

## Digging for Diamonds

6E5B Minerals Contribute to Rock Lexile 860  
Matter and Energy

The Crater of Diamonds is a 37.5 acre state park in Pike County, Arkansas. It is the only place where diamonds are found that is open to the public. The diamond-search area is the eroded surface of a prehistoric volcanic pipe. Over 95 million years ago, it brought diamonds and semiprecious stones to the surface. Today, visitors come to this site to dig through the plowed field. Visitors can find diamonds or other



gem producing minerals, including amethyst, peridot, quartz, and garnet.

Now, suppose your parents tell you that this summer your family will be taking a road trip. You'll be visiting the Crater of Diamonds. Upon hearing the news, you are very excited. You've been sort of a "rock hound" for as long as you can remember. After all, you never could resist picking up a rock that sparkled in the light. Pretty-looking pebbles always seemed to catch your eye. This would be the perfect opportunity to explore gemology and add to your personal collection of gemstones!

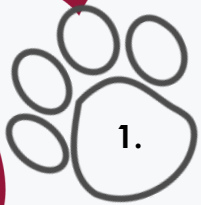
Before the trip, you share some information about gemology and gemstones with your family. You let them know that gemstones are minerals that have been carefully cut and polished. This makes their surfaces smooth and shiny. People value gemstones because of their beauty, rarity, and durability. They're often used to create jewelry or other decorative items. Traditionally, diamonds, rubies, emeralds, and sapphires have been considered as precious stones due to their rarity, hardness, and overall clarity. All other gemstones are considered semiprecious because they're more common and are softer. Many semiprecious stones are very popular. They can be used to create beautiful jewelry. You tell your family to be on the lookout for the more common semiprecious stones found at the Crater of Diamonds.

As the big trip gets closer, everyone in your family is getting excited about visiting the Crater of Diamonds. You've decided that the time has come to share the most important information with your family: how to spot a diamond. After all, it's important to know whether they've found a diamond or just a plain old rock. You share that four physical properties are used to identify a mineral. These are hardness, color, luster, and streak.

Hardness describes the strength of the forces holding atoms together in a solid mineral. The Mohs scale is used to describe how easily a mineral can be scratched. It has a range from 1–10. Diamonds are rated a 10 on the Mohs scale. They are the hardest minerals in the world. The color of a mineral is often easy to identify. Many minerals are found in a wide range of colors. Diamonds are no exception. They can be yellow, brown, blue, green, orange, purple, black, pink, red, or colorless. Colored diamonds have impurities that cause them to be different colors. Colorless, transparent diamonds, however, are nearly pure. Luster refers to the way a mineral looks as it reflects light.

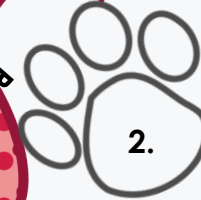
A mineral's luster could be metallic, dull, pearly, or adamantine. Diamonds have adamantine luster, which is seen in their brilliant sparkle. The term streak refers to the color of the powder left by a mineral. The streak of a mineral is often found by scraping a mineral along the non-glazed side of a porcelain tile. The color of the mark left on the tile helps to identify the mineral. The streak of a diamond is white.

You've explained how a mineral's physical properties can be tested to identify it. You also tell them that some of these tests work better in a laboratory. Now that your family knows how physical properties are used to identify minerals, they're even more excited to dig up some hidden gems. As summer gets closer, you and your family are getting more and more excited about your trip to the Crater of Diamonds. Who knows what treasures you'll find!



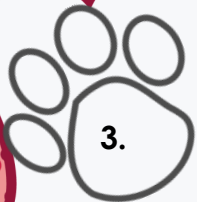
Read It!

List three gem producing minerals.



Read It!

List three reasons that people value gemstones.



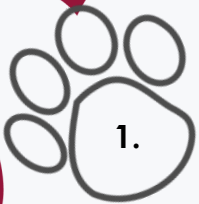
Read It!

List four physical properties that are used to identify a mineral.



Read It!

What is the name of the scale used to measure the hardness of a mineral?

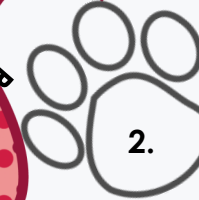


## Watch It!

Go to the following Brainpop video

<http://tinyurl.com/kwxyf3v>

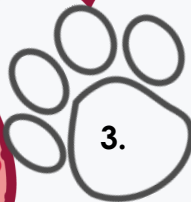
1. Click Play on the video.
2. Answer questions from Cards #2-6 on your lab sheet.



## Watch It!

Which of the following is a chemical property of a mineral?

