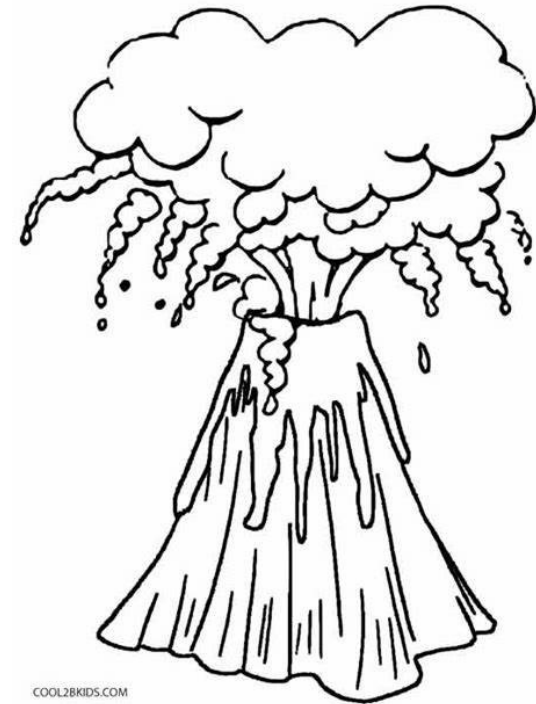


## Risky places checklist:

1. What is risk? \_\_\_\_
2. Structure of the Earth \_\_\_\_
3. Tectonic plates \_\_\_\_
4. Pangea- a supercontinent \_\_\_\_
5. Tectonic plate boundaries \_\_\_\_
6. Volcanoes \_\_\_\_
7. Living near a volcano \_\_\_\_
8. Earthquakes \_\_\_\_
9. Impacts of earthquakes \_\_\_\_
10. Preparing for an earthquake \_\_\_\_

# S1 Risky Places

## Geography course notes



COOL2BKIDS.COM

Name: \_\_\_\_\_

Class: \_\_\_\_\_

## Topic #1: What is Risk?

Date \_\_\_\_\_

### **Risk is:**

1. Exposure to a situation involving danger.
2. The possibility that something unpleasant will happen.

### **Types of risk:**

1. Human - Risks created by humans.
2. Physical - Risks found in nature.

**Examples of risks:** avalanches, dangerous animals, volcanoes, earthquakes, tsunamis, landslides, war, riots, hurricanes, floods.

## Additional notes:

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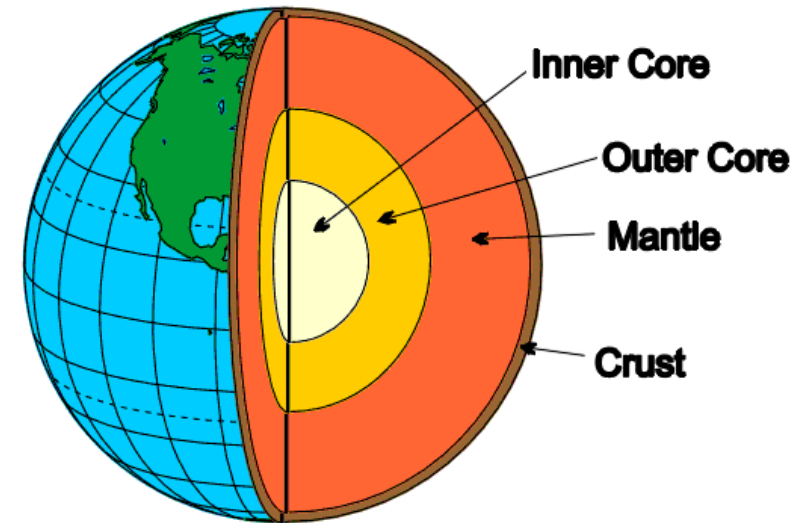
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## Earthquake survival kit:



## Topic #2: The structure of the Earth

Date: \_\_\_\_\_



### 1. The Crust

The crust of the Earth is solid and can be as thick as 90 km in some places. The crust is under our feet!

## 2. The mantle:

- is 2900 km thick and molten.
- Temperatures in the mantle reach 2000 °C.

