Earth Science Packet

150-page packet

* Earth and the Solar System
* Layers of the Earth
* Pangaea, Plate Tectonics
* Faults
* Earthquakes
* Mountain Making
* Volcanoes... and more

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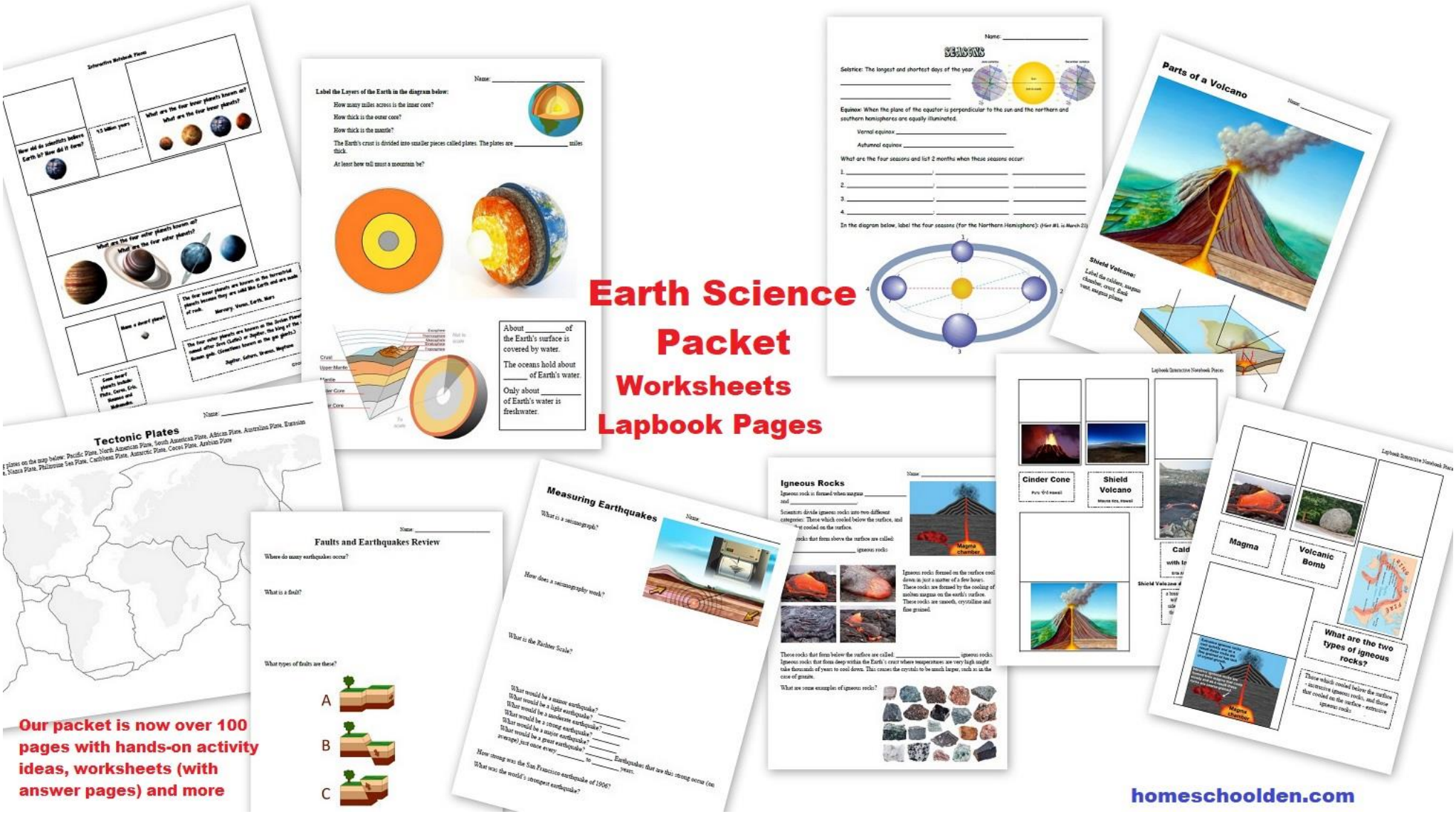
Earth Science Packet
Worksheets
Lapbook Pages
Parts of a Volcano
Seasons
Tectonic Plates
