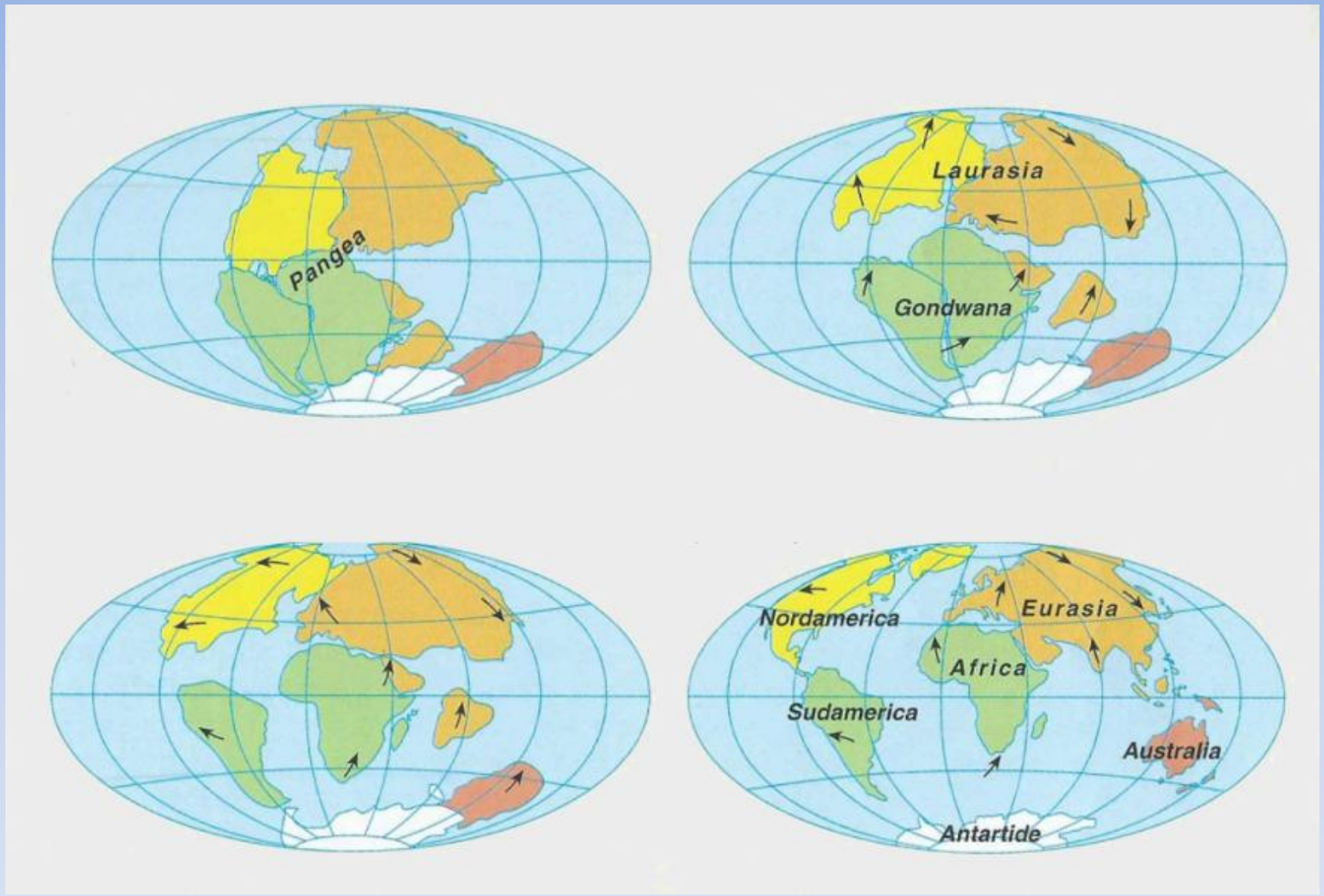
VOLCANOES AND EARTHQUAKES

WHAT IS IT?

This is the PANGEA

In the beginning all the continents were joined together.



Then the continents slowly started to separate and continue to move today.

There are about **twenty plates** along the surface of the Earth.

