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Science

Quarter 3 – Module 2:
Volcanic Eruption

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Science

Quarter 3 – Module 2:
Volcanic Eruption

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Introductory Message

This Self-Learning Module (SLM) is prepared so that you, our dear learners, can continue your studies and learn while at home. Activities, questions, directions, exercises, and discussions are carefully stated for you to understand each lesson.

Each SLM is composed of different parts. Each part shall guide you step-by-step as you discover and understand the lesson prepared for you.

Pre-tests are provided to measure your prior knowledge on lessons in each SLM. This will tell you if you need to proceed on completing this module or if you need to ask your facilitator or your teacher's assistance for better understanding of the lesson. At the end of each module, you need to answer the post-test to self-check your learning. Answer keys are provided for each activity and test. We trust that you will be honest in using these.

In addition to the material in the main text, Notes to the Teacher are also provided to our facilitators and parents for strategies and reminders on how they can best help you on your home-based learning.

Please use this module with care. Do not put unnecessary marks on any part of this SLM. Use a separate sheet of paper in answering the exercises and tests. And read the instructions carefully before performing each task.

If you have any questions in using this SLM or any difficulty in answering the tasks in this module, do not hesitate to consult your teacher or facilitator.

Thank you.

What I Need to Know

This module was designed and written with you in mind. It is here to help you master the volcanic eruption. It emphasizes how volcanic eruptions occur in a certain area.

The module focuses on achieving this learning competency:

Explain what happens when volcanoes erupt. (S9ES-IIIb-27)

After going through this module, you are expected to:

1. describe the formation and composition of magma and explain the effects of temperature and composition and its viscosity;
2. relate the characteristics of magma with the type of volcanic eruption;
3. explain the process of volcanic eruption; and,
4. enumerate the material emissions of volcano and describe the effects of material emissions from volcanoes to humans and other living things.

What I Know

Directions: Read each question carefully then choose the letter of the best answer. Write your answer on a separate sheet of paper.

1. What term is used to describe the molten material deep inside the Earth?
   A. hot spot
   B. lava
   C. magma
   D. volcano

2. Which is NOT a contributor in the formation of magma?
   A. pressure
   B. composition
   C. temperature
   D. distance from the core

3. Viscosity is a measure of a material's resistance to flow. Which affects the viscosity of magma?
   A. temperature of the magma
   B. chemical composition of the magma
   C. presence of dissolved gases in the magma
   D. all of the choices

4. Which serves as the driving force that causes magma to explode to the surface?
   A. the gravity in the core
   B. the mass of the magma
   C. the silica in the magma
   D. the dissolved gases trapped in the magma

5. Magma is a mixture of minerals and volcanic gases. Which describes the composition of gases in magma?
   A. Mostly H_2O (water vapor) & some CO_2 (carbon dioxide)
   B. Major amounts of Sulfur, Chlorine, and Fluorine gases
   C. Mostly CO_2 (carbon dioxide) and few H_2O (water vapor)
   D. Mostly SO_2 (sulfur dioxide) and some H_2O (water vapor)

6. What are the characteristics of magma that create explosive eruptions?
   A. high gas content and high viscosity
   B. low gas content and low viscosity
   C. high gas content and low viscosity
   D. low gas content and high viscosity

7. What would magma with the highest viscosity contain?
   A. a high silica content and high temperature.
   B. a high silica content and low temperature.
   C. a low silica content and high temperature.
   D. a low silica content and low temperature.

8. At depth in the Earth, nearly all magmas contain gas dissolved in liquid. When do the gases form into a separate vapor phase?
   A. When volume of gas is reduced as pressure increased.
   B. When volume of gas expands as pressure is increased.
   C. When pressure is decreased as magma rises toward the surface of the Earth.
   D. When pressure is increased as magma rises toward the surface of the Earth.

9. Which type of volcano ejects a basaltic magma?

   A. Cinder cone B. Composite C. Shield D. Stratovolcanoes

10. In magma formation, what should be the temperature and pressure requirements?
   A. High temperature and high pressure
   B. Low temperature and low pressure
   C. High temperature and low pressure
   D. High pressure and low temperature

For questions 11-12, refer to the table below:

Table No.1: Magma Composition and Characteristics.

