mid-ocean ridges tend to be small and shallow.
- _____ 5. Seismic waves travel outward in all directions from their source.
- _____ 6. All seismic waves travel at the same speed through solid rock.
- _____ 7. P-waves are the first seismic waves to reach a seismometer.
- _____ 8. All undersea earthquakes generate tsunamis.
- _____ 9. The deadliest tsunami of all time occurred in 2004 in Indonesia.
- _____ 10. Tsunamis are more common in the Atlantic Ocean than the Pacific Ocean.

Lesson 4.2: Multiple Choice

Name _____ Class _____ Date _____

Circle the letter of the correct choice.

- 1. According to elastic rebound theory, earthquakes occur when stresses on rocks become too great and the rocks
 - a. become deformed.
 - b. fracture and form a joint.
 - c. return to their original shape.
 - d. are permanently stretched out of shape.
- 2. The focus of a shallow earthquake is
 - a. less than 70 km below the surface.
 - b. between 70 and 300 km below the surface.
 - c. more than 300 kilometers below the surface.
 - d. none of the above
- 3. About 80 percent of all earthquakes take place
 - a. in the state of California.
 - b. at divergent plate boundaries.
 - c. along the Pacific Ring of Fire.
 - d. far from plate boundaries.
- 4. The wavelength of a wave can be measured by finding the distance between
 - a. the focus and the epicenter.

- b. a P wave and an S wave.
 - c. a crest and a trough.
 - d. two adjacent crests.
5. Seismic waves that do the most damage are
- a. body waves.
 - b. surface waves.
 - c. primary waves.
 - d. secondary waves.
6. Surface waves that produce a rolling motion are
- a. P waves.
 - b. S waves.
 - c. love waves.
 - d. Rayleigh waves.
7. Tsunamis may be caused by
- a. landslides.
 - b. meteorites.
 - c. nuclear explosions.
 - d. all of the above

4.3 Measuring and Predicting Earthquakes

Lesson 4.3: True or False

Name _____ Class _____ Date _____

Write true if the statement is true or false if the statement is false.

- _____ 1. The strength of an earthquake can be measured in several different ways.
- _____ 2. The pen of a seismograph moves back and forth over a paper roll during an earthquake.
- _____ 3. Modern seismographs record seismic waves using a stationary drum.
- _____ 4. The S waves on a seismogram are usually smaller than the P waves.
- _____ 5. For some earthquakes, only P waves and surface waves show up on a seismogram.
- _____ 6. The Richter scale measures the magnitude of an earthquake's largest jolt of energy.
- _____ 7. A Richter magnitude 8 earthquake occurs about once a week.
- _____ 8. Most Richter magnitude 9 earthquakes have occurred around the Pacific Ring of Fire.
- _____ 9. The preferred scale for measuring an earthquake's magnitude is the moment magnitude scale.
- _____ 10. Today, scientists can accurately predict most earthquakes.

Lesson 4.3: Multiple Choice

Name _____ Class _____ Date _____

Circle the letter of the correct choice.

- 1. Finding the amplitude of a seismic wave is one way of determining its
 - a. intensity.
 - b. magnitude.
 - c. wavelength.
 - d. wave speed.
- 2. What can you determine about an earthquake from a single sonogram?
 - a. exact location of the epicenter
 - b. distance from the epicenter to the seismograph
 - c. strength of the earthquake
 - d. two of the above
- 3. When an earthquake's focus is close to the surface, the largest waves recorded on a seismogram are
 - a. primary waves.
 - b. surface waves.
 - c. body waves.
 - d. S waves.

4. If a seismogram records only P waves and surface waves for an earthquake, the earthquake must be
 - a. on the opposite side of Earth from the seismograph.
 - b. extremely close to the seismograph.
 - c. very far below Earth's surface.
 - d. very close to Earth's surface.
5. An S-wave shadow occurs because S waves travel
 - a. more quickly than surface waves.
 - b. more slowly than P waves.
 - c. only on the surface.
 - d. only through solids.
6. The moment magnitude of an earthquake is calculated from the
 - a. length of the fault.
 - b. distance the ground moves.
 - c. amplitude of the seismic waves.
 - d. two of the above
7. Assume that an earthquake has a magnitude of 4 on the Richter scale. An earthquake that is 100 times stronger has a magnitude of
 - a. 5.
 - b. 6.
 - c. 40.
 - d. 400.