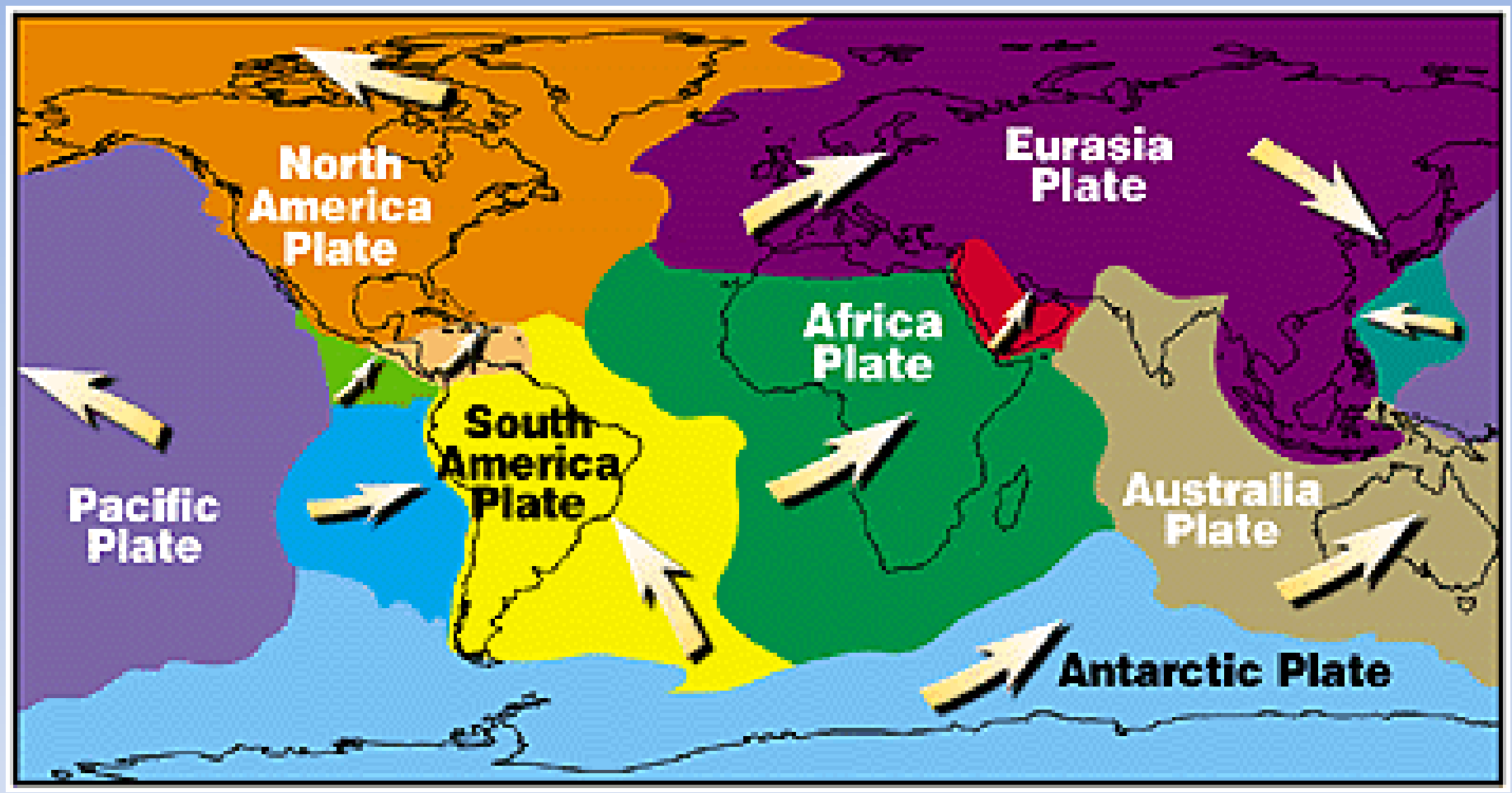
They are **huge pieces of rock** like pieces of a puzzle, **which make up the Earth's crust**.

The plates **move continuously** and slowly colliding and rubbing against each other.