Faults and Earthquakes Review
Measuring Earthquakes
Igneous Rocks
Cinder Cone
Shield Volcano
Magma
Volcanic Bomb
What are the two types of igneous rocks?
Our packet is now over 100 pages with hands-on activity ideas, worksheets (with answer pages) and more
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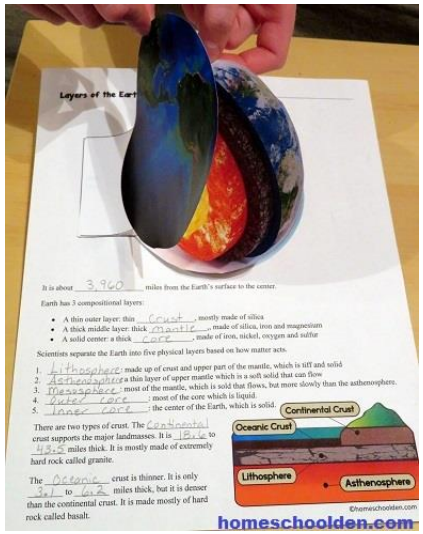
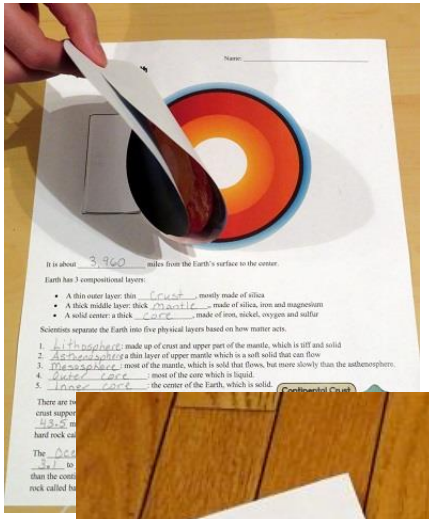