**Molten** means flowing or soft. Think of what the inside of a molten chocolate cake is like.

## 3. The outer core:

- is 2000 km thick, molten.
- Temperatures in the outer core reach 4500 °C.

## 4. The inner core:

- is only 1300 km thick and is solid iron and nickel.
- Temperatures in the inner core reach 5500 °C!

**Base isolation systems:** buildings have shock absorbing bases that absorb the energy of an earthquake. Base isolation systems are similar to bicycle shocks.

Buildings have automatic gas switches that turn the building's gas supply off in the event of an earthquake.

2. Japan has good infrastructure (roads, hospitals) and professional rescue crews.



3. The residents of Japan are well educated about earthquakes: they knew what to do. Earthquake drills in schools and workplaces meant that people knew to get under their desks to protect their heads. These drills are similar to fire drills we have in Scotland.

## Topic #10: Preparing for an earthquake

Date: \_\_\_\_\_

Japan, 2011 Tōhoku earthquake and tsunami.

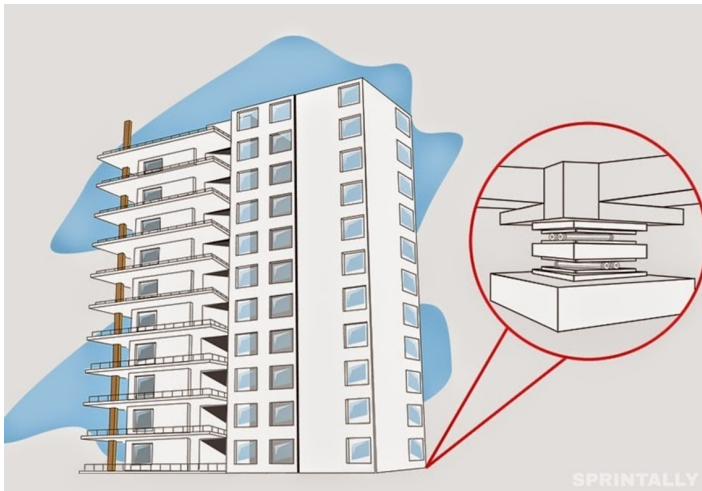
Impact on people:

15,896 deaths

6,023 injured

Significantly fewer people were harmed by this disaster. This is because Japan was better prepared for an earthquake to hit:

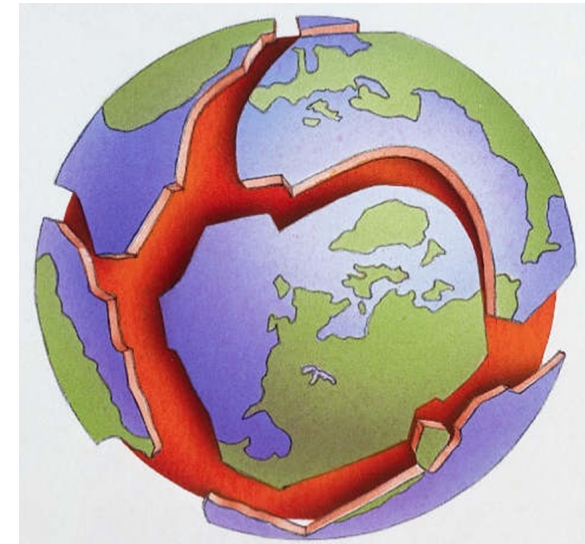
1. Buildings are designed to endure earthquakes.



