Learning About Volcanoes, Earthquakes and Tsunamis

MUSICAL SPROUTS SCIENCE LESSON JAPAN SEGMENT



Japan is located along the so-called Pacific Ring of Fire, which is the most active earthquake belt in the world. This "ring" is actually an imaginary horseshoe-shaped zone that follows the rim of the Pacific Ocean, where many of the world's earthquakes and volcanic eruptions occur.





The Ring of Fire has many volcanoes! But do you know how a volcano is formed?

LET'S EXPLORE THIS TOPIC!





Volcanoes and earthquakes can change the Earth's surface very quickly.





Volcanoes: Temperatures are so high at the bottom of Earth's crust that rocks can melt. Melted rock below Earth's surface is called magma.



As magma heats and expands, it pushes in all directions. It moves to Earth's surface where the crust is weakest. Many weak places exist where Earth's rocky plates meet.



At these places, magma may shoot or pour out of the surface in an eruption. Magma that reaches the surface is called <u>lava</u>.



An eruption can also throw hot boulders, ash, gases, and cinders into the air.

A <u>VOLCANO</u> IS A MOUNTAIN BUILT UP FROM HARDENED LAVA, ROCKS, AND ASH THAT ERUPTED OUT OF EARTH.





Volcanic deposits can also create new landforms, richer soil for farming and a diverse number of new rocks.





Earthauakes: An <u>earthauake</u> happens when huge slabs of rock move against each other deep below Earth's surface. The slabs touch a fault. A fault is a crack in the Earth's crust.



The rock slabs do not move slowly and steadily along the fault. Instead they stick together until the forces pushing on them become very great. Then one of the slabs suddenly moves a short distance.





This jolt produces waves in the crust like ripples in a pond. These waves can be felt as an earthquake.





In some places, land may drop during an earthquake. In other places, land may rise. So earthquakes can build up or destroy land.

Watch this video: Demonstration of an Earthquake/Volcano



All earthquakes are not the alike. Some release more energy than others. Some are more destructive than others. The strength of an earthquake can be measured by the energy it releases or by the destruction it produces.





In 1935, an American scientist name Charles Richter developed a way of comparing the strengths of earthquakes. His invention is called the <u>Richter Scale</u>.



Rich	nter Scale
0-2	Not felt by people, only recorded by seismometers
2-3	Felt by few people, no building damage, feels like the vibrations from a large truck passing by
3-4	Felt by many people, ceiling lights may swing, objects may rattle
4-5	Most people feel it, walls crack, indoor objects may shake or fall, windows may break
5-6	Everyone feels it, furniture moves
6-7	Some building collapse, widespread shaking
7-8	Buildings can be destroyed, widespread damage, buildings knocked off foundations
8+	Total destruction of buildings, bridges, and roads, severe damage, few structures left standing

The Richter scale has the numbers 1 through 9. Number 1 is the weakest earthquake, and number 9 is the strongest.





Tsunamis: A tsunami is a giant ocean wave caused by an undersea earthquake.



When an earthquake occurs on the ocean floor, it releases a lot of energy. The energy travels through the water and produces a small wave. The wave moves outward in all directions.



Far out at sea, the wave may be less than a meter tall. But as it nears land, it piles up into a huge, tall wave. When it hits the shore, it may be more than 20 meters tall.





Although these volcanoes, earthquakes, and tsunamis are a never ending occurrence, it has not stopped people from visiting the beautiful oceans of Japan.