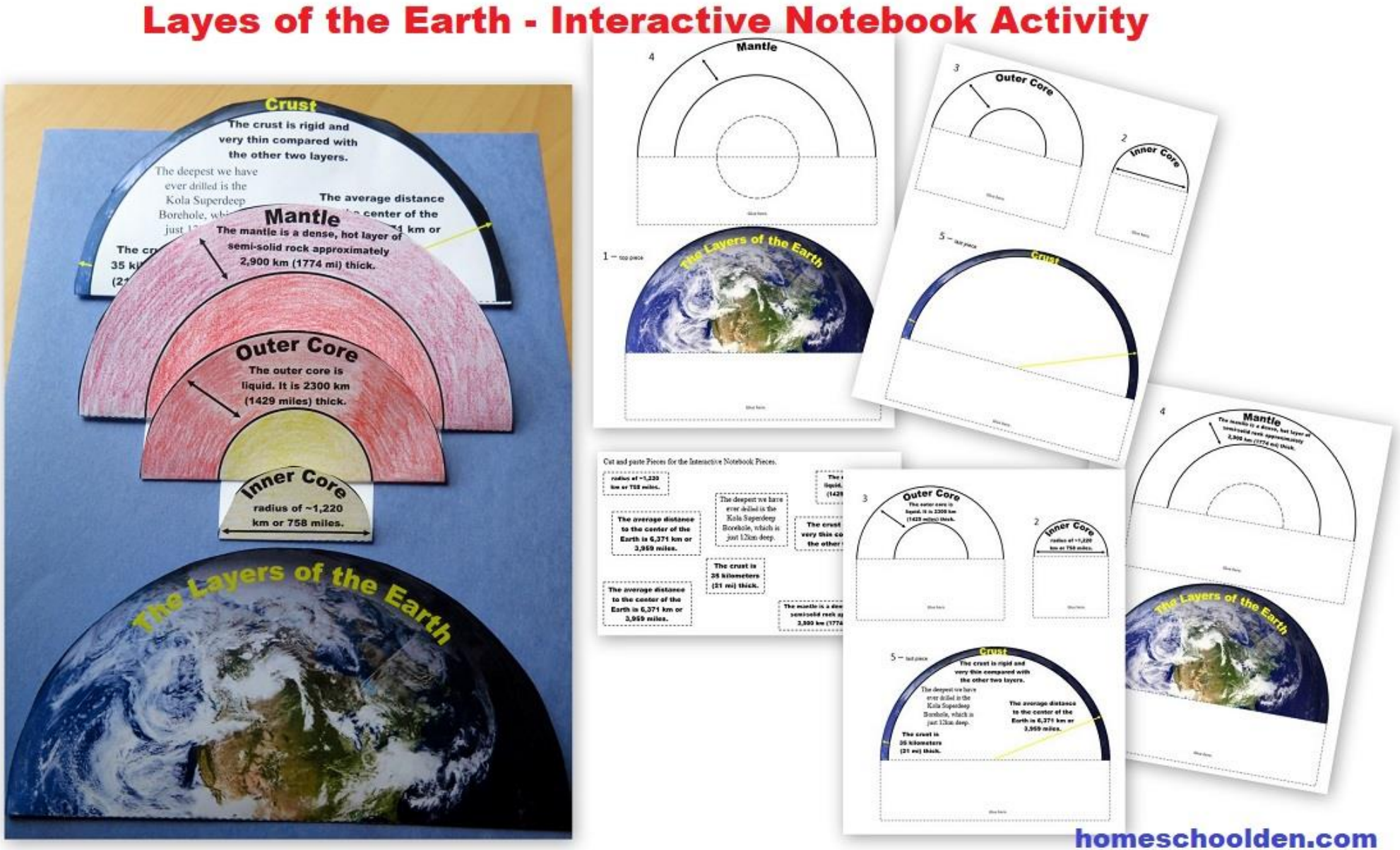
Layers of the Earth Activity

Interactive Flapbook - Notebook Page

In color or black & white

2nd Option: Layers of the Earth Activity

Interactive Notebook Pieces




Hands-On Activities
Earth Science Unit
NW
E
W
SE
SW
S
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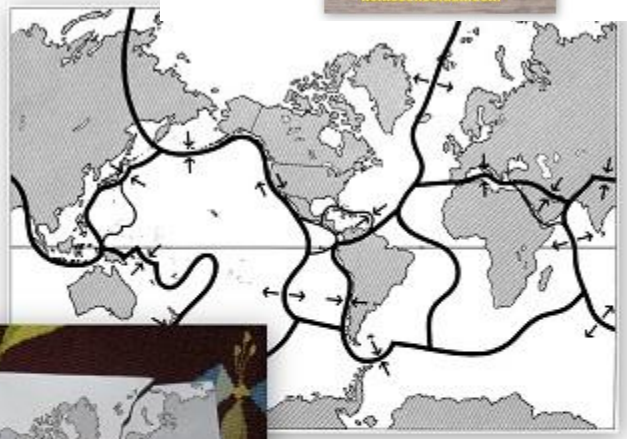
Plate Tectonics

Map makers of the 1500s noticed how South America and Africa almost fit together.