4.4 Staying Safe in Earthquakes

Lesson 4.4: True or False

Name _____ Class _____ Date _____

Write true if the statement is true or false if the statement is false.

- _____ 1. All earthquake damage is caused by the ground shaking.
- _____ 2. A stronger earthquake always causes more damage than a weaker earthquake.
- _____ 3. An earthquake always causes more deaths in cities closer to the epicenter.
- _____ 4. The Great Alaska Earthquake had a magnitude greater than 9 on the Richter scale.
- _____ 5. Most deaths in the Great Alaska Earthquake were due to the tsunami.
- _____ 6. In earthquake zones, building materials should be strong and rigid.
- _____ 7. Buildings should be constructed so they do not bend and sway in an earthquake.
- _____ 8. If you are inside when an earthquake strikes, you should get beneath a sturdy table or desk.
- _____ 9. If you are outside when an earthquake strikes, you should run to an open area away from buildings and power lines.
- _____ 10. In earthquake zones, heavy furniture should be attached securely to walls.

Lesson 4.4: Multiple Choice

Name _____ Class _____ Date _____

Circle the letter of the correct choice.

- 1. Much of the damage caused by earthquakes is done by
 - a. fires.
 - b. tsunamis.
 - c. landslides.
 - d. all of the above
- 2. Earthquake-safe construction methods include
 - a. making buildings out of stone.
 - b. anchoring buildings to bedrock.
 - c. making buildings without foundations.
 - d. all of the above
- 3. The Great Alaska Earthquake occurred
 - a. near the capital city of Juneau.
 - b. where many people lived.
 - c. at a subduction zone.
 - d. in 2004.

4. Structures that reduce how much buildings sway during an earthquake include
 - a. diagonal steel beams.
 - b. heavy slate roofs.
 - c. counterweights.
 - d. two of the above
5. Steel is a good building material for earthquake zones because steel
 - a. bends without breaking.
 - b. is very light in weight.
 - c. resists shaking.
 - d. is very rigid.
6. If you live in a place where the risk of earthquakes is high, you should
 - a. keep heavy objects near the floor.
 - b. prepare an emergency kit.
 - c. use fluorescent light bulbs.
 - d. all of the above
7. If you are in a car when an earthquake occurs, you should
 - a. run into the nearest building.
 - b. get out of the car and drop to the ground.
 - c. stay in the car and away from buildings.
 - d. stay in the car and park under an overpass.

CHAPTER

5**MS Volcanoes Worksheets****Chapter Outline**

- 5.1 VOLCANIC ACTIVITY**
 - 5.2 VOLCANIC ERUPTIONS**
 - 5.3 TYPES OF VOLCANOES**
 - 5.4 IGNEOUS LANDFORMS AND GEOTHERMAL ACTIVITY**
-

5.1 Volcanic Activity

Lesson 5.1: True or False

Name _____ Class _____ Date _____

Write true if the statement is true or false if the statement is false.

- _____ 1. Iceland consists of volcanoes that formed over a hot spot.
- _____ 2. Volcanoes are scattered randomly across Earth's surface.
- _____ 3. Many volcanoes occur along the mid-Atlantic Ridge.
- _____ 4. Volcanoes occur only in oceanic crust.
- _____ 5. Chains of volcanoes form above hot spots because of plate tectonics.
- _____ 6. The Hawaiian hot spot is no longer active.
- _____ 7. Hot spots never occur under continental crust.
- _____ 8. The majority of mantle plumes are found under the ocean basins.
- _____ 9. All hot spots are in the middle of tectonic plates.
- _____ 10. The molten rock of a volcano comes from Earth's core.

Lesson 5.1: Multiple Choice

Name _____ Class _____ Date _____

Circle the letter of the correct choice.

- 1. The only place where the mid-Atlantic ridge is above sea level is
 - a. Iceland.
 - b. England.
 - c. Greenland.
 - d. none of the above
- 2. Volcanoes form at
 - a. hot spots.
 - b. divergent plate boundaries.
 - c. convergent plate boundaries.
 - d. all of the above
- 3. Many volcanoes are located
 - a. within the Eurasian plate.
 - b. at the edges of the Pacific plate.
 - c. within the North American plate.
 - d. at the edges of the Atlantic plate.