Composition	**Source Material**	**Viscosity**	**Gas Content**	**Silica content**	**Location of formation**
Basaltic magma	Upper mantle	Low	1-2 %	About 50 %	Both oceanic and continental
Andesitic magma	Oceanic crust and oceanic sediments	Intermediate	3-4 %	About 60 %	Continental margins associated with subduction zones
Rhyolitic magma	Continental crust	High	4-6 %	About 70 %	Continental crust

11. Which of the following statements correctly compares the three magma compositions based on the table above?

   I. Rhyolitic magma has the highest gas content and highest silica content and the most viscous magma composition.
   II. Basaltic magma has the lowest gas content, but the highest silica content and the least viscous magma composition.
   III. Andesitic magma has greater silica and gas content than basaltic magma but less than the silica and gas content of rhyolitic magma.

   A. I, II and III
   B. I and II
   C. II and III
   D. I and III

12. Based on the given data about the gas and silica contents of magma, what would be the correct arrangement of the three types of magma composition if you are to arrange them in an increasing order of explosiveness?
    A. Basaltic, Andesitic, Rhyolitic
    B. Andesitic, Rhyolitic, Basaltic
    C. Rhyolitic, Andesitic, Basaltic
    D. Basaltic, Rhyolitic, Andesitic

13. Based on the figure below, use numbers 1-5 to sequence the process on how magma is formed which lead to volcanic eruptions.

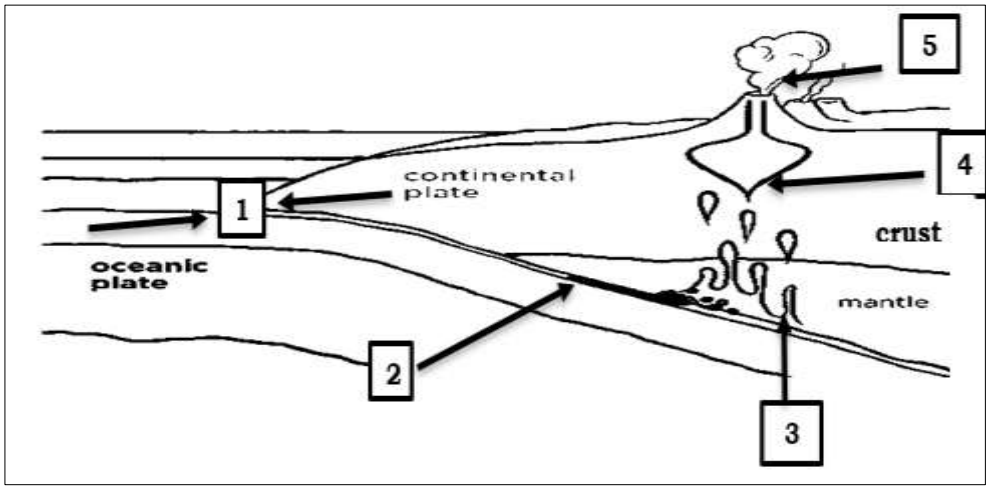


Figure 1. Formation of Magma
Illustrated by: Ellissa Christie Kaye L. Murillo

_____ The magma rises and collects in chambers within the crust. As magma fills the chamber, pressure grows until the pressure gets high enough.

_____ Oceanic plates sink into the mantle below. As the oceanic plate sinks, fluid is squeezed out of it.

_____ When the pressure gets high enough, the magma can break through the crust and spew out in a volcanic eruption.

_____ The fluid flows up into the mantle rock above and changes its chemistry, causing it to melt and formation of magma.

_____ A denser oceanic plate collides with a continental plate.

14. Which gas from erupting volcano causes Global Warming?
    A. Carbon dioxide
    B. Sulfur dioxide
    C. Methane gas
    D. Hydrogen sulfide

15. During the eruption of volcano, different dissolved gases and dust particles were released into the atmosphere. What might be the effect of these materials on the environment and on the living things?
    A. Global Warming
    B. Respiratory illness
    C. Disruption of aircraft travel
    D. All of the choices

Lesson 1 Earth and Space: Volcanic Eruption

In module 1, you learned about the structures, parts, classification and activity of the volcano. After going through this module, you will discover the phenomena behind the eruption of volcano.