Plate Tectonics

Introducing the idea of convections currents

Plate Tectonics Puzzle



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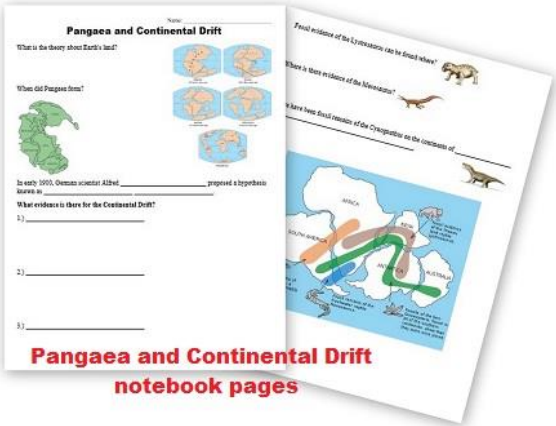
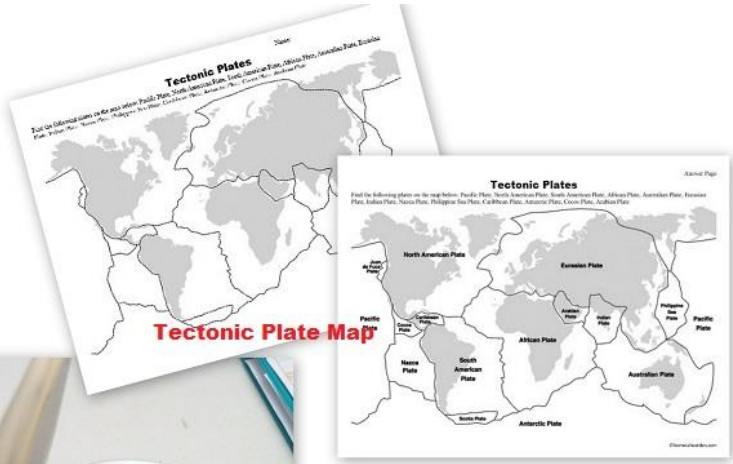
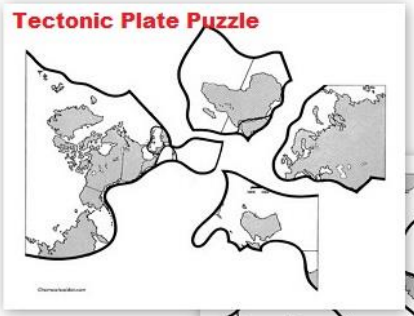
Pangaea & Plate Movement Activities

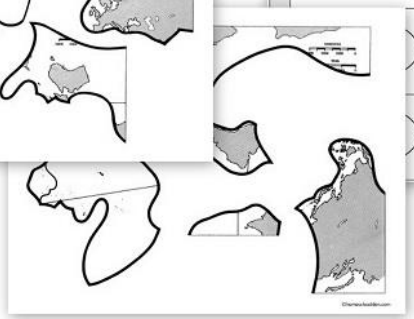


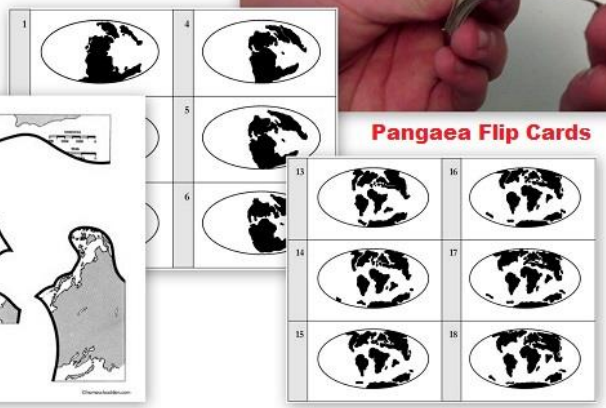
Pangaea and Continental Drift notebook pages



Tectonic Plate Map







Pangaea Flip Cards

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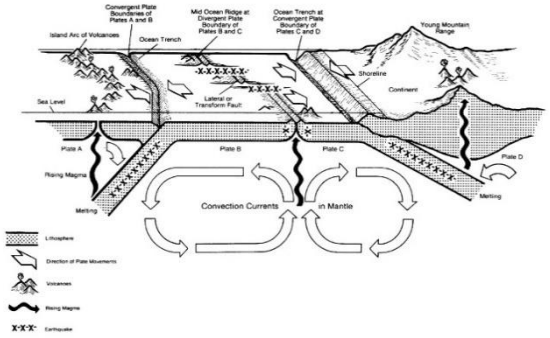


Creating a Convection Current Activity

1. Using a pipette or eye dropper gently squeeze red (dyed) water at the bottom of the pan near the heating element. As the water heats up, the red dye will move up and out, away from the heating element.
2. Then gently squeeze some blue (dyed) water at the top of the water surface near the bag of ice. The water will sink and then start to move across the bottom of the pan toward the heating element.

