





### Lesson Procedure

#### Step 1: Introduction (5 minutes)

- Hook students by asking: 'Have you ever wondered what makes a diamond so hard or why salt crystals look like tiny cubes?'
- Display images of different rocks and minerals and ask students to share what they notice about their colors, shapes, and shininess.

#### Step 2: Direct Instruction (15 minutes)

- Distribute the Study Guide and review the definition of a mineral as a naturally formed, solid element with a unique chemical composition.

(<https://newpathworksheets.com/api/guide/study-guide-science-grade-5-minerals-of-earth-s-crust.pdf>)



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the Mohs Hardness Scale, streak, and luster.

(<https://newpathworksheets.com/api/worksheet/worksheet-science-grade-5-minerals-of-earth-s-crust-1.pdf>)

- Instruct students to reference the Mohs scale chart provided in their study materials if they need help determining rankings for common objects.

#### Step 5: Assessment (10 minutes)

- Administer Practice Worksheet 0 as a final quiz to evaluate students' grasp of mineral formation, properties, and crystal shapes.



(<https://newpathworksheets.com/api/worksheet/worksheet-science-grade-5-minerals-of-earth-s-crust-0.pdf>)

- Review the answers collectively, addressing any lingering misconceptions about streak color versus a mineral's outward color.

## 💡 Differentiation Strategies

### For advanced learners:

- Challenge students to research and identify the properties of a mineral not covered in the lesson and create a mock 'baseball card' for it.
- Have students explain why streak color is a more reliable identifier than a mineral's outward color in a short paragraph.

### For learners needing support:



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- NewPathWorksheets: Minerals of Earth's crust (<https://newpathworksheets.com/science/grade-5/minerals-of-earth-s-crust>)
- Study Guide: Minerals of Earth's Crust (<https://newpathworksheets.com/api/guide/study-guide-science-grade-5-minerals-of-earth-s-crust.pdf>)
- Practice Worksheet 0 (<https://newpathworksheets.com/api/worksheet/worksheet-science-grade-5-minerals-of-earth-s-crust-0.pdf>)
- Practice Worksheet 1 (<https://newpathworksheets.com/api/worksheet/worksheet-science-grade-5-minerals-of-earth-s-crust-1.pdf>)



- Practice Worksheet 2 (<https://newpathworksheets.com/api/worksheet/worksheet-science-grade-5-minerals-of-earth-s-crust-2.pdf>)
- Vocabulary Set 1 (<https://newpathworksheets.com/api/vocabulary/vocabulary-science-grade-5-minerals-of-earth-s-crust-1.pdf>)
- Vocabulary Set 2 (<https://newpathworksheets.com/api/vocabulary/vocabulary-science-grade-5-minerals-of-earth-s-crust-2.pdf>)



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## MINERALS OF EARTH'S CRUST

### What are minerals?

Minerals are solid elements formed naturally in the Earth's surface. Every mineral has a unique chemical composition – a mix of the chemicals that formed it. Rocks are made up of minerals, sometimes more than one kind of mineral!

*Lesson Checkpoint: Can minerals be man-made?*

### Minerals come in different shapes and sizes



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### Let's take a closer look at these properties:

What exactly is **hardness**? The hardness of a mineral refers to how easily (or not so easily) a mineral can be scratched. This hardness is measured on a scale which ranks the hardness of minerals from 1-10. A measurement of 1 means the mineral is extremely easy to scratch and 10 means it is extremely HARD! This scale is named the **Moh's Hardness Scale**.

Minerals that are extremely easy to scratch, such as talc, are ranked as a 1. The hardest known mineral is given a 10 – that’s a diamond!

### MINERAL HARDNESS

Moh's Hardness Scale	Approximate Hardness of Common Objects
Talc	1
Gypsum	2
Calcite	3
Fluorite	4
Apatite	5
	Fingernail (2.5)
	Copper penny (3.5)
	Iron nail (4.5)
	Glass (5.5)



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c) 3  
d) 1

If you answered **b) 2.5**, you are correct!!

### More Mineral Properties

**Streak color** refers to the color of the streak the mineral leaves when scraped against a white surface. Careful: the color of rock does not determine streak color. Sometimes a red mineral will leave a green streak!

**Luster** refers to how light is reflected off the surface of a mineral. There are two main types of luster: metallic and nonmetallic.