Here are some of the key questions for you to think about after finishing this module:

1. What is the composition of magma and how is it formed?
2. How do temperature and composition of magma affect viscosity?
3. What happens when there is a volcanic eruption?
4. What are the materials emitted during a volcanic eruption and how do these materials affect human beings and other living things?

What's In

AMAZING FACT:

There is a volcano on Mars called Olympus Mons which rises nearly 25 kilometers above the Martian surface. It is almost 3 times as tall as Mount Everest.

Let us review the concepts learned from the previous module by answering the questions written below. Write your answer on a separate sheet of paper.

Guide Questions:

1. What is a volcano?
2. What are the different types of volcano?
3. How is a volcano formed?
4. What is the difference between active and inactive volcano?
5. How will you differentiate the types of volcanic eruption?

What's New

Facts About Volcanoes

- More than 80% of the Earth's surface is volcanic in origin.
- Mountains and seafloors were formed by volcanic eruptions.
- Volcanoes' gaseous emission formed the Earth's atmosphere.
- The danger zone around volcano covers about 32.187 km radius.
- Volcanic lightning is caused by friction between the ash particles moving rapidly to the surface.
- Volcanic eruption can trigger earthquake, mudflow, rock falls, flash floods and tsunamis.
- Volcanic ash is a mixture of rock fragments, glass particles, and minerals thrown out from erupting volcano. It is acidic and has a sharp adges.

Facts About Taal Volcano Eruption in 2020

- Location: Batangas (Taal)
- Status: Second most active volcano
- Features: Caldera (Has water/lake within a lake)
- Eruption Started on: January 12, 2020
  Ended on: January 22, 2020
- Last eruption: 1977 (43years ago)
- Type of eruption: Phreatomagmatic (main crater) has water in it.

What is It

MAGMA AND ITS COMPOSITION

Magma is the molten rock which lies underneath volcanoes. It is formed at destructive plate boundaries and is rich in silicate. These are products of crustal rocks (which are richer in silica than the rock of the mantle).

Crystal Content

Some magmas begin to crystallize as they reach the surface. High temperature minerals are formed as magma slowly cools down followed by low temperature minerals. Magma always contains crystals of high temperature.

Viscosity

The magma's silica content affects its viscosity, the resistance of the fluid to flow. Low viscosity magma has low silica content and is composed mostly of basalt. While magma with rhyolite is viscous or high in viscosity due to its high silica

content. Temperature also affects the viscosity of the magma. Magma with high temperatures have low viscosity while magma with low temperatures have high viscosity.

Temperature

Temperature of magma reflects the melting points of their mineral components. Magmas formed by partial melting of mantle rocks are much hotter over 1200ºC for some basalts. Rhyolites that reached the surface have temperature of less than 900ºC, and have a much higher viscosity.

Volatile Content

Magma contains small amounts of dissolved gas (water vapor, Carbon dioxide, etc.) which is released as pressure is removed. Magmas formed by melting of mantle rocks have generally low volatile contents, but those formed by partial melting of crustal rocks are often volatile-rich. The degree of concentrations of different volcanic gases are different from one volcano to the other. Water vapor is the most abundant volcanic gas, followed by carbon dioxide and sulfur dioxide. There are other volcanic gases such as hydrogen sulfide, hydrogen chloride, and hydrogen fluoride. Trace gases are also found in volcanic emissions and these are: hydrogen, carbon monoxide, and volatile metal chloride. The movement of this volatile content is affected by the viscosity of the magma. As the gas continues to precipitate from the high viscosity magma, the bubbles will be prevented from rapidly breaking out resulting to the increase in pressure on the magma column. This causes the volcano to erupt explosively.

CLASSIFICATIONS OF MAGMA

Magma can be classified into basaltic or mafic, intermediate or andesitic and granitic or felsic.