Plate Boundaries

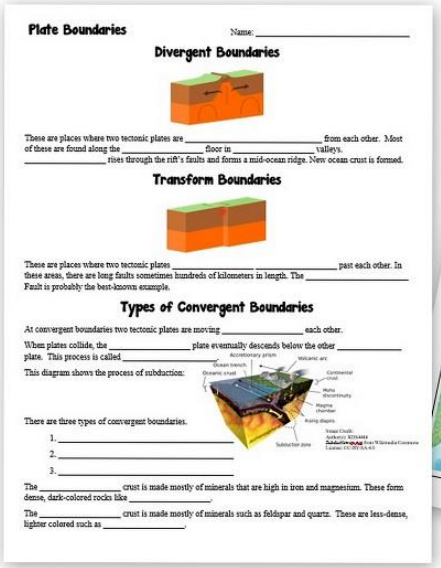


Plate Boundaries

Name: _____

Divergent Boundaries

These are places where two tectonic plates are _____ from each other. Most of these are found along the _____ floor in _____ valleys. _____ rises through the rift's faults and forms a mid-ocean ridge. New ocean crust is formed.

Transform Boundaries

These are places where two tectonic plates _____ past each other. In these areas, there are long faults sometimes hundreds of kilometers in length. The _____ Fault is probably the best-known example.

Types of Convergent Boundaries

At convergent boundaries two tectonic plates are moving _____ each other.

When plates collide, the _____ plate eventually descends below the other _____ plate. This process is called _____

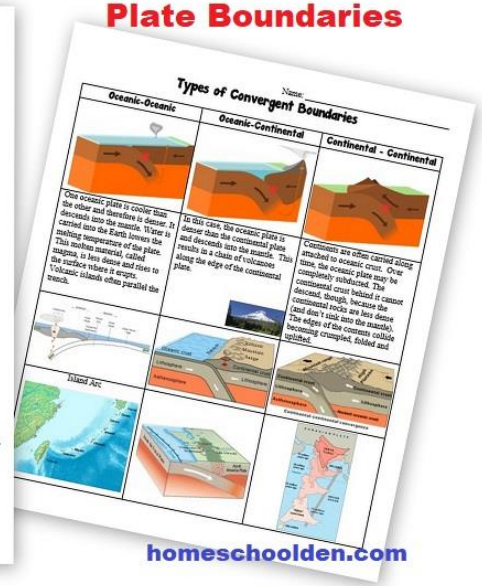
This diagram shows the process of subduction:

There are three types of convergent boundaries.

1. _____
2. _____
3. _____

The _____ crust is made mostly of minerals that are high in iron and magnesium. These form dense, dark-colored rocks like _____.

The _____ crust is made mostly of minerals such as feldspar and quartz. These are less-dense, lighter colored such as _____.


Types of Convergent Boundaries

Name: _____

Oceanic-Oceanic	Oceanic-Continental	Continental - Continental
One oceanic plate is cooler than the other and therefore is denser. It descends into the mantle. Water is carried into the Earth lowers the melting temperature of the plate. This molten material, called magma, is less dense and rises to the surface where it erupts. Volcanic islands often parallel the trench.	In this case, the oceanic plate is denser than the continental plate and descends into the mantle. This results in a chain of volcanoes along the edge of the continental plate.	Continents are often carried along attached to oceanic crust. Over time, the oceanic plate may be completely subducted. The continental crust behind it cannot descend, though, because the continental rocks are less dense (and don't sink into the mantle). The edges of the continents collide becoming crumpled, folded and uplifted.
Island Arc		

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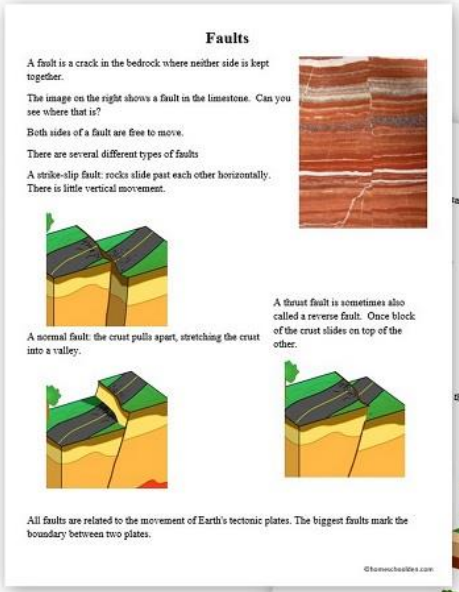
Faults, Earthquakes, Earthquake Waves


Faults

A fault is a crack in the bedrock where neither side is kept together.