## Topic #3: Tectonic plates

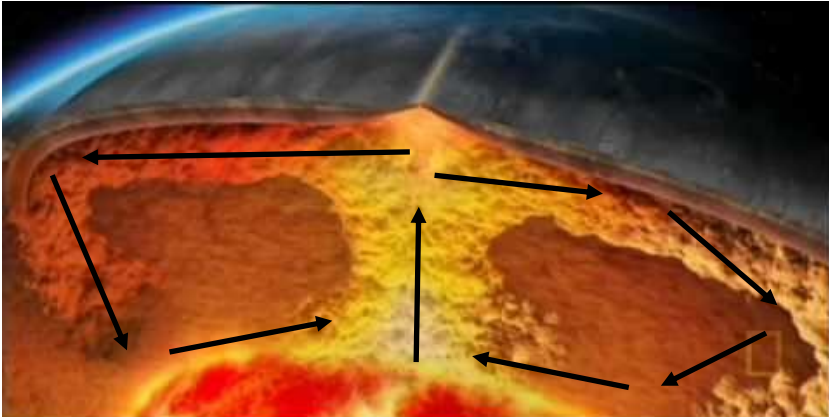
Date: \_\_\_\_\_

The crust is made up of pieces called tectonic plates.



The plates are like water rafts floating on the surface of hot molten rock in the mantle.

The plates moves due to the heating and cooling of the molten rock in the mantle . This is called **convection**.



The molten rock in the mantle is heated by the Earth's core (remember the core is very hot!).

The molten rock rises, but when it comes close to the crust it cools down.

The molten rock then sinks back down to the bottom of the mantle.

Effects of the 2010 Haiti earthquake:

- 220 000 people were killed.
- 1.3 million Haitians lost their homes.
- 8 hospitals collapsed.
- Roads were blocked and the port destroyed.
- Parts of Haiti were out of power for long periods of time.
- People remained homeless because they could not afford to rebuild homes and businesses .
- By November there were outbreaks of diseases.
- The tourist industry started failing.
- Animal habitats were lost.

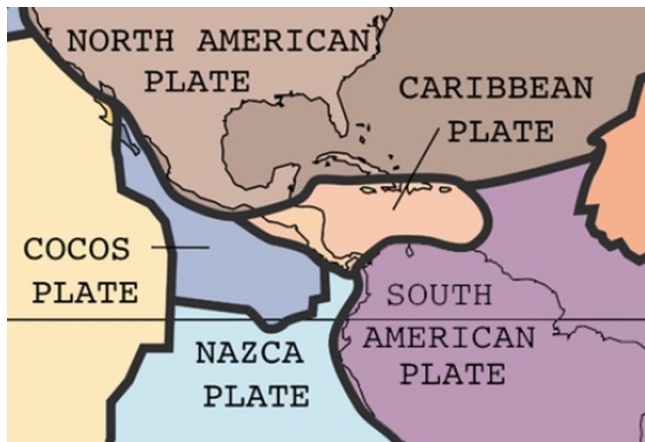
## Topic #9: Impacts of earthquakes

Date: \_\_\_\_\_

Haiti, 2010, Port-au-Prince earthquake:

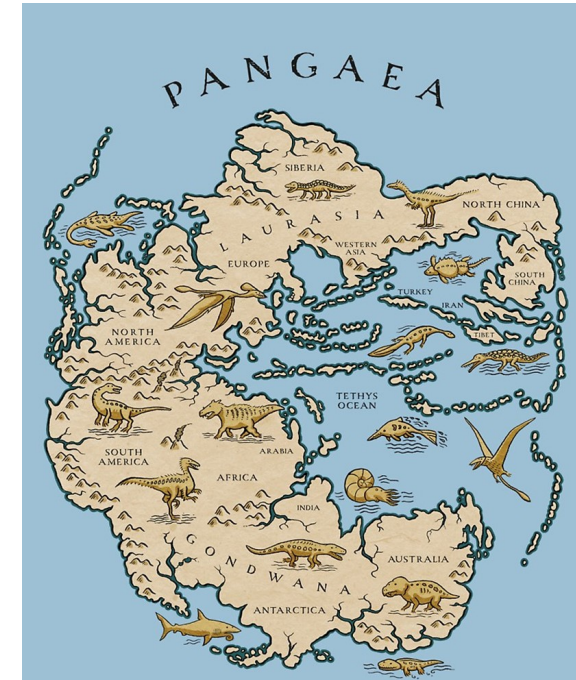
On Tuesday, 12th of January at 4.53 pm an earthquake with a magnitude of 7.0 occurred in Haiti, the poorest country in the Western Hemisphere.

The 2010 Haiti earthquake was caused by 2 plates (the Caribbean and North American) sliding past each other and releasing energy.