Table 1: Magma composition and characteristics

Composition	Viscosity	Temperature	Gas Content	Silica content	Explosiveness	Location of formation
Basaltic magma	Low	1000°C - 1200°C	1-2 %	About 50 %	Least explosive	Both oceanic and continental
Andesitic magma	Intermediate	900°C - 1000°C	3-4 %	About 60 %	Intermediate	Continental margins associated with subduction zones
Rhyolitic magma	High	750°C - 900°C	4-6 %	About 70 %	Most explosive	Continental crust

PROCESS OF VOLCANIC ERUPTION

High temperature inside the Earth melts the solid rocks in the mantle and turns it into a thick molten mixture commonly known as magma. The continuous melting of solid rocks and accumulation of additional magma push it to the vent of a volcano, called magma chamber. Magma contains dissolved gases mostly water vapor, carbon dioxide, and sulfur dioxide. As dissolved gases are released from the magma, bubbles

will begin to form through the process called vesiculation. This can occur by decompression or crystallization. In decompression, the confining pressure is lowered when magma rises which promotes bubble formation. This process is similar to bubble formation in soda bottles when opened. In the process of crystallization of anhydrous minerals, the vapor pressure of the residual liquid of the cooling magma increases leading to vesiculation. Bubbles frozen in a porous or frothy volcanic rock are called vesicles. Both decompression and crystallization can trigger an explosive eruption.

As the magma reaches the Earth's surface it explodes due to the presence of dissolved gases. The type of explosion of a volcano is dependent on the composition of magma.

VOLCANIC HAZARDS AND THEIR EFFECTS

Volcanic hazards are phenomena arising from volcanic activity that poses potential threat to people and property. During major explosive eruptions, large amounts of volcanic gas, aerosol droplets, and ash are injected into the stratosphere. Tephra or fragmented volcanic debris are violently ejected into the atmosphere and can extend to tens of kilometers above. Carbon dioxide, a greenhouse gas, is also dispersed into the atmosphere that leads to global warming. On the other hand, sulfur dioxide can cause global cooling, ozone destruction and air pollution. Below is a list of volcanic hazards common in the Philippine active volcanoes.

- Ash fall – pulverized rocks, sand, gritty and harsh glasses shoot out in the air by volcano.
- Mud flow – mixture of water, molten rocks and debris flowing down from the side of volcano to the ground. It is also called as Lahar.
- Lava flow – streams of molten rocks and other fragmented materials emitted by erupting volcano.
- Pyroclastic flow – fast moving hot mixtures of gas, ash, and molten rocks moving away from the volcano to the ground.

VOLCANIC ERUPTION DANGER

Taro Taylor, "Explosions", March 19, 2008, https://commons.wikimedia.org/wiki/File:Explosions_@_Mount_Tarvurvur.jpg

ASH FALL
Towns and Farms covered by tons of ash.

Alan Bowring, "Mudflow beneath Craig", July 18, 2009, https://commons.wikimedia.org/wiki/File:Mudflow_beneath_Craig_Pwllfa_-_geograph.org.uk_-_1405853.jpg

MUD FLOW
Ash and rain form a catastrophic river of mud.

Janice Hickman, "Lava flows through Royal Gardens", September 18, 2007, https://commons.wikimedia.org/wiki/File:Lava_flows_through_Royal_Gardens_-_panoramio.jpg

LAVA FLOW
Temperature between 800 to 1,200 degree Celsius.

Edgar El, "Pyroclastic flow poured into the sea", March 4, 2012, https://commons.wikimedia.org/wiki/File:2012-03-04_-_Pyroclastic_flows_poured_into_the_sea_-_panoramio.jpg

PYROCLASTIC FLOW
A cloud of a hot gas blasts down to volcano's sides at 200 km/h.

Figure 2. Volcanic Eruption Danger
Source: Wikimedia commons

But why do people live near volcanoes?