The image on the right shows a fault in the limestone. Can you see where that is?

Both sides of a fault are free to move.

There are several different types of faults

A strike-slip fault: rocks slide past each other horizontally. There is little vertical movement.

A normal fault: the crust pulls apart, stretching the crust into a valley.

A thrust fault is sometimes also called a reverse fault. Once block of the crust slides on top of the other.

All faults are related to the movement of Earth's tectonic plates. The biggest faults mark the boundary between two plates.

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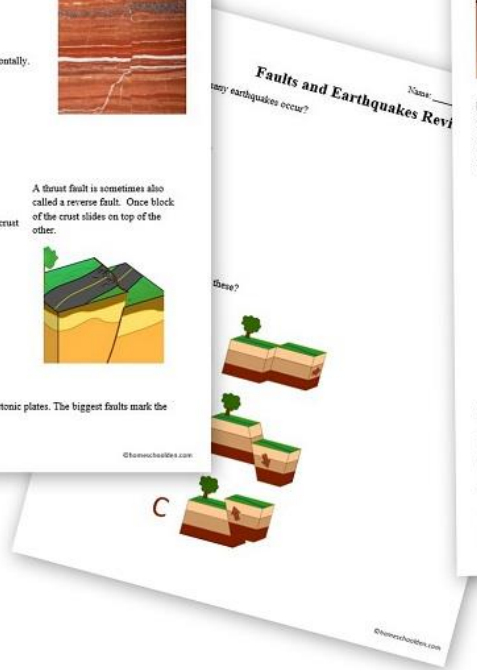
Faults and Earthquakes Revi

Name: _____

these?

C

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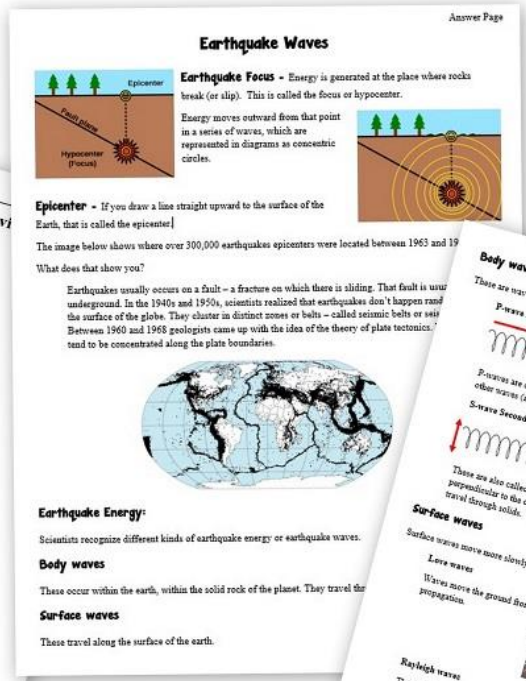

Answer Page

Earthquake Waves

Earthquake Focus - Energy is generated at the place where rocks break (or slip). This is called the focus or hypocenter.

Energy moves outward from that point in a series of waves, which are represented in diagrams as concentric circles.

Epicenter - If you draw a line straight upward to the surface of the Earth, that is called the epicenter.

The image below shows where over 300,000 earthquakes epicenters were located between 1963 and 19

What does that show you?

Earthquakes usually occurs on a fault – a fracture on which there is sliding. That fault is usu underground. In the 1940s and 1950s, scientists realized that earthquakes don't happen rand the surface of the globe. They cluster in distinct zones or belts – called seismic belts or sei Between 1960 and 1968 geologists came up with the idea of the theory of plate tectonics. tend to be concentrated along the plate boundaries.

