

## 4th Grade Earth Materials Assessment

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Name: \_\_\_\_\_ Date: \_\_\_\_\_

1. Max collects rocks, gems, and crystals. Which is made up of two or more different minerals?

- A. minerals
  - B. gems
  - C. rock
  - D. crystals
- 

2. The picture below shows a rock. The arrow is pointing to something inside the rock.



This \_\_\_\_\_ rock contains \_\_\_\_\_.

- A. fossil; glass
- B. metamorphic; a fossil
- C. sedimentary; a fossil
- D. igneous; a fossil

## 4th Grade Earth Materials Assessment

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3. Which of the following best describes the luster of the mineral shown below?



- A. purple
  - B. shiny and pearly
  - C. very hard
  - D. white streak
- 

4. Jorge is testing a mineral by seeing whether it can be scratched by a penny. What property of the mineral is Jorge testing?

- A. luster
  - B. hardness
  - C. streak
  - D. color
- 

5. Geologists often use the property of \_\_\_\_ to tell minerals apart.

- A. sound
- B. length
- C. color
- D. size

## 4th Grade Earth Materials Assessment

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6. \_\_\_\_\_ start out as one kind of rock, but large amounts of pressure and heat change them into a different kind.

- A. Igneous
  - B. Metamorphic
  - C. Sedimentary
  - D. Fossils
- 

7. Jackie noticed that one of the minerals below is metallic and shiny, and the other is glassy but not as shiny.



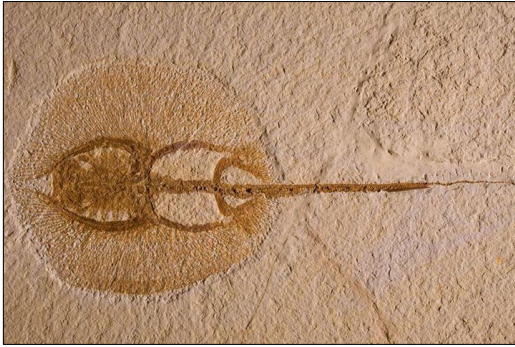
What property of the minerals is Jackie observing?

- A. hardness
- B. luster
- C. streak
- D. color

## 4th Grade Earth Materials Assessment

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8. The fossil on the left, below, is from an organism that lived in the ocean over 23 million years ago. The fossilized organism is believed to be in the same family as the stingray shown on the right.



Which of the following best describes how stingrays compare to their ancient ancestors?

- A. Stingrays are very similar in shape to their ancient ancestors.
- B. Stingrays have tails while their ancestors did not.
- C. Stingrays swim, but their ancestors had limbs.
- D. Stingrays are shaped very differently from their ancestors.

## 4th Grade Earth Materials Assessment

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9. Minerals can be identified by their physical properties such as color, hardness, and luster. Use the following table to answer the question.

### Minerals & Their Properties

Mineral	Properties			
	Hardness (scratch test)	Color	Luster	Special Properties
Feldspar	6 scratches glass	pink or white	dull/pearly	--
Gypsum	2 scratched by fingernail	white/gray	dull	--
Mica	2 scratched by fingernail	black/gray	shiny	splits into thin sheets
Talc	1 easily scratched by fingernail	white	dull	--
Calcite	3 scratched by nail	white	dull/glassy	bubbles with acid

Allison is looking at three different rocks that her teacher gave her for science lab. Her favorite rock is shiny and black, and she can peel layers of it off in thin sheets. According to the table, what mineral is this rock most likely made of?

- A. feldspar
- B. gypsum
- C. calcite
- D. mica

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10. Limestone is a common building material made up of calcite. Today, limestone buildings are being damaged. What is the cause?