4. Volcanoes form in a subduction zone where a tectonic plate
 - a. is pulled down into the mantle.
 - b. remains over a hot spot.
 - c. pulls away from another plate.
 - d. creates a rift valley.
5. Examples of volcanic arcs that formed at convergent plate boundaries include the
 - a. island nation of Japan.
 - b. Cascade Range in Washington State.
 - c. Andes Mountains of South America.
 - d. all of the above
6. About how many hot spots have scientists identified on Earth?
 - a. 5
 - b. 15
 - c. 50
 - d. 500
7. Which U.S. state formed over a hot spot in an oceanic plate?
 - a. Oregon
 - b. California
 - c. Florida
 - d. Hawaii

5.2 Volcanic Eruptions

Lesson 5.2: True or False

Name _____ Class _____ Date _____

Write true if the statement is true or false if the statement is false.

- _____ 1. The 1985 Mount St. Helens eruption was the biggest volcanic eruption that ever occurred.
- _____ 2. All volcanic eruptions involve explosions.
- _____ 3. A volcanic eruption may be more powerful than a nuclear explosion.
- _____ 4. Gases form in a volcano when magma boils and evaporates.
- _____ 5. Ash from a volcanic eruption may stay in the atmosphere for years.
- _____ 6. Gases from a volcano may cause environmental problems.
- _____ 7. A volcano is more likely to be explosive when lava is thin and runny.
- _____ 8. When a lava cools, it forms lava tubes.
- _____ 9. Pillow lava is especially common along mid-ocean ridges.
- _____ 10. A volcano's history can help scientists predict whether the volcano is likely to erupt again.

Lesson 5.2: Multiple Choice

Name _____ Class _____ Date _____

Circle the letter of the correct choice.

- 1. Which statement about Mount St. Helens is false?
 - a. It is an active volcano.
 - b. Its 1980 eruption was explosive.
 - c. It is unlikely to erupt again.
 - d. all of the above
- 2. Compared with the solid rock around it, magma is
 - a. cooler.
 - b. harder.
 - c. less dense.
 - d. two of the above
- 3. The deepest magma chambers are about
 - a. 16 km below the surface.
 - b. 160 km below the surface.
 - c. 1600 km below the surface.
 - d. 16,000 km below the surface.

4. A non-explosive volcanic eruption may release a large quantity of
 - a. ash.
 - b. gases.
 - c. molten rock.
 - d. pyroclasts.
5. The chemistry of magma determines
 - a. how it erupts.
 - b. how thick it is.
 - c. what type of igneous rock it forms.
 - d. all of the above
6. For magma to form, solid rock must reach a temperature of at least
 - a. 600 °C.
 - b. 1600 °C.
 - c. 6000 °C.
 - d. 16,000 °C.
7. Signs that a volcano may soon erupt include
 - a. earthquakes.
 - b. ground tilting
 - c. release of gases.
 - d. all of the above

5.3 Types of Volcanoes

Lesson 5.3: True or False

Name _____ Class _____ Date _____

Write true if the statement is true or false if the statement is false.

- _____ 1. Many composite volcanoes are found in the Pacific Ring of Fire.
- _____ 2. All volcanoes release ashes, gases, and pyroclasts.
- _____ 3. Composite volcanoes have steep sides because the lava cannot flow very far.
- _____ 4. Mauna Loa in Hawaii is an example of a composite volcano.
- _____ 5. A shield volcano has a flatter top than a composite volcano.
- _____ 6. Cinder cones have gently sloping sides like shield volcanoes.
- _____ 7. Most large volcanoes have nearby cinder cones.
- _____ 8. Cinder cones usually build up very rapidly.
- _____ 9. Cinder cones always erupt over a long period of time.
- _____ 10. The largest supervolcano in North America is Yellowstone.

Lesson 5.3: Multiple Choice

Name _____ Class _____ Date _____

Circle the letter of the correct choice.

- 1. Composite and shield volcanoes differ in their
 - a. thickness of magma.
 - b. overall shape.
 - c. type of eruptions.
 - d. all of the above
- 2. Composite volcanoes are common at
 - a. divergent plate boundaries.
 - b. subduction zones.
 - c. mid-ocean ridges.
 - d. hot spots.
- 3. Composite volcanoes are also called
 - a. cone volcanoes.
 - b. stratovolcanoes.
 - c. cinder volcanoes.
 - d. convergent volcanoes.