Earthquake Energy:

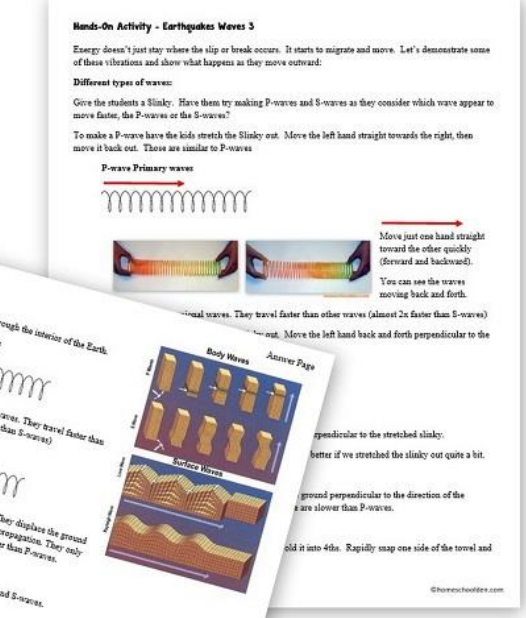
Scientists recognize different kinds of earthquake energy or earthquake waves.

Body waves

These occur within the earth, within the solid rock of the planet. They travel thr

Surface waves

These travel along the surface of the earth.


Hands-On Activity - Earthquakes Waves 3

Energy doesn't just stay where the slip or break occurs. It starts to migrate and move. Let's demonstrate some of these vibrations and show what happens as they move outward:

Different types of waves:

Give the students a Slinky. Have them try making P-waves and S-waves as they consider which wave appear to move faster, the P-waves or the S-waves?

To make a P-wave have the kids stretch the Slinky out. Move the left hand straight towards the right, then move it back out. Those are similar to P-waves

P-wave Primary waves

Move just one hand straight toward the other quickly (forward and backward).

You can see the waves moving back and forth.

...ional waves. They travel faster than other waves (almost 2x faster than S-waves)

...out. Move the left hand back and forth perpendicular to the

...rpendicular to the stretched slinky.

...better if we stretched the slinky out quite a bit.

...ground perpendicular to the direction of the ...e are slower than P-waves.

...old it into 4ths. Rapidly snap one side of the towel and

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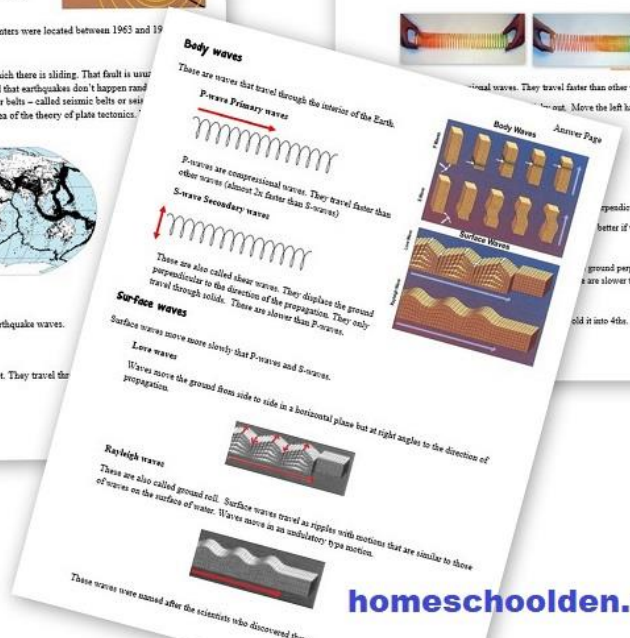
Body waves

These are waves that travel through the interior of the Earth.

P-wave Primary waves

P-waves are compressional waves. They travel faster than other waves (almost 2x faster than S-waves)

S-wave Secondary waves

These are also called shear waves. They displace the ground perpendicular to the direction of the propagation. They only travel through solids. These are slower than P-waves.

Surface waves

Surface waves move more slowly that P-waves and S-waves.

Love waves

Waves move the ground from side to side in a horizontal plane but at right angles to the direction of propagation.

Rayleigh waves

These are also called ground roll. Surface waves travel as ripples with motions that are similar to those of waves on the surface of water. Waves move in an undulatory type motion.

These waves were named after the scientists who discovered th...

Body Waves

Surface Waves

Answer Page

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