**Color** is just that...the color of the mineral. Many minerals come in more than one color. For example, fluorite is not always white...it can be clear, white, yellow, blue, purple, or even green. For this reason, you can't easily tell the type of a mineral just by looking at its color.

*Lesson Checkpoint: Does the color of the rock determine its streak color?*

## Mineral Chart

You can organize the information you know about minerals you are studying by using a chart similar to the one below. This chart includes



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Answer: halite

**Which mineral has a dull luster and can be yellow in color?**

Answer: sulfur

**Which mineral is white in color, has a white color streak, and has a hardness ranking of 1?**

Answer: talc

## Minerals have many uses

Here is a list of some common minerals and where they are used (including some mineral we use every day):

- quartz is used in glass
- graphite is used in pencil lead
- fluorite is used in toothpaste
- hematite is used in coloring
- halite is used in salt
- chromite is used in stainless steel
- diamond is used in engagement rings ☺

*Lesson Checkpoint: Name one mineral and its use.*



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Name \_\_\_\_\_ Class \_\_\_\_\_ Date \_\_\_\_\_

1 **Minerals** are solid substances found in the Earth's surface that are \_\_\_\_\_.

- A unnaturally formed
- B man-made
- C naturally formed
- D chemically made



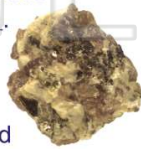
2 What is true of **every** mineral?

- A They are made of rocks.
- B They can be in liquid form.
- C They are very heavy.
- D Each mineral has its own chemical composition.



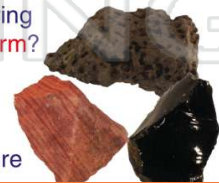
3 **Some rocks**, such as this piece of **granite**, are \_\_\_\_\_.

- A made up of clear or shiny minerals
- B made up of layers of sand
- C made up of more than one kind of



4 Which of the following **causes rocks to form**?

- A fire
- B wind
- C heat and pressure



5



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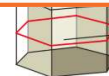
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D octagon



C octagonal  
D hexagonal



9

**Hardness, streak color, luster, and color** are **all** \_\_\_\_\_.

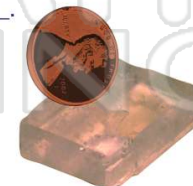
- A properties of the Earth's mantle
- B properties of soil
- C properties of water
- D properties of minerals



10

The **hardness** of a mineral refers to how **easily** (or not so easily) a mineral can be \_\_\_\_\_.

- A formed
- B scratched
- C cracked
- D dissolved






Name \_\_\_\_\_ Class \_\_\_\_\_ Date \_\_\_\_\_

1 **Minerals** are solid substances found in the Earth's surface that are \_\_\_\_\_.

**A** unnaturally formed  
**B** man-made  
**C** naturally formed  
**D** chemically made



(C)

2 What is true of **every** mineral?


**A** They are made of rocks.  
**B** They can be in liquid form.  
**C** They are very heavy.  
**D** Each mineral has its own chemical composition.



(D)

3 **Some rocks**, such as this piece of **granite**, are \_\_\_\_\_.

**A** made up of clear or shiny minerals  
**B** made up of layers of sand  
**C** made up of more than one kind of mineral



(C)

4 Which of the following **causes rocks to form**?

**A** fire  
**B** wind  
**C** heat and pressure



(C)



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6 **Octagons** have \_\_\_\_\_ sides.

**A** 8  
**B** 6  
**C** 5  
**D** octagon



(A)

7 **Hexagons** have \_\_\_\_\_ sides.


**A** 6  
**B** 8  
**C** octagonal  
**D** hexagonal



(A)

9 **Hardness, streak color, luster, and color** are **all** \_\_\_\_\_.

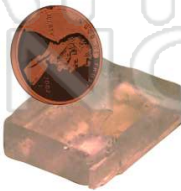
**A** properties of the Earth's mantle  
**B** properties of soil  
**C** properties of water  
**D** properties of minerals



(D)

10 The **hardness** of a mineral refers to how **easily** (or not so easily) a mineral can be \_\_\_\_\_.

**A** formed  
**B** scratched  
**C** cracked  
**D** dissolved



(B)



Name \_\_\_\_\_ Class \_\_\_\_\_ Date \_\_\_\_\_

1 The **scale** that has **rankings** of the **hardness** of **minerals and rocks** from 1-10 is called the \_\_\_\_\_ hardness scale.