They move in **different directions and at different speeds.**

Sometimes the plates crash together, push or move past each other.

When this happens, the results commonly are **earthquakes**.



This map shows the major tectonic plates that make up the Earth's crust and the directions in which they are moving-

What is an earthquake?

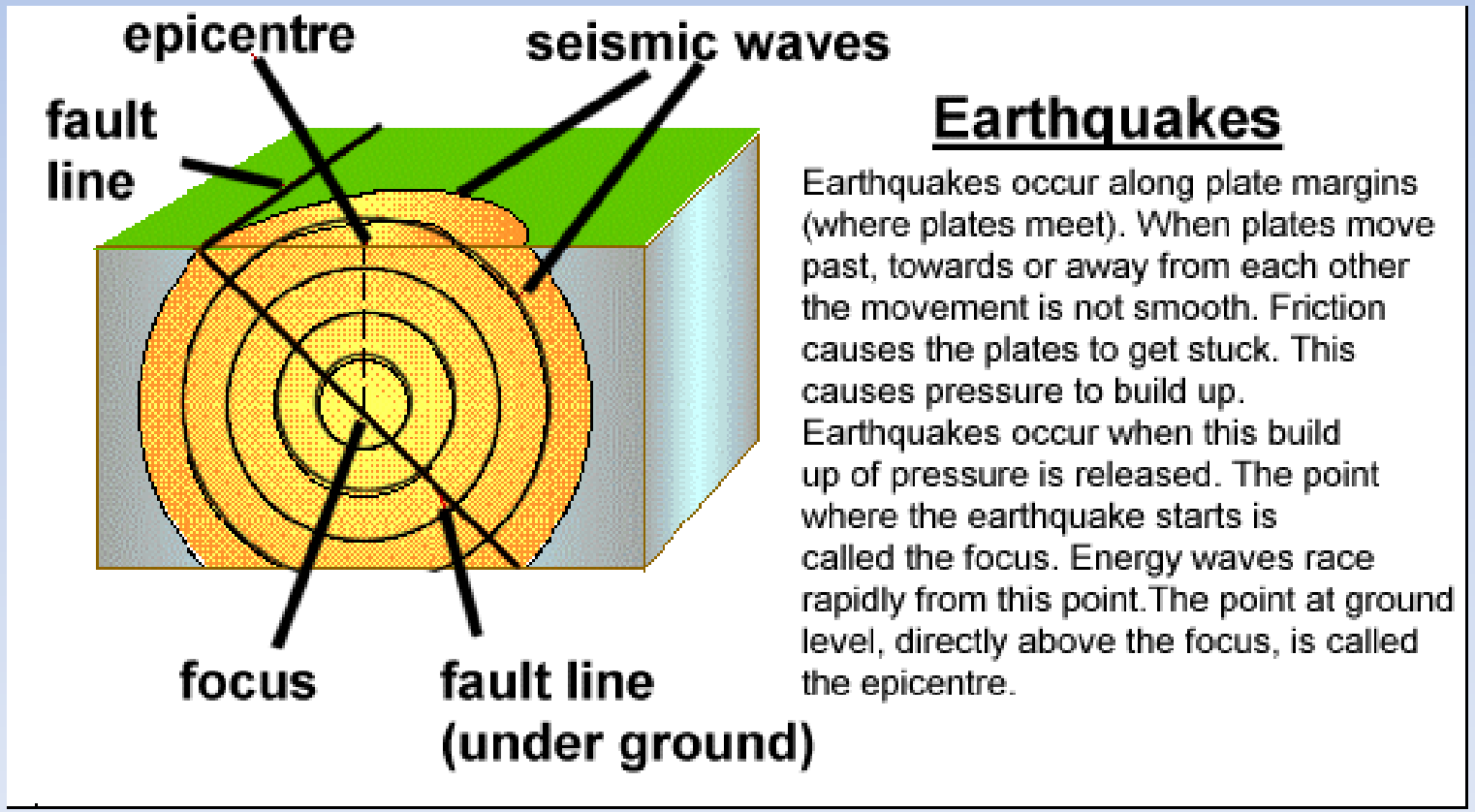
It's a sudden shock, shaking or rolling of the Earth's surface.