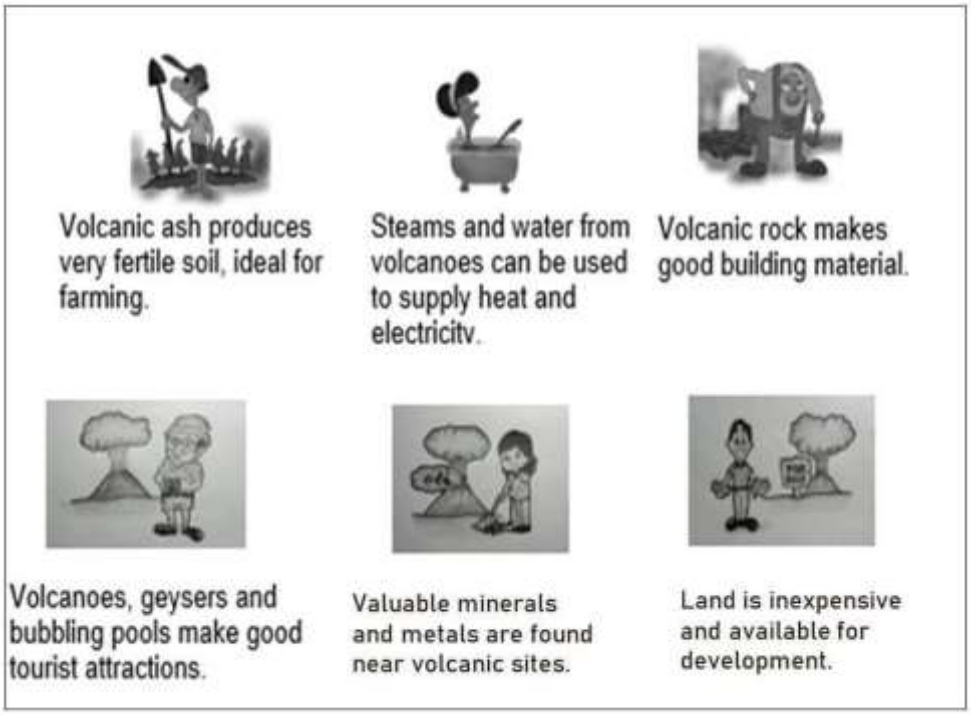


Figure 3. Reasons why people live nearby volcanoes
Illustrated by: Ellissa Christie Kaye L. Murillo

The following are list of the **Precautionary measures** that can be practiced to lessen the danger before, during, and after a volcanic eruption:

BEFORE

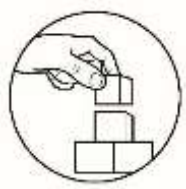
- Know the facts about volcanoes in your area like danger zones and history of eruptions.
- Know the location of designated evacuation site.
- Listen to the announcement of your authorities.
- Stock clean and safe drinking water and other food supplies.

DURING

- Stay inside your homes and keep doors and windows close.
- Secure you water and food supplies.
- Wear mask, eye googles or face shield if you need to go out.
- Do not go near the danger zones.
- Listen to the news via television or radio devices.
- Obey the evacuation orders of the authorities.

AFTER

- Assess the situation if it is safe to go out.
- Check the perimeter of your house for any possible damage.
- Clean and remove the volcanic ashes in the roof, gutters, and windows.
- Replace contaminated water and food supplies.
- Stay updated in news and announcements from your authorities.



What's More

ACTIVITY 1: TRUE or FALSE

Write **TRUE** if the statement is correct and **FALSE** if the statement is incorrect and **rewrite** the statement to make it correct. Write your answer on a separate sheet of paper.

_____ 1. Magma is an extremely hot fluid or semi fluid materials found under the Earth surface.

_____ 2. Viscosity refers to the materials' resistance to flow. The more viscous the material, the lesser is the resistance to flow.

_____ 3. Basaltic to andesitic magma is non-explosive while andesitic to rhyolitic magma is explosive.

_____ 4. Magma with high temperature has high viscosity, while magma with low temperature has low viscosity.

_____ 5. Composition, temperature, and pressure are the factors that contribute to the formation of magma.

ACTIVITY 2: FINDING THE SEQUENCE!

Analyze the process of volcanic eruption. Arrange the process of volcanic eruption into correct order using numbers 1-5. Write your answer and copy the statement on a separate sheet of paper.

A.	○ Magma moves upward and accumulates in an area called magma chamber.
B.	○ Gas-charged magma reaches the surface and explode. The presence of dissolved gases enables the molten materials to explode.

C.	○ More highly gas charged magma reaches the surface and the volcano explodes.
D.	○ Volcanic activities include the melting of solid rocks in the mantle which became thick molten materials called magma.
E.	○ High temperature and pressure push magma through the openings like vents and fractures. The magma then oozed out to form a lava dome but do not cause any explosive eruption.

Answer the following questions:

1.List down at least two manifestations or signs that the volcano will erupt.