4. A shield volcano
 - a. consists of layers of lava.
 - b. is relatively small.
 - c. has very thick lava.
 - d. two of the above
5. A caldera forms when a
 - a. vent is plugged by magma.
 - b. magma chamber collapses.
 - c. crater fills with water.
 - d. lava field hardens.
6. Cinder cones are composed mainly of
 - a. rock fragments.
 - b. thin lava.
 - c. magma.
 - d. ashes.
7. A supervolcano
 - a. is the most dangerous type of volcano.
 - b. may cause Earth's temperature to rise.
 - c. has no magma chamber.
 - d. produces no ash.

5.4 Igneous Landforms and Geothermal Activity

Lesson 5.4: True or False

Name _____ Class _____ Date _____

Write true if the statement is true or false if the statement is false.

- _____ 1. Intrusive igneous rocks are never visible on Earth's surface.
- _____ 2. A lava dome is any mountain that forms from lava.
- _____ 3. The lava that forms a lava dome is thin and runny.
- _____ 4. A lava plateau forms when a volcano produces very little lava.
- _____ 5. Lava from shield volcanoes created the Hawaiian Islands.
- _____ 6. Intrusions form on the surface and later are buried by sediments.
- _____ 7. The water in hot springs is heated by magma.

Lesson 5.4: Multiple Choice

Name _____ Class _____ Date _____

Circle the letter of the correct choice.

- 1. When lava is thick it
 - a. travels far from vents.
 - b. forms a caldera.
 - c. flows rapidly.
 - d. none of the above
- 2. Lava that flows from vents at mid-ocean ridges
 - a. forms composite volcanoes.
 - b. creates lava plateaus.
 - c. creates lava domes.
 - d. is thin and runny.
- 3. Examples of lava plateaus include the
 - a. ocean basins.
 - b. Columbia Plateau.
 - c. Hawaiian Islands.
 - d. two of the above
- 4. An intrusion forms when
 - a. a volcano erupts.
 - b. magma cools underground.
 - c. lava hardens at the surface.

- d. lava is very thin.
5. Which statement about hot springs is false?
- a. They are very rare.
 - b. They are found in Antarctica.
 - c. They are used as natural hot tubs.
 - d. They are thought to cure illnesses.
6. A geyser forms when underground water is
- a. superheated.
 - b. under pressure.
 - c. trapped in a narrow passage.
 - d. all of the above
7. Which statement about geysers is false?
- a. There are only about 1000 geysers in the world.
 - b. About half the world's geysers are in the U.S.
 - c. The water in geysers is heated by magma.
 - d. All geysers erupt on a regular schedule.

CHAPTER

6

MS Evidence About Earth's Past Worksheets

Chapter Outline

- 6.1 FOSSILS
 - 6.2 RELATIVE AGES OF ROCK
 - 6.3 ABSOLUTE AGES OF ROCKS
-

6.1 Fossils

Lesson 6.1: True or False

Name _____ Class _____ Date _____

Write true if the statement is true or false if the statement is false.

- _____ 1. Preserved traces can include burrows.
- _____ 2. Scientists have discovered fossil footprints.
- _____ 3. Complete preservation occurs only when remains are preserved in rock.
- _____ 4. It is very likely that any given organism will become a fossil.
- _____ 5. Fossils of ocean animals have been found at the top of Mt. Everest.
- _____ 6. Fossils show that Antarctica once had a much warmer climate.
- _____ 7. Index fossils are the first fossils ever discovered of an extinct species.
- _____ 8. Teeth are more likely than feathers to be preserved as fossils.
- _____ 9. People first started discovering fossils about 150 years ago.
- _____ 10. All fossils form when remains of dead organisms are covered with sediments.

Lesson 6.1: Multiple Choice

Name _____ Class _____ Date _____

Circle the letter of the correct choice.

- 1. Which of the following parts of organisms are most likely to be fossilized?
 - a. skin
 - b. hair
 - c. shells
 - d. internal organs
- 2. Preserved traces of organisms might include
 - a. casts.
 - b. feces.
 - c. molds.
 - d. compressions.
- 3. Preserved remains that have become fossils have turned to
 - a. tar.
 - b. rock.
 - c. amber.
 - d. none of the above

4. Which type of organism's remains are least likely to be preserved as fossils?
 - a. jellyfish
 - b. salmon
 - c. shark
 - d. tuna
5. Fossils can show us
 - a. how extinct organisms looked.
 - b. what past environments were like.
 - c. what geological processes occurred in the past.
 - d. all of the above
6. To be used as index fossils, fossils must represent an organism that
 - a. lived in the water.
 - b. lived over a wide area.
 - c. lived for a long period of time.
 - d. lived less than 5 million years ago.