## Topic #4: Pangea- a supercontinent

Date: \_\_\_\_\_

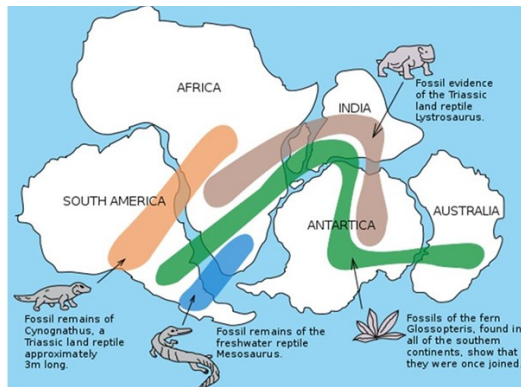


250 million years ago all continents were joined together. This supercontinent was called **Pangea**.

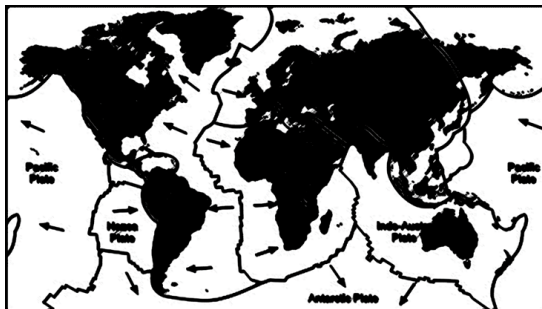
**FACT:** Pangea means 'all lands' in Greek.

## How do we know Pangea existed?

1. The continents appear to fit together like pieces of a puzzle.
2. The same fossils are found on neighbouring continents, suggesting they were once joined.

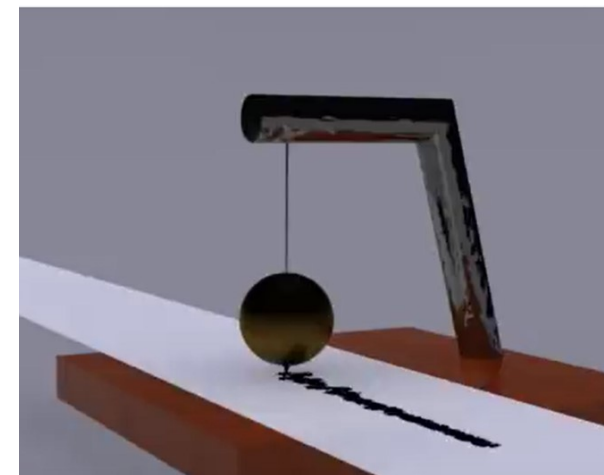


3. Earthquakes and volcanic eruptions are mostly found in certain places on Earth. These places are plate boundaries.



## Predicting an Earthquake:

1. Unusual Animal Behaviour: animals flee cities, become restless hours before an earthquake.
2. Foreshocks: minor (small) shocks known as foreshocks are generally detected before major earthquakes.
3. Seismic gap- if an earthquake has not occurred in a while in a particular place.





## Key terms:

**Focus:** The location where the earthquake begins.

**Epicentre:** The point on the Earth's surface located directly above the focus.

**Seismic waves:** Energy spreading through the rock in all directions.

A **seismograph** is an instrument that measures ground motions, such as earthquakes, volcanic eruptions, and explosions.

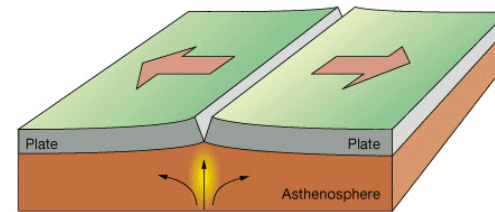
The **Richter scale (1-9)** is used to report the strength ("size") of an earthquake. The higher the number, the stronger the earthquake.

## Topic #5: Tectonic plate boundaries

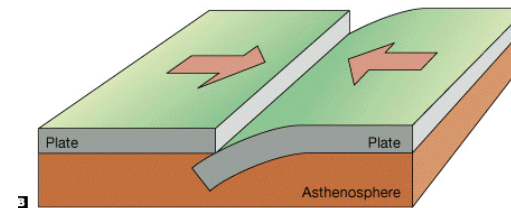
Date: \_\_\_\_\_

Where two tectonic plates meet is called a **boundary**. Interesting things happen at plate boundaries!