_____

_____

2. Give one positive and one negative effects of volcanic eruption**.**

_____

_____

ACTIVITY 3: VOLCANIC ERUPTIONS: CAUSE AND EFFECT

List down the effects of the following materials on human and other living things. Write your answers on a separate sheet of paper.

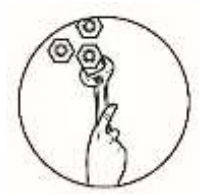
CAUSE Materials Ejected from Volcano	**EFFECTS** on human and other living things
1. Lava	1.
2. Steam	2.
3. Fragmented debris (Tephra)	3.
4. Dissolved gases	4.
5. Volcanic Ash	5.

What I Have Learned

Pick out the word/s from the list below to complete the statement. Write your answer on a separate sheet of paper.

Vesiculation	volcano	decompression	water vapor
tephra	respiratory	dissolved gases	magma
crystallization	viscosity	basaltic	andesitic
lava	carbon dioxide	rhyolitic	sulfur dioxide

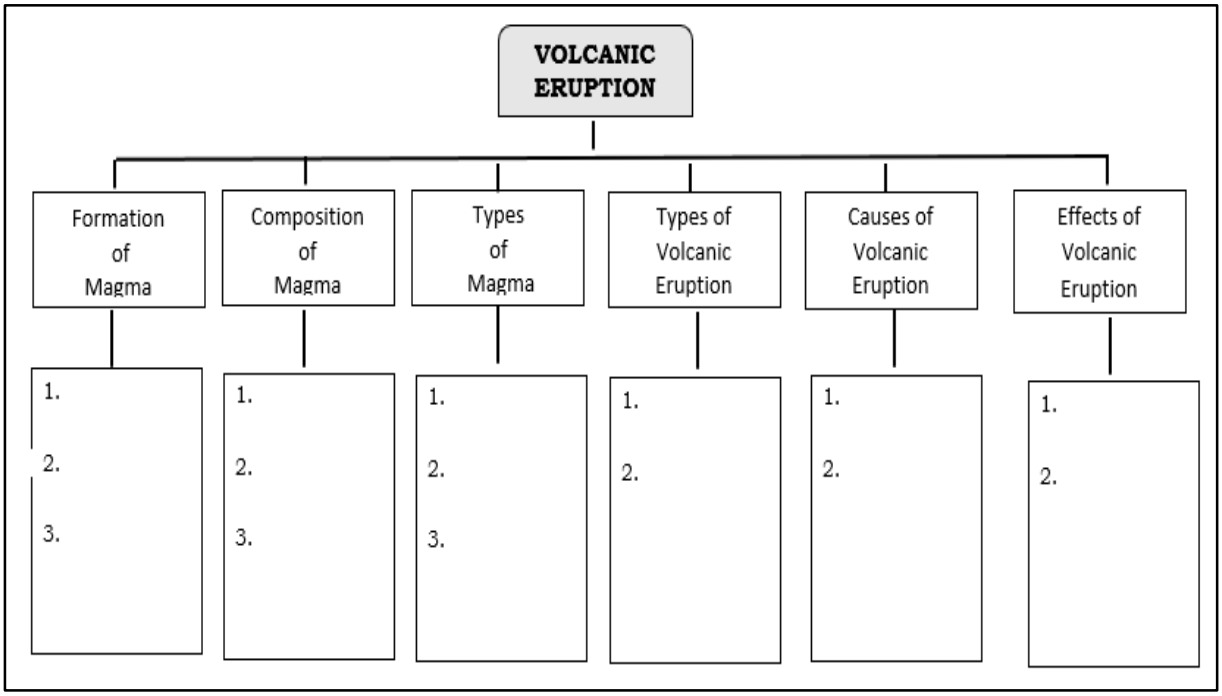
The opening in the Earth's crust that allows molten rocks, debris, and gases to escape to the surface is called 1._____. Molten materials or 2._____ is composed of minerals, fragments of rocks and dissolved gases such water vapor, carbon dioxide and sulfur dioxide. When these molten materials have reached the Earth's surface, it is now called 3. _____. Due to high temperature, the rocks in the mantle partially melting, thus, forming the magma. Explosive eruption is triggered by the formation of bubbles which is referred to as 4. _____ and can be induced by 5._____,wherein pressure is reduced and by 6. _____ which increases vapor pressure. The amount of 7. _____ in the magma contributes to the driving force for explosion and eruptions. 8. _____is one of the gases in magma that is present in large amounts. Also, the nature of volcanic eruptions is related to magma's 9. _____ which depends on temperature and composition of magma. There are 3 types of magma depending on their temperature, composition, and viscosity namely: 10. _____ 11. _____ 12._____. Volcanic eruption affects not only the environment but also the human being. When large amounts of fragmented rocks or debris called 13._____ are released during the volcanic eruption, it can lead to deaths due to collapse of roofs. Ashes dispersed onto the surrounding, when inhaled can cause 14. _____ diseases for human. 15. _____, a greenhouse gas, traps the heat from the lower atmosphere that leads to global warming and 16. _____ can cause global cooling and air pollution.