6.2 Relative Ages of Rock

Lesson 6.2: True or False

Name _____ Class _____ Date _____

Write true if the statement is true or false if the statement is false.

- _____ 1. Earth's geologic processes have changed over time.
- _____ 2. Extinction occurs when a species completely dies out.
- _____ 3. Layers of sedimentary rock are called strata.
- _____ 4. The relative age of a rock is its approximate age in years.
- _____ 5. Rock layers on opposite sides of the Grand Canyon show lateral continuity.
- _____ 6. Key beds are rock layers that have unconformities.
- _____ 7. More than one type of index fossil provides stronger evidence that rock layers are the same age.
- _____ 8. The Cretaceous Period ended when the first dinosaurs appeared.
- _____ 9. The earliest geologic time scale showed how many years ago each era began.
- _____ 10. Fish were common organisms during the Paleozoic Era.

Lesson 6.2: Multiple Choice

Name _____ Class _____ Date _____

Circle the letter of the correct choice.

- 1. If sedimentary rock layers are tilted, they must have
 - a. formed at an angle.
 - b. moved after they formed.
 - c. been cross-cut by igneous rock.
 - d. formed from deposits on a mountainside.
- 2. A key bed of clay from around the time the dinosaurs went extinct led to the hypothesis that the extinction was caused by a
 - a. large flood.
 - b. huge volcano.
 - c. giant asteroid.
 - d. none of the above
- 3. Evidence shows that Earth is about
 - a. 1.9 million years old.
 - b. 2.8 million years old.
 - c. 3.8 billion years old.
 - d. 4.5 billion years old.

4. Eons of the geologic time scale are divided first into
 - a. years.
 - b. periods.
 - c. eras.
 - d. epochs.
5. The Cenozoic Era is called the age of
 - a. dinosaurs.
 - b. mammals.
 - c. reptiles.
 - d. life.
6. What does the term paleozoic mean?
 - a. fossil life
 - b. ancient rock
 - c. rock strata
 - d. old life
7. Many of the divisions of the geologic time scale mark major events in the history of
 - a. life.
 - b. science.
 - c. astronomy.
 - d. Earth science.

6.3 Absolute Ages of Rocks

Lesson 6.3: True or False

Name _____ Class _____ Date _____

Write true if the statement is true or false if the statement is false.

- _____ 1. The number of protons in atoms of the same element may vary.
- _____ 2. Almost all carbon atoms are atoms of carbon-14.
- _____ 3. When an atom of carbon-14 decays, it loses an electron.
- _____ 4. Carbon-14 atoms decay to carbon-13 atoms.
- _____ 5. The half-life of a radioactive isotope is constant.
- _____ 6. A living thing takes in carbon-14 only while it is alive.
- _____ 7. Carbon-14 dating can be used to determine the ages of rocks.
- _____ 8. The half-life of carbon-14 is 5730 years.
- _____ 9. All fossils can be dated with carbon-14 dating.
- _____ 10. To date a rock that is as old as Earth, you could use potassium-40 dating.

Lesson 6.3: Multiple Choice

Name _____ Class _____ Date _____

Circle the letter of the correct choice.

- 1. Absolute ages are based on evidence from
 - a. key beds.
 - b. stratigraphy.
 - c. index fossils.
 - d. radiometric dating.
- 2. Which of the following atomic particles may vary for atoms of a given element?
 - a. protons
 - b. neutrons
 - c. electrons
 - d. all of the above
- 3. How many protons are found in each atom of carbon-14?
 - a. 14
 - b. 8
 - c. 7
 - d. 6

4. If a carbon atom has 7 neutrons, it is the isotope named
 - a. carbon-11.
 - b. carbon-12.
 - c. carbon-13.
 - d. carbon-14.
5. Plants use carbon dioxide for the process of
 - a. respiration.
 - b. germination.
 - c. reproduction.
 - d. photosynthesis.
6. New atoms of carbon-14 form in the atmosphere because of
 - a. pollution.
 - b. cosmic rays.
 - c. global warming.
 - d. burning of fossil fuels.
7. If you start with 1.00 g of carbon-14, the amount left after two half-lives will be
 - a. 0 g.
 - b. 0.25 g.
 - c. 0.50 g.
 - d. 0.75 g.