- A Mike's
- B Mohs'
- C Miller's
- D Main

Hardness Scale			
1 Talc	6 Feldspar	7 Quartz	8 Topaz
2 Gypsum	9 Corundum	10 Diamond	
3 Calcite			
4 Fluorite			
5 Apatite			

fingernail (2.5)  
penny (3.5)  
iron nail (4.5)  
glass (5.5)

2 Which mineral on the chart below can be **scratched the easiest**?

- A talc
- B fluorite
- C topaz
- D quartz

fingernail (2.5)  
penny (3.5)  
iron nail (4.5)  
glass (5.5)

Hardness Scale			
1 Talc	6 Feldspar	7 Quartz	8 Topaz
2 Gypsum	9 Corundum	10 Diamond	
3 Calcite			
4 Fluorite			
5 Apatite			

3 If you have found a mineral that you can scratch with your **fingernail**, what ranking would the mineral receive on the **Mohs' Hardness Scale**?

- A 1
- B 2.5

Hardness Scale			
1 Talc	6 Feldspar	7 Quartz	
2 Gypsum			
3 Calcite			
4 Fluorite			
5 Apatite			

fingernail (2.5)

4 Which is the **hardest mineral** on the chart below?

fingernail (2.5)  
penny (3.5)  
iron nail (4.5)  
glass (5.5)

Hardness Scale			
1 Talc	6 Feldspar	7 Quartz	8 Topaz
2 Gypsum	9 Corundum	10 Diamond	
3 Calcite			
4 Fluorite			
5 Apatite			

5



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9

What are the two main types of **luster**?

- A metallic and nonmetallic
- B transparent and opaque
- C shiny and clear
- D porous and nonporous



10

Why **can't** you identify a mineral just by looking at its **color**?

- A Many minerals come in more than one color.
- B Minerals come in only one color.
- C The color on the outside always matches the streak color.
- D Minerals are shiny, they do not have color.





Name \_\_\_\_\_ Class \_\_\_\_\_ Date \_\_\_\_\_

1 The **scale** that has **rankings** of the **hardness** of **minerals and rocks** from 1-10 is called the \_\_\_\_\_ hardness scale.

- A Mike's
- B Mohs'
- C Miller's
- D Main

Hardness Scale			
1 Talc	6 Feldspar		
2 Gypsum	7 Quartz		
3 Calcite	8 Topaz		
4 Fluorite	9 Corundum		
5 Apatite	10 Diamond		

(B)

2 Which mineral on the chart below can be **scratched the easiest**?

- A talc
- B fluorite
- C topaz
- D quartz

fingernail (2.5)  
penny (3.5)  
iron nail (4.5)  
glass (5.5)

Hardness Scale			
1 Talc	6 Feldspar		
2 Gypsum	7 Quartz		
3 Calcite	8 Topaz		
4 Fluorite	9 Corundum		
5 Apatite	10 Diamond		

(A)

3 If you have found a mineral that you can scratch with your **fingernail**, what ranking would the mineral receive on the **Mohs' Hardness Scale**?

- A 1
- B 2.5

Hardness Scale			
1 Talc	6 Feldspar		
2 Gypsum	7 Quartz		

(B)

4 Which is the **hardest mineral** on the chart below?

fingernail (2.5)  
penny (3.5)  
iron nail (4.5)  
glass (5.5)

Hardness Scale			
1 Talc	6 Feldspar		
2 Gypsum	7 Quartz		
3 Calcite	8 Topaz		
4 Fluorite	9 Corundum		
5 Apatite	10 Diamond		

(D)

5



(A)

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(C)

9

What are the two main types of **luster**?

- A metallic and nonmetallic
- B transparent and opaque
- C shiny and clear
- D porous and nonporous



(A)

10

Why **can't you identify** a mineral just by looking at its **color**?

- A Many minerals come in more than one color.
- B Minerals come in only one color.
- C The color on the outside always matches the streak color.
- D Minerals are shiny, they do not have color.