- A. Forest fires
- B. Hurricanes
- C. Damaging winds
- D. Acid rain

## 4th Grade Earth Materials Assessment

---

11. Look at the data in the table below.

**Properties of Minerals**

<b>Mineral</b>	<b>Hardness</b>	<b>Color</b>	<b>Luster</b>
Quartz	can scratch glass	colorless, pink, or other shades	shiny and glassy or greasy
Mica	can be scratched with a penny	white, brown, green, or black	shiny, pearly, metallic
Calcite	can be scratched with a penny	white or colorless	glassy, but may not be shiny
Feldspar	can scratch glass	white, gray, or cream	shiny and glassy or pearly

Kelly found a mineral that is colorless, has a glassy luster, and can scratch glass. Based on the table above, what mineral did she most likely find?

- A. mica
  - B. calcite
  - C. feldspar
  - D. quartz
- 

12. Which of the following correctly describes how igneous rocks are formed?

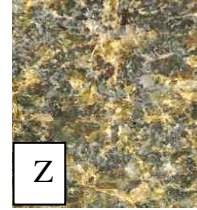
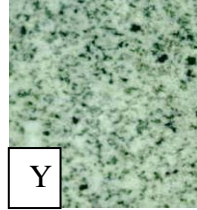
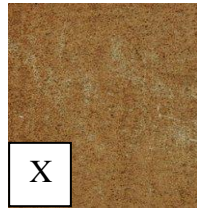
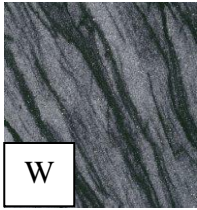
- A. layers of sediment are pressed down on top of each other
- B. melted rock cools, either above ground or underground
- C. another kind of rock is exposed to a lot of pressure and heat
- D. water breaks off pieces of rocks and moves them to new locations

## 4th Grade Earth Materials Assessment

---

13. Foliation, or layering, is a property that many metamorphic rocks share. Foliations look like stripes in the rocks.

Which of the following rocks is metamorphic?



- A. Y
- B. W
- C. X
- D. Z

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14. Because of the way they form, fossils are usually only found in \_\_\_\_\_ rocks.

- A. sedimentary
- B. igneous
- C. mineral
- D. metamorphic

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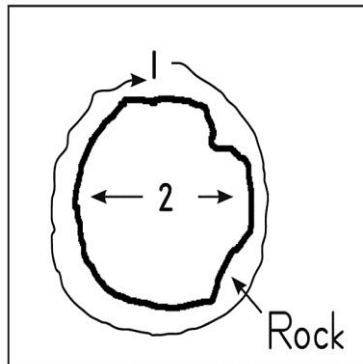
15. How does evaporation help you study mock rocks?

- A. Evaporation gives a better idea of the weight of the rock.
- B. Evaporation changes the color of the rock, so its parts are easier to see.
- C. Evaporation helps you scratch a mineral with a paper clip.
- D. Evaporation helps separate the parts of a rock.

## 4th Grade Earth Materials Assessment

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16. Dana measures across a rock for measurement number 2 as shown below. Which measurement is Dana finding?



- A. diameter
  - B. depth
  - C. height
  - D. circumference
-



## 4th Grade Earth Materials Assessment

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17. Minerals can be identified by their physical properties such as color, hardness, and luster. Use the following table to answer the question.

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Mike is holding a dull rock in his hand. He can't scratch it with his fingernail or with a nail. The rock is a light pinkish-white color. Which kind of mineral from the table is the rock most likely made of?

- A. gypsum
  - B. feldspar
  - C. calcite
  - D. talc
- 

18. Jonathan is using vinegar to test rock samples for calcite. Which is a positive test for calcite?

- A. Bubbles form on the rock.
  - B. Little holes form on the rock.
  - C. The rock doesn't dry/
  - D. Powder forms on the rock.
-

## 4th Grade Earth Materials Assessment

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19. The table below shows three different types of rock, their characteristics, and how they are formed. Use the table to answer the question.

