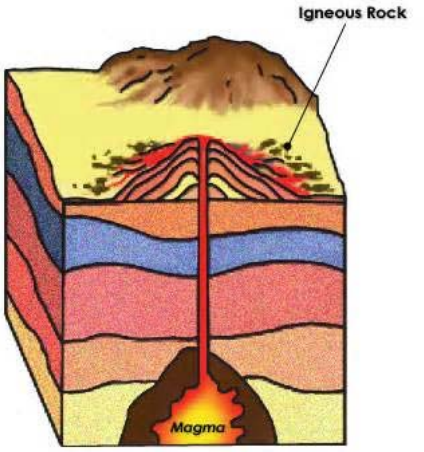
Name _____



Formation of Igneous Rock

The Fiery Birth of Igneous Rocks: Unraveling the Magma Magic

Have you ever wondered how those stunning volcanic mountains, like Mount Vesuvius or Mount Fuji, came to be? Well, the answer lies in the formation of igneous rocks, and it's a fascinating story of molten rock and geological forces. Let's dive into the fiery world of igneous rocks and discover how they are formed!

How Are Igneous Rocks Formed?

Igneous rocks are born from the fiery depths of the Earth, where temperatures soar and rocks melt into a red-hot liquid called magma. But how does this magma turn into solid rock that we can touch and see on the surface? Let's explore the journey step by step.

1. Magma Formation

Our story begins deep within the Earth, where temperatures rise as you descend into the planet's layers. The Earth's mantle, which lies beneath the crust, is exceptionally hot. In these scorching conditions, rocks from the mantle can start to melt, becoming molten rock called magma.

2. Rising to the Surface

Magma is less dense than the surrounding solid rock, so it has a natural tendency to rise upward. It moves through cracks and fractures in the Earth's crust, seeking an escape route to the surface. Sometimes, this journey is slow and steady, while at other times, it can be explosive, leading to volcanic eruptions.

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3. Cooling and Solidification

As magma gets closer to the Earth's surface, it begins to cool down. The temperature difference causes the magma to lose its heat energy and slowly solidify. Think of it like a bowl of hot soup cooling down as it sits on your kitchen table. As it cools, the magma transforms into solid rock.

Types of Igneous Rocks

The way magma cools determines the type of igneous rock that forms:

If magma cools quickly on the Earth's surface, it forms volcanic igneous rocks, like basalt. These rocks have fine-grained textures because they didn't have much time to crystallize.

If magma cools slowly beneath the Earth's surface, it forms intrusive igneous rocks, like granite. These rocks have coarse-grained textures because they had more time to crystallize.

The Role of Volcanoes

Volcanoes play a crucial role in the formation of igneous rocks. When magma erupts onto the surface during a volcanic eruption, it cools rapidly in the open air, creating volcanic rocks. The lava flows and ash from these eruptions build up over time, forming mountains.

Igneous Rocks Around the World

Igneous rocks can be found all over the world. Volcanic islands, like Hawaii, are primarily made up of volcanic igneous rocks. In contrast, famous mountain ranges, such as the Rocky Mountains or the Andes, contain a significant amount of intrusive igneous rocks.