What I Can Do

LESSON'S MAP

Below are terms associated with volcanic eruptions. Fill out the numbered space connected to them with their appropriate descriptions. Write your answers on a separate sheet of paper.



Assessment

Directions: Choose the letter of the best answer. Write your answers on a separate sheet of paper.

1. Which are needed in the formation of magma?
   A. composition, pressure, temperature
   B. composition, pressure, density
   C. pressure, temperature, distance from the surface
   D. pressure, temperature, volume
2. If a volcano's magma is high in silica, how will you describe to its volcanic activity?
   A. It will erupt quietly
   B. It will remain dormant
   C. It will erupt explosively
   D. It will produce dark-colored lava
3. Viscosity is a measure of a material's resistance to flow. Which **DOES NOT** affect the viscosity of magma?
   A. location of magma
   B. temperature of the magma
   C. chemical composition of the magma
   D. presence of dissolved gases in the magma
4. Which is **TRUE** about the composition of magma?
   A. It contains ash, dust, and lava
   B. It contains dissolved gases only.
   C. It contains fragmented rocks only.
   D. It contains both dissolved gases and fragmented materials.
5. Several kilometers from a volcano, a geologist observes an old lava flow made up of dark- colored basalt rock. The geologist infers that the lava must have had_____.
   A. low viscosity
   B. high viscosity
   C. medium viscosity
   D. high silica content
6. Which type of lava will offer the least resistance to flow?
   A. Andesitic
   B. Basaltic
   C. Rhyolitic
   D. Basaltic and Rhyolitic
7. The magma in the chamber of a volcano has a very high amount of silica. If the volcano would erupt, which might happen?
   A. The lava would flow very slowly
   B. The volcano would erupt violently
   C. The volcano would erupt non-explosively
   D. There would be a build-up of pressure below the crater
8. Which is **NOT** a common gas in magma?
   A. methane gas
   B. carbon dioxide
   C. sulfur dioxide
   D. water vapor

For question 9 - 10, refer to the table below:

Magma Type	Chemical Composition	Temperature	Viscosity	Gas Content
Basaltic	45-55 SiO_2 %, high in Fe, Mg, Ca, low in K, Na	1000 - 1200 ^oC	Low	Low
Andesitic	55-65 SiO_2 %, intermediate in Fe, Mg, Ca, Na, K	800 - 1000 ^oC	Intermediate	Intermediate
Rhyolitic	65-75 SiO_2 %, low in Fe, Mg, Ca, high in K, Na.	650 - 800 ^oC	High	High

9. Which type of magma has the lowest chemical and gas content?
   A. Andesitic
   B. Basaltic
   C. Rhyolitic
   D. None of the choices
10. Which statement is **NOT** true based from the given data in the table?
   I. Higher silica content allows magma to trap more gas.
   II. Viscosity increases with increasing temperature of the magma.
   III. Viscosity decreases with increasing SiO_2 concentration in the magma.
   IV. The more silica in the magma, the more viscous or resistant to flow it is.
   A. I and II
   B. I and III
   C. III and IV
   D. II and III
11. Which correctly shows the types of magma in an increasing order of silica and gas content?
   A. Andesitic, Basaltic, Rhyolitic
   B. Andesitic, Rhyolitic, Basaltic
   C. Basaltic, Andesitic, Rhyolitic
   D. Rhyolitic, Andesitic, Basaltic
12. What provides the force that causes magma to erupt to the surface?
   A. the gravity in the lithosphere
   B. the density of the magma
   C. the silica in the magma
   D. the dissolved gases trapped in the magma
13. What can be inferred about the silica content and temperature of magma if it has a low viscosity?
   A. a high silica content and high temperature
   B. a high silica content and low temperature
   C. a low silica content and high temperature
   D. a low silica content and low temperature

