

## Diamond Formation Reading Comprehension

Name \_\_\_\_\_

Diamonds are among nature's hardest materials. They can scratch a sheet of glass, and are used on machines to cut through big pieces of rock and other hard surfaces. Diamonds are also used as symbols of "love" and "forever." They are very expensive and are often seen on rings, necklaces, bracelets, and other kinds of jewelry.

It's amazing that humans have put so much value and meaning into one of the most unstable crystals that exists on Earth. In fact, diamonds are so unstable that under certain conditions they will convert back into graphite, which is used in pencils. Believe it or not, diamonds and your pencil led are incredibly similar. In fact, if your pencil led had exploded out of the Earth's mantle to its surface, it could have been a diamond!

Diamonds were formed in very high temperature and pressure environments. This type of environment does not exist on the earth's surface, and can only be found in specific zones deep within the earth's mantle about 100 miles under the surface. It is believed that diamonds formed in these parts of the mantle and then were delivered to the surface of the Earth by very rapid, violent, and powerful volcanic eruptions millions or even billions of years ago. According to scientists, such eruptions have not occurred in modern times. The important part of these eruptions was speed. If the eruptions had happened slowly, the diamonds would have turned into graphite on their way up, but because the eruptions happened so quickly, the diamonds were "locked" into their crystal structure.

Graphite and diamonds are both crystallized forms of carbon. The difference between the two is how their atoms are arranged and the types of bonds holding them together. Diamonds have stronger bonds than graphite.

### 1. Where are diamonds formed?

- a. Outer Space
- b. On Earth's surface
- c. Beneath the Earth's surface
- d. In slow volcanic eruptions

**2. What is implied in the second paragraph?**

- a. All of the world's diamonds have likely been found and mined
- b. Diamonds may have formed in eruptions that occurred above the surface of the Earth
- c. Diamonds can form in conditions of extreme heat and pressure
- d. In current conditions, new diamonds cannot form

**3. Diamonds are not...**

- a. symbols of love.
- b. very expensive.
- c. commonly found today.
- d. unstable crystals.

**4. According to the passage, which of the following is the best description of the relationship between graphite and diamonds?**

- a. They are identical
- b. They are very similar. The only difference is the location in the Earth that each is formed in
- c. They are very similar. The only difference is how their atoms are arranged and the bonds that hold them together
- d. They are very similar. The only difference is how they look

**5. In which of the following conditions COULD diamonds form?**

- a. Slow volcanic eruptions near the surface of the Earth
- b. Fast volcanic eruptions near the surface of the Earth
- c. Slow volcanic eruptions deep within the Earth
- d. Fast volcanic eruptions deep within the Earth

**6. Which of the following is NOT explained in the passage?**

- a. Under what conditions will diamonds become graphite?
- b. What kinds of symbols do people attach to diamonds?
- c. What are diamonds used for apart from jewelry?
- d. What was the most important factor in determining whether diamonds or graphite would be formed?

**7. What does author seem surprised about?**

- a. The length of time it takes to form a diamond
- b. That people consider diamonds so valuable
- c. That diamonds are so unstable
- d. That diamonds are among the hardest materials on Earth