- A. Hardness
- B. Luster
- C. Atomic Structure
- D. Color



## Watch It!

Which mineral is ranked highest on the Mohs scale?

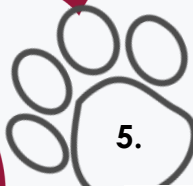
- A. Talc
- B. Calcite
- C. Quartz
- D. Diamond



## Watch It!

Which physical property requires no scales, tools, or other equipment to determine?

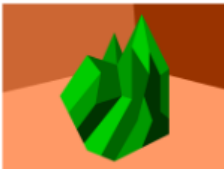
- A. Hardness
- B. Color
- C. Fracture
- D. Cleavage



## Watch It!

5. Which of the minerals pictured have a metallic luster?

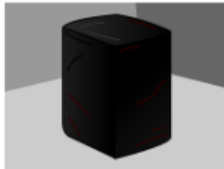
A.



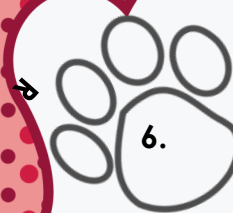
B.



C.



D.



## Watch It!

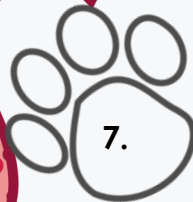
6. What kind of tool would you need to determine if a mineral has fracture?

A. Hammer

B. File

C. Grinder

D. Harder Metal



## Watch It!

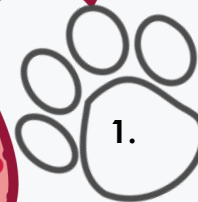
7. Which best describes the way minerals are identified?

A. Procedure

B. Guesswork

C. Gimmick

D. Tricks




## Explore It!

1. Located at each table are several mineral samples. Look over the minerals and write down the characteristics you observe. Use the dichotomous key to see if you can identify at least two minerals.





Assess It!



5.



Assess It!



6.



Assess It!



7.



Assess It!



8.

Luster

Hardness

Break

Color

Streak

Density

How a  
mineral  
reflects light.

Metallic



Vitreous





The color of a mineral in powdered form



What property can you test with this?



What property can you test with this?

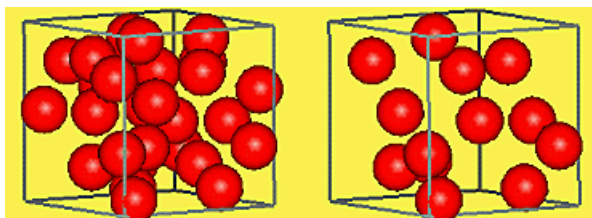


What property can you test with these?



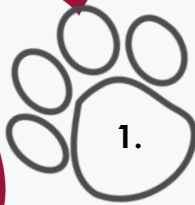


cleavage



Fracture





### Research It!

1. Choose a mineral from the list. Research its characteristics and fill in the template found on your lab sheet under Research It!

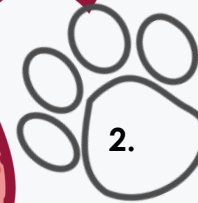
### Illustrate It!

Draw a picture of what cleavage of a mineral means and what fracture of a mineral means. Label each.



### Write It!

1. Which mineral do you think is most important in your life? Why do you think this is an important mineral?



### Write It!

2. Describe a mystery mineral for another student to guess. Do NOT say the name of the mineral in your description.

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

### Input Stations

#### Explore It!

Task Card 1:

Characteristics of the minerals:

Identify 2:

Mineral \_\_\_\_\_ is \_\_\_\_\_

Mineral \_\_\_\_\_ is \_\_\_\_\_

#### Read it!

1.

2.

3.

4.

### Watch It!

View the Brainpop Video and answer questions on task cards 2-7.

\_\_\_\_\_ 2. \_\_\_\_\_ 4. \_\_\_\_\_ 6.  
\_\_\_\_\_ 3. \_\_\_\_\_ 5. \_\_\_\_\_ 7.

### Research It!

Name of Mineral

What is this mineral used for?

Luster

Color:

Elements that make up this mineral:

streak

2

**Output Stations**

***Write It!***

**Task Card 1:**

**Task Card 2:**

**Output Stations Continued**

***Illustrate It!***

Don't forget to label your diagram!

***Assess It!***

- |          |          |
|----------|----------|
| _____ 1. | _____ 5. |
| _____ 2. | _____ 6. |
| _____ 3. | _____ 7. |
| _____ 4. | _____ 8. |

***Organize It!***

Teacher Initials:

**Reflection:** How did you do? What did you find easy? What mistakes did you make?