An earthquake (also known as a *quake* or *tremor*) is the result of a sudden release of energy in the Earth's crust that creates seismic waves.

Hypocentre and Epicentre

An earthquake's point of initial rupture is called its focus or hypocentre.

The epicentre is the point at ground level directly above the hypocentre.



Effects of earthquakes

1-Shaking and ground rupture

Damaged buildings in Port-au-Prince,Haiti, January 2010.

2- ***Fires***

Fires of the 1906 San Francisco earthquake

3- Tsunami

December 23rd, 2018

Strait of the Sunda, which separates the Indonesian islands of Java and Sumatra

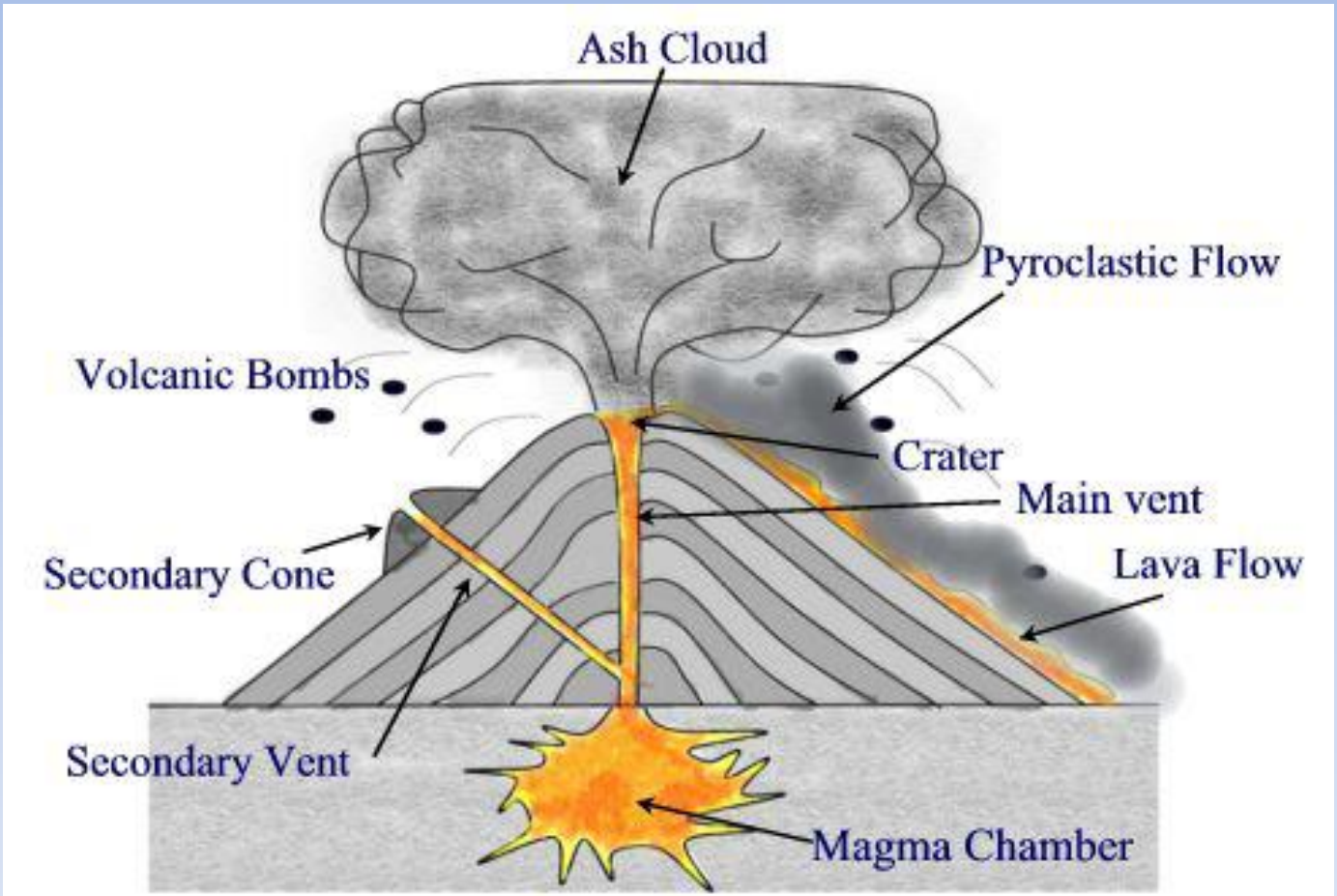
4 - Geysers

They are springs that throw boiling water into the air, phenomena of secondary volcanism.