(A)



Name \_\_\_\_\_ Class \_\_\_\_\_ Date \_\_\_\_\_

1 Which mineral has a **hardness** ranking of 7?

Mineral	Hardness	Streak Color	Luster	Color
fluorite	4	white	glassy	purple
halite	2.5	white	glassy	colorless
quartz	7	white	glassy	white

- A fluorite      C quartz  
B halite        D diamond

2 Which mineral has a **glassy** luster, leaves a **white streak** color, and is **white** in color too?

Mineral	Hardness	Streak Color	Luster	Color
fluorite	4	white	glassy	purple
halite	2.5	white	glassy	colorless
quartz	7	white	glassy	white

- A quartz        C fluorite  
B halite        D calcite

3 Which mineral has a **dull** luster?

Mineral	Hardness	Streak Color	Luster	Color
calcite	3	white	glassy	white
talc	1	white	pearl	white
sulfur	2	white	dull	bright yellow, yellow brown

4 A **white streak** color is left by \_\_\_\_\_.

Mineral	Hardness	Streak Color	Luster	Color
calcite	3	white	glassy	white
talc	1	white	pearl	white
sulfur	2	white	dull	bright yellow, yellow brown

- A calcite only

5



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9

Which mineral is used to **make clothes** and other items colorful?

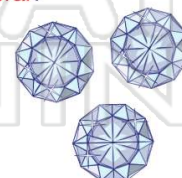
- A hematite  
B halite  
C diamond  
D chromite

MINERAL	USED IN
hematite	in coloring
halite	salt
chromite	stainless steel

10

Which mineral is known as the **hardest mineral**?

- A talc  
B diamond  
C calcite  
D hematite





Name \_\_\_\_\_ Class \_\_\_\_\_ Date \_\_\_\_\_

1 Which mineral has a **hardness** ranking of 7?

Mineral	Hardness	Streak Color	Luster	Color
fluorite	4	white	glassy	purple
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- A fluorite      C quartz  
B halite        D diamond

C

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quartz	7	white	glassy	white

- A quartz        C fluorite  
B halite        D calcite

A

3 Which mineral has a **dull** luster?

Mineral	Hardness	Streak Color	Luster	Color
calcite	3	white	glassy	white
talc	1	white	pearl	white
sulfur	2	white	dull	bright yellow, yellow brown

D

4 A **white streak** color is left by \_\_\_\_\_.

Mineral	Hardness	Streak Color	Luster	Color
calcite	3	white	glassy	white
talc	1	white	pearl	white
sulfur	2	white	dull	bright yellow, yellow brown

- A calcite only

C

5



C

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B

9

Which mineral is used to **make clothes** and other items colorful?

- A hematite  
B halite  
C diamond  
D chromite

MINERAL	USED IN
hematite	in coloring
halite	salt
chromite	stainless steel

A

10

Which mineral is known as the **hardest mineral**?

- A talc  
B diamond  
C calcite  
D hematite



B



Name \_\_\_\_\_ Class \_\_\_\_\_ Date \_\_\_\_\_

**Match each of the following terms to its definition:**

Crystal

Cleavage

Metamorphism

Fracture

Land reclamation

Gemstone

Hardness

Inorganic

1. \_\_\_\_\_ - a physical property of minerals that describes the way some minerals break on flat planes



2. \_\_\_\_\_ - a solid substance with molecules arranged in a repeated pattern



3. \_\_\_\_\_  
irregu



4. \_\_\_\_\_  
jewelr

5. \_\_\_\_\_  
not so  
betwe

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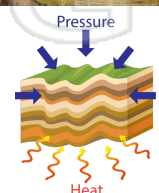
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6. \_\_\_\_\_  
previo

7. \_\_\_\_\_ - restoring land and natural habitats by bringing in new topsoil and planting trees and native plants



8. \_\_\_\_\_ - the geologic processes by which one rock is turned into another due to intense heat and pressure; literally means





Name \_\_\_\_\_ Class \_\_\_\_\_ Date \_\_\_\_\_

**Match each of the following terms to its definition:**

Crystal

Cleavage

Metamorphism

Fracture

Land reclamation

Gemstone

Hardness

Inorganic

1. **cleavage** - a physical property of minerals that describes the way some minerals break on flat planes



2. **crystal** - a solid substance with molecules arranged in a repeated pattern



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6. ino  
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7. **land reclamation** - restoring land and natural habitats by bringing in new topsoil and planting trees and native plants



8. **metamorphism** - the geologic processes by which one rock is turned into another due to intense heat and pressure; literally means