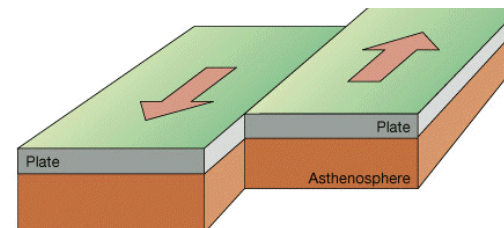
There are 4 types of plate boundaries: parting, destructive, sliding and colliding.



1. Parting: two plates move away from each other.



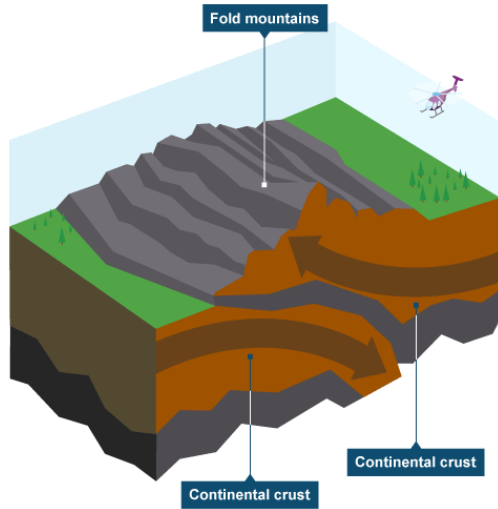
2. Destructive: one plate is forced under another plate



3. Sliding  
two plates slide past each other.

#### 4. Colliding:

Two plates move towards each other and both are forced up creating mountains.



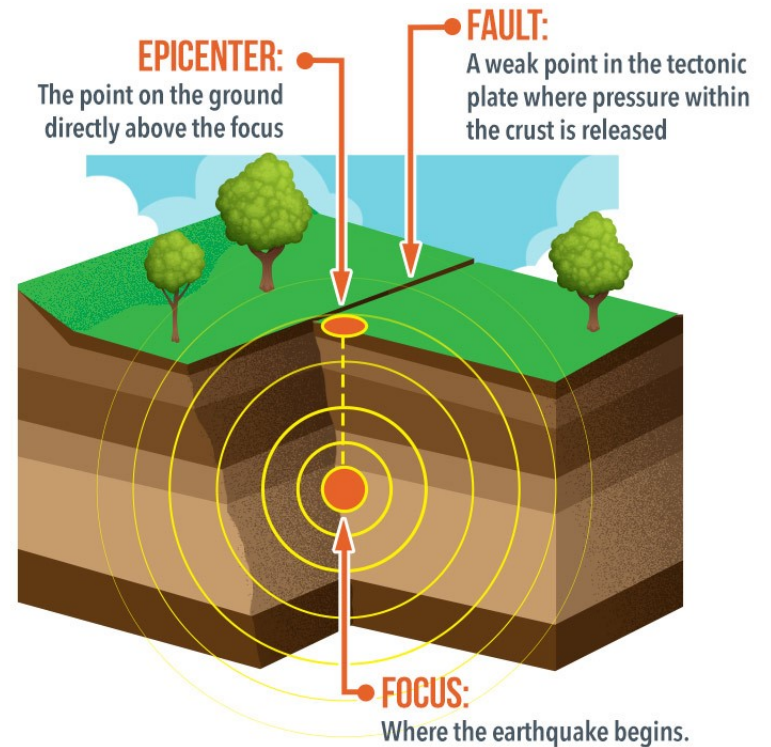
Earthquakes and volcanic eruptions usually happen at plate boundaries.

## Topic #8: Earthquakes

Date: \_\_\_\_\_

Earthquakes happen where tectonic plates meet.

Two plates rub against each other until they suddenly release energy. This causes an earthquake.