Earthquakes can also trigger...

volcanic activity

Earthquakes often occur in volcanic regions and are caused, both by tectonic faults and the movement of magma in volcanoes.



Main Features of a Volcano

What is a volcano?

A volcano is a rupture of the Earth's crust where the magma comes out from the **magma chamber,** changing into lava. The lava cools off and makes origin to the volcanic edifice. At the surface it erupts to form lava flows and ash deposits, gases and rock shoot up through the opening and spill over or fill the air with lava fragments. Over time, as the volcano continues erupting, it will get bigger and bigger.

How many volcanoes are there in the world?

There are more than 500 active volcanoes on the Earth. We currently know of 80 or more which are under the oceans.

What is the largest active volcano?

The world's largest, active volcano is **Mauna Loa** in **Hawaii**. It is 13,677 feet above sea level. From its base below sea level to its summit, Mauna Loa is taller than Mount Everest. The biggest active volcano in Europe is Etna (Italy).

What is the difference between lava and magma?

Magma is liquid rock inside a volcano.
Lava is liquid rock (magma) that flows out of a volcano.

ETNA

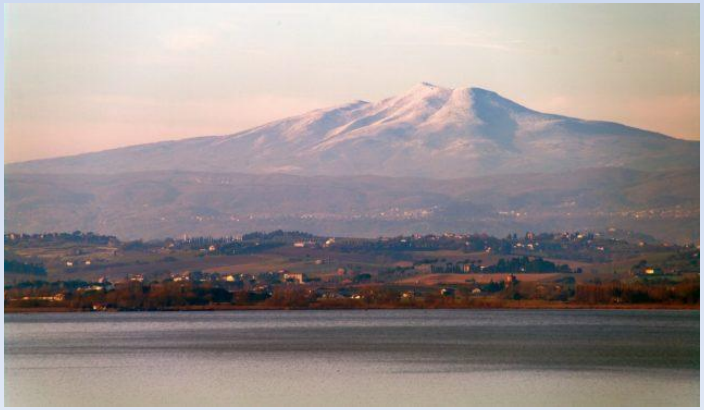
What types of volcanoes are there?

A volcano can be:

ACTIVE
that erupts regularly (STROMBOLI)

DORMANT: *it hasn't erupted for many years but there is still some activity inside (VESUVIO)*

EXTINCT: *that is no longer active (MONTE AMIATA(*



There are three basic shapes of volcano:

STRATOVOLCANOES or COMPOSITE VOLCANOES

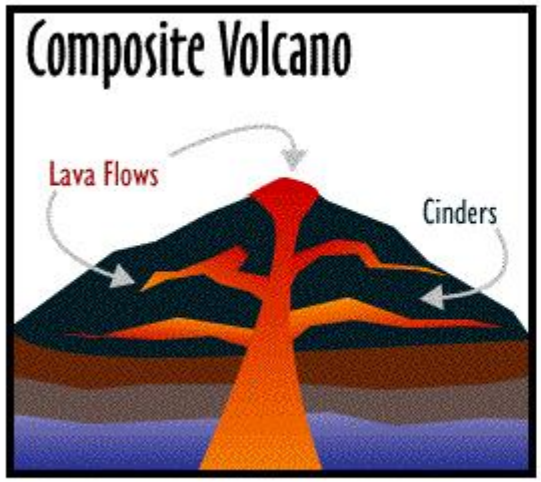
They're circular or oval they're made by explosive eruptions of pyroclastic material. They've got big bases and steep sides (VESUVIO)