14. When compared to andesitic lavas, what characteristics of basaltic lavas will be shown?
    A. lower in viscosity and it retains dissolved gases.
    B. higher in viscosity and it retains dissolved gases.
    C. lower in viscosity and it easily releases dissolved gases.
    D. higher in viscosity but it easily releases dissolved gases.
15. Water vapor is one of the dissolved gases released by erupting volcano. It is present in large amounts, and is considered harmless. When will it become harmful to the living things and environment?
    A. when it is in the lower atmosphere
    B. when it is in the middle atmosphere
    C. when it is in the upper atmosphere
    D. when it combines with other dissolved gases

Additional Activities

MAGIC SQUARE

Read and identify the term described in each number. Write the number of the definition or description in the square with appropriate term. Check your answers by adding up the numbers to see if the sum of all rows, both across and down add up the same magic number.

magma	tephra	rhyolitic	basaltic
volatile	temperature	eruption	hot spring
geysers	effusive	steam	pressure
hot spots	viscosity	lava	andesitic

1. Hot fluid or semifluid material below or within the earth's crust.
2. Molten materials given off when a volcano erupts.
3. It refers to the resistance of fluids to flow.

4. Magma produced from direct melting of mantle. It has low silicate content and rich in iron and magnesium.

5. It refers to continuous physical force exerted on or against an object by something in contact with it.

6. The measure of hotness and coldness of an object.

7. Volcanic _____ refers to throwing out of molten materials, steam other materials from the volcano.

8. A hot spring in which water intermittently boils, sending a tall column of water and steam into the air.

9. An opening on the ground that contains water with high temperature compared to its surrounding area.

10. _____ eruption where magma flows out from inside the Earth to the surface and onto the ground.

11. The gaseous phase of water.

12. It refers to a substance that evaporates quickly.

13. An area in the mantle where rocks melt to form magma.

14. Silicate rich magma with highest viscosity.

15. Particles ejected from erupting volcano that consists of fragmented rocks.

16. _____ magma refers to the product of partial melting of mantle. It has an average content of materials and temperature.

Answer Key

What's More
Activity 1
TRUE

FALSE Viscosity refers to the material' resistance to flow. The more viscous the material, the greater is the resistance to flow.

TRUE

FALSE Magma with high temperature has low viscosity, while magma with low temperature has high viscosity.

TRUE

What I Know

1. C
2. D
3. D
4. D
5. A
6. A
7. B
8. C
9. B
10. A
11. D
12. A
13. 4,2,5,3,1
14. A
15. D

Activity 3

CAUSE Materials Ejected from Volcano	EFFECTS on human and other living things
1. Lava	Death of plants and animals
2. Steam	Crop failure, burns due to high temperature
3. Fragmented debris (Tephra)	Damage on vegetation, suffocation. Respiratory illness
4. Dissolved gases	Difficulty in breathing, respiratory illness
5. Volcanic Ash	Eyes and skin itchiness and irritation

Activity 2

A. 2
B. 4
C. 5
D. 1
E. 3

What I Have Learned

1. Volcano
2. Magma
3. Lava
4. Vesiculation
5. Decompression
6. Crystallization
7. Dissolved Gases
8. Water vapor
9. Viscosity
10. Basaltic
11. Andesitic
12. Rhyolitic
13. Tephra
14. Respiratory
15. Carbon dioxide
16. Sulfur dioxide

Additional Activity

magma 11	tephra 15	rhyolitic 14	basaltic 4
volatile 12	temperature 6	eruption 7	hot spring 9
geysers 8	effusive 10	steam 11	pressure 5
hot spots 13	viscosity 3	lava 2	andesitic 16

Assessment

1. A
2. C
3. A
4. D
5. A
6. B
7. C
8. A
9. B
10. D
11. C
12. D
13. C
14. C
15. D

What I Can Do

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