Earth's Layers & Volcanoes

Grade 4 Name: _____

Read the science passage carefully. Then answer the questions below.

Yellowstone's Sleeping Giant: What is a Supervolcano?

Deep beneath Yellowstone National Park, a giant is sleeping. This isn't just any volcano; it's a supervolcano! Unlike the tall, cone-shaped volcanoes you might imagine, Yellowstone's supervolcano doesn't look like a mountain at all. Instead, it's a huge, sunken area called a caldera, formed by past massive eruptions. The caldera at Yellowstone is about 70 kilometers (43 miles) long and 50 kilometers (31 miles) wide – big enough to fit an entire city inside!

What makes it "super" is the enormous size of its magma chamber. This chamber, filled with molten rock, is like a giant balloon of fiery liquid, stretching for many kilometers underground. The heat comes from deep within Earth, where temperatures are hotter than the surface of the sun. This incredible heat melts rock, creating the magma. Over millions of years, this magma builds up, creating immense pressure.

If Yellowstone's supervolcano were to erupt again, it would be a truly world-changing event, far bigger than any eruption in human history. Instead of just lava flows, it would blast huge amounts of ash and gas high into the atmosphere. This ash could cover vast areas of North America, blocking sunlight and causing temperatures to drop around the world. Scientists constantly monitor Yellowstone, using special tools to watch for any changes, ensuring we understand this powerful force beneath our feet.

COMPREHENSION QUESTIONS

(1) What is the main visible feature of Yellowstone's supervolcano on the surface?

(A) A tall, cone-shaped mountain (B) A deep, narrow canyon

(C) A huge, sunken area called a caldera

(D) A series of small, bubbling hot springs

(2) According to the passage, what is the primary reason the magma chamber under Yellowstone is so large and hot?

(A) It is constantly refilled by rainwater from the surface.

(B) Heat from deep within Earth continuously melts rock.

(C) It is a hollow space that traps hot air.

(D) Sunlight warms the rocks directly above it.

(3) In the passage, the word "caldera" refers to:

(A) A type of molten rock found deep underground.

(B) A tall, pointed volcanic mountain.

(C) A large, sunken area formed by a past eruption.

(D) A tool scientists use to measure seismic activity.

(4) If a supervolcano like Yellowstone erupted, releasing massive amounts of ash into the atmosphere, what global effect would be most likely?

(A) A rapid increase in global temperatures.

(B) A significant decrease in ocean levels.

(C) Widespread cooling due as sunlight is blocked.

(D) An immediate increase in volcanic activity worldwide.

(5) Explain in your own words why an eruption from Yellowstone's supervolcano would be considered "world-changing" compared to a typical volcano.