## Living near a volcano means:

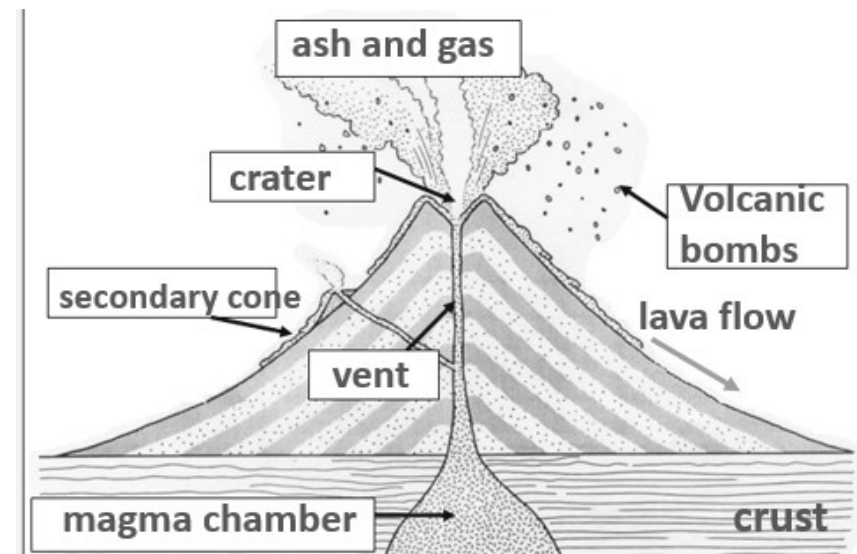
1. Thousands of tourists visit volcanoes each day.
2. Ash from erupting volcanoes make the nearby soil fertile (good for growing crops).
3. Volcanic ash can fill the air, stopping planes from taking flight.
4. Lava erupted from volcanoes can block roads.
5. Valuable minerals and metals can be found around volcanoes.
6. Volcanoes can be beautiful to live near and photograph.
7. The heat from a volcano (geothermal energy) can be used to power homes.
8. Lava erupted from volcanoes can destroy everything in its path.

## Topic #6: Volcanoes

Date: \_\_\_\_\_

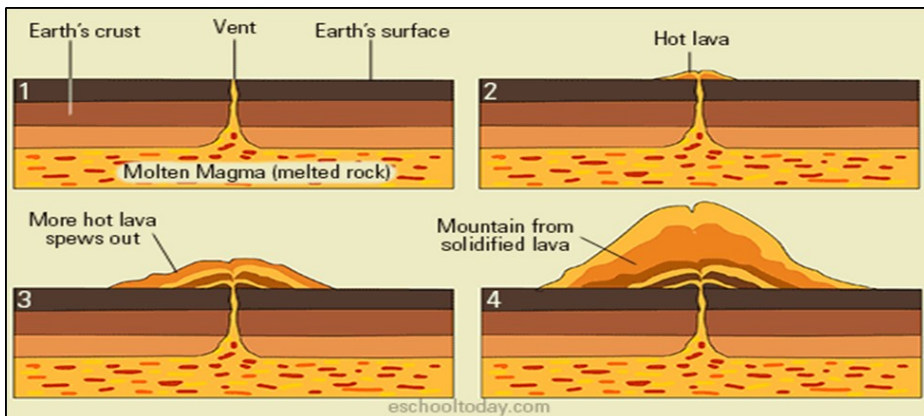
Volcanoes are cone shaped mountains formed by eruptions of lava and ash. They can occur at colliding and parting plate boundaries.

The structure of a volcano:



## How volcanoes are formed:

1. Magma moves up the cracks and weaknesses in the Earth's crust.
2. Pressure then builds up until the volcano erupts.
3. The lava cools down and turns into solid rock.
4. After several eruptions, a volcano is formed.



## Topic #7: Living next to a volcano

Date: \_\_\_\_\_

Key terms:

**Geothermal Energy**- energy that comes from the inside of the Earth.

**Pyroclastic Flow** is a cloud of ash that is up to 1,000°C and travels at over 400mph.

**Lahars** are fast flowing mud flow containing rocks, water and volcanic material.

**Fertile soil**- land that is good for growing crops (plants that we eat).