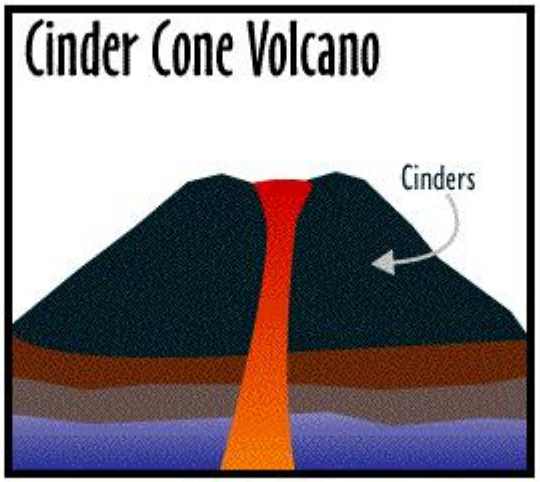
CINDER CONE VOLCANOES

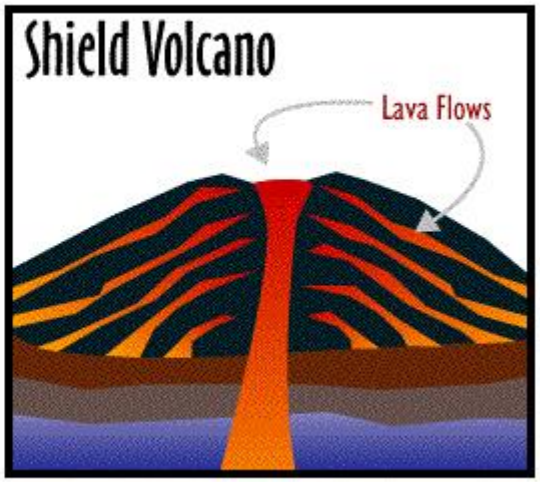
They are the simplest type of volcano with a circular or oval cone (MAUNA KEA IN HAWAII)

SHIELD VOLCANOES

They're formed by layers of basaltic lava (due to the continual eruptions) without violent explosions, because the lava is very fluid (ETNA).

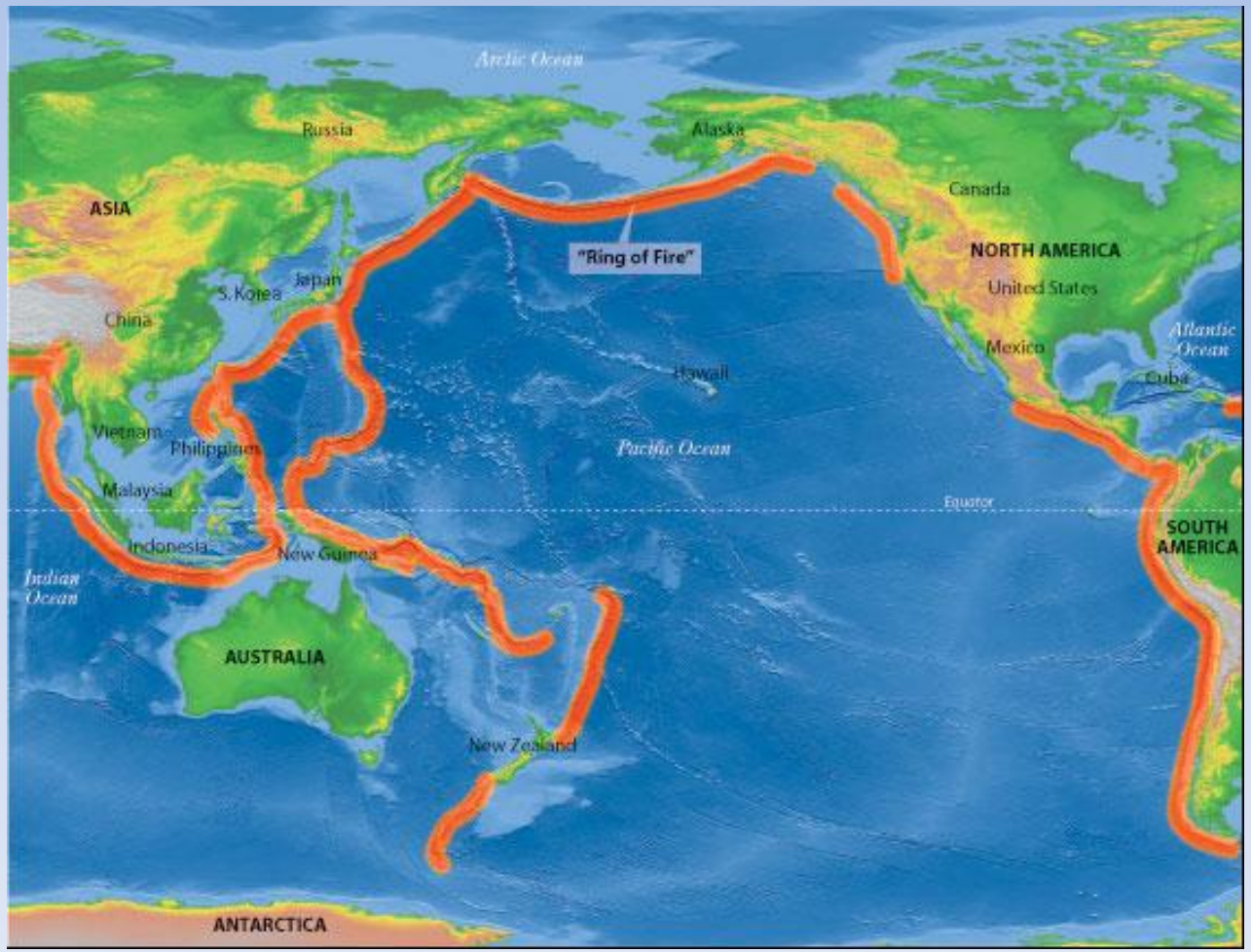






What is the Ring of Fire?

The Pacific Ring of Fire is an area of frequent earthquakes and volcanic eruptions encircling the basin of the Pacific Ocean. The Ring of Fire has 452 volcanoes and is home to over 50% of the world's active and dormant volcanoes. 90% of the world's earthquakes and 81% of the world's largest earthquakes occur along the Ring of Fire.



And now it's up to you…

CIENCE

1 2 3

Earthquakes and Tsunamis

T46 **1.** Listen and number.

The point where two tectonic plates meet is called a plate boundary, such as the San Andreas Fault in California.
When the rocks at plate boundaries collide, pressure increases and causes sudden movements of the Earth's crust. These are called earthquakes. What are they? An earthquake is a sudden movement of a plate. The point on the surface where it starts is called the epicentre. The shock waves are stronger near the epicentre.

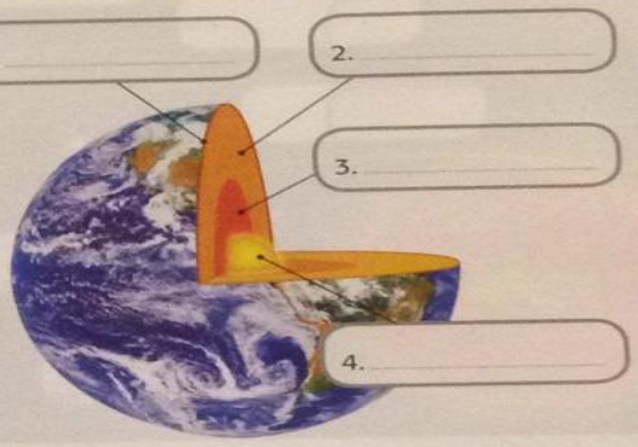
Did you know that the Earth's crust is split up into tectonic plates? Some of them move apart, while some move towards each other.

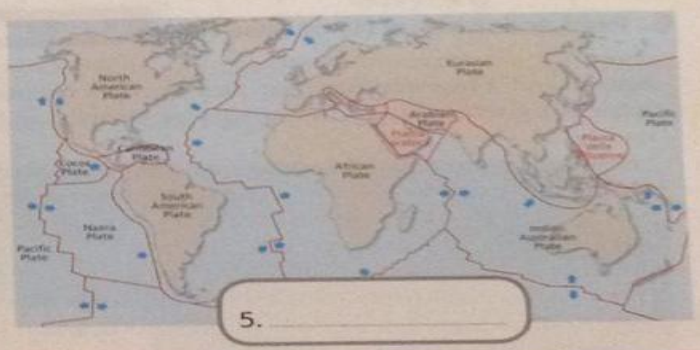
If you take a journey to the centre of the Earth, you will discover that our planet is a sphere. It is made up of four layers: the crust, the mantle, the outer core and the inner core. The crust is the outer layer.

Seismographs are instruments that measure the intensity of earthquakes and their strength is measured on the Richter scale. Earthquakes can also occur in or near the sea. In this case they can generate dangerous giant waves called Tsunamis! Unfortunately, we cannot predict earthquakes, but we can monitor movements in the Earth's crust or check the emissions of radon gas from the ground and, of course, keep our fingers crossed!

2. Read the text again and label the pictures using the words in the box.

inner core	crust	tectonic plates
outer core	mantle	





3. Choose the correct option.

1. The epicentre of an earthquake is
   a. the point in the core where it starts.
   b. the point on the surface where it starts.
2. Seismographs measure
   a. the intensity of earthquakes.
   b. movements in the Earth's crust.
3. Tsunamis are
   a. earthquakes which occur under the sea.
   b. giant waves.
4. Radon gas from the ground
   a. indicates where an earthquake might occur.
   b. cannot help predict earthquakes.

4. In pairs, ask and answer questions about earthquakes. Use the prompts below, as in the example.

What/an earthquake?
What/the layers in the structure of the Earth?
What/seismograph?
What/the Richter scale?
What/a plate boundary?
What/a tsunami?

What is an earthquake?

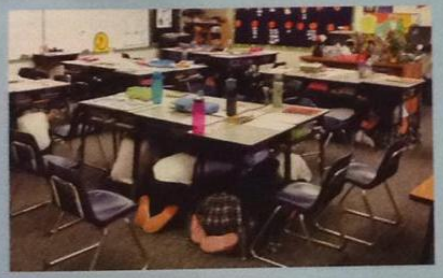
An earthquake is a sudden movement on the Earth's crust.

5. Read and match.

WHAT TO DO DURING AN EARTHQUAKE

When you feel shaking, follow these safety rules.

1. If you are inside...
2. If you are in bed...
3. If you are in a crowded area (stadium, cinema...)
4. If you are outdoors...
5. If you are in a car...



- pull your pillow or blanket over your head for protection.
- move as far away from buildings as possible to prevent injury from falling glass, bricks or masonry. Also, stay away from cliffs and riverbanks.
- get underneath a table and hold on to the legs, or stand in a corner or under a structural doorway and cover your head and neck with your arms.
- drive to the side of the road and away from bridges, overpasses and power lines.
- do not rush for the doors. Everyone will be doing that. Instead, take cover under something heavy and stay away from things that could fall on you.

Remember the **GOLDEN RULE**

DON'T PANIC!

DROP TO THE GROUND.
TAKE COVER UNDER A TABLE OR DESK.
HOLD ON TO THE LEGS.

Remember! The time to discuss earthquake safety tips is **now**. It's too late to look for the "instructions" once the earth starts shaking.

ANSWER THE QUESTIONS

1.What is the Pangea?
2.Talk about the tectonic plates (how many they are, if they're moving, what they're causing, …)
3.What is an earthquake?
4.What are the hypocentre and the epicenter of an earthquake? Draw them.
5.Which are the effects of an earthquake?
6.What is a volcano?
7.How many volcanoes are there and which is the largest active volcano?
8.What is the difference between magma and lava?
9.There are three kinds of volcanoes. What are they?
10.What is the ring of fire?
11.Draw a volcano and write the names of its parts.
12.You are at school. What should you do if an earthquake came?
13.And what would you want to do?
14.You are at home, it's 3.00 o'clock in the morning. What would you do in the event of an earthquake?
15.Do you know the history of Pompei? Briefly describe what happened.