

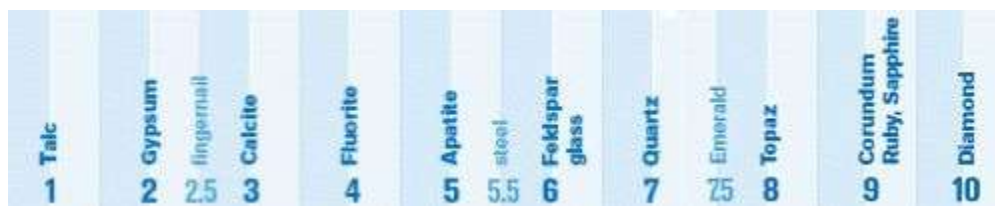
Hard Minerals

Visitors can pocket a billion years of history at a diamond-strewn park.

In February 2007, at the Crater of Diamonds State Park in Arkansas, Jim Gatliff made a gem of a find. He discovered a 2.67-carat yellow diamond—a rare stone that is a bit bigger than a large pea. And he was allowed to keep it!

Gem hunters uncovered more than 480 diamonds at Crater of Diamonds in 2006. Most were small, about the size of a match head. But some, like Gatliff's discovery, were bigger - and more valuable.

Gems, such as diamonds, rubies, and emeralds, are all types of crystals. They vary in color because they are formed from different materials. Diamonds are made from the element **carbon**. Carbon is also found in **graphite**, the material used in pencil leads. The graphite in your pencil is pretty soft. Diamonds aren't. In fact, diamond is the hardest **mineral** on Earth. Minerals are the solid materials that make up rocks.



Science Spin

The hardness scale.

Diamonds are born hundreds of miles below Earth's surface, or **crust**. Beneath the crust is a hot, partially oozing layer called the **mantle**. Inside the mantle, the pressure is enormous and temperatures can reach as high as 4,000 degrees Fahrenheit. That heat and pressure can transform carbon into diamonds.

How did diamonds end up in Arkansas and other places around the world? "It takes a special type of volcanic activity to bring diamonds to the surface," says Rachel Engebrecht, a spokesperson for Crater of Diamonds. Liquid rock called **magma** erupted from the mantle through tubes called **volcanic pipes**. That magma carried diamonds to the surface.

The gems at Crater of Diamonds probably formed billions of years ago. "We think the diamonds got pushed up to the surface around 100 million years ago, during the age of

dinosaurs," Engebrecht says.

All diamonds people find in the ground are old, but some diamonds may not come from underground at all. Black diamonds are a rare kind of diamond with mysterious origins. Some scientists think the black gems were created inside **supernovas** (exploding stars) and traveled to Earth from space!

Measuring Minerals

The hardness of minerals is measured on the Mohs scale. Diamond is the hardest. Talc, a white mineral found in baby powder, is at the softest end of the scale.

Name: _____ Date: _____

1. According to the passage, why do gems vary in color?

- A. The sun changes the gems' colors.
- B. They are dyed different colors.
- C. They are formed from different materials.
- D. Heat changes the color of the gems.

2. According to the description in the passage, what is the highest temperature the mantle can reach?

- A. 2,006 degrees Fahrenheit
- B. 480 degrees Fahrenheit
- C. 4,000 degrees Celsius
- D. 4,000 degrees Fahrenheit

3. Based on the passage, which of the following most likely makes a gem valuable?

- A. how hard the gem is
- B. what color the gem is
- C. how rare the gem is
- D. how much carbon is in the gem

4. Read the following sentence and answer the question below:

"Black diamonds are a rare kind of diamond with mysterious origins."

As used in the sentence, **rare** describes

- A. where to find diamonds
- B. how to determine the value of a diamond
- C. something that is uncommon
- D. something that can be found everywhere

5. The central idea of the passage is

- A. where to find diamonds
- B. how to determine the value of a diamond
- C. how diamonds are formed
- D. how pencils are made

6. What transforms carbon into diamonds?

7. Do you think graphite is more common than diamonds? Please explain your answer.

8. The question below is an incomplete sentence. Choose the word that best completes the sentence.

_____ graphite and diamonds are both made from carbon, graphite is much softer than diamonds.

- A. So
- B. Although
- C. Because
- D. Then