### Rock Types & Their Properties

<b><u>Igneous</u></b>	Many of these rocks are very smooth and fine-grained like quartz, granite and obsidian (volcanic glass).
<b><u>Sedimentary</u></b>	These rocks are created by the accumulation of layers of sediment and small bits of other rocks, sand, animal and plant material.
<b><u>Metamorphic</u></b>	These rocks are formed deep in the earth when igneous or sedimentary rocks come under enormous pressure or heat.

Mr. Peters is teaching a class about different types of rocks. He shows his class the rock samples below and tells them that these rocks likely formed when magma cooled and solidified inside the Earth.



What type of rock is Mr. Peters showing his class?

- A. metamorphic
  - B. layered
  - C. sedimentary
  - D. igneous
- 

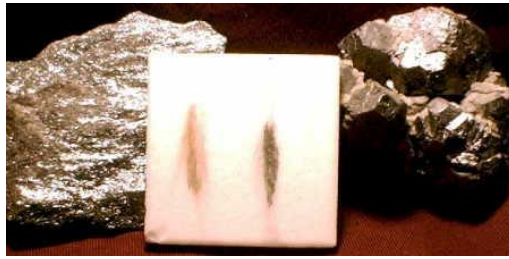
20. Dana wraps a string around a rock. Then she measures the length of the string with a metric ruler. What measurement is Dana finding?

- A. height
- B. depth
- C. circumference
- D. diameter

## 4th Grade Earth Materials Assessment

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21. Lorrie is testing the properties of a mineral. What property of the mineral is she testing in the picture shown below?



- A. luster
  - B. streak
  - C. hardness
  - D. cleavage
- 

22. Plants lived on Earth during prehistoric times. We know this because...

- A. stories about them have been passed down from parent to child.
  - B. everything alive today has been alive since the beginning of time.
  - C. some of the plants were preserved in fossils.
  - D. we can see them in photographs that were taken long ago.
- 

23. Marcus mixed a mystery powder in water and the powder seemed to disappear. What happened to the powder?

- A. The powder dissolved.
  - B. The powder evaporated.
  - C. The powder became bubbles.
  - D. The powder turned yellow.
-

## 4th Grade Earth Materials Assessment

---

24. Adriana broke apart a rock. She sorted the pieces into like piles. What evidence is Adriana collecting?

- A. All rocks break apart easily.
  - B. Scientists break up minerals to make rocks.
  - C. Minerals break up to make new minerals.
  - D. Rocks are made up of different materials.
- 

25. Why are reusable utensils, such as knives, forks, and spoons, usually made out of metal instead of plastic?

- A. Metal is prettier than plastic.
  - B. Metal utensils are always newer.
  - C. Metal is stronger than plastic.
  - D. Metal utensils are always bigger.
- 

26. Two samples of the mineral mica are shown in the picture below.



Mica is a mineral that forms in flat planes that can be easily separated into thin sheets. What property of mica does this describe?

- A. cleavage
  - B. streak
  - C. luster
  - D. hardness
-

## 4th Grade Earth Materials Assessment

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27. The Mohs' scale of mineral hardness is often used to identify and compare minerals. Minerals with larger hardness numbers can scratch minerals with smaller hardness numbers.

### Moh's Hardness Scale

Mohs' Hardness Number	Mineral
0	Liquid
1	Talc
2	Gypsum
3	Calcite
4	Fluorite
5	Apatite
6	Orthoclase Feldspar
7	Quartz
8	Topaz
9	Corundum
10	Diamond

If a copper penny has a hardness of 3.5, which material would the penny be able to scratch?

- A. orthoclase feldspar
  - B. corundum
  - C. topaz
  - D. calcite
-

## 4th Grade Earth Materials Assessment

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28. The fossil below is perhaps as old as 70 million years.



Which modern organism is most similar to this fossil?

- A. a fern plant
- B. a blade of grass
- C. a caterpillar
- D. a millipede

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29. Which of the following tests could a student do to find out whether a mineral has the property of cleavage?

- A. look at how shiny the mineral is
- B. try to scratch the mineral with a fingernail
- C. rub the mineral on a white ceramic plate
- D. try to break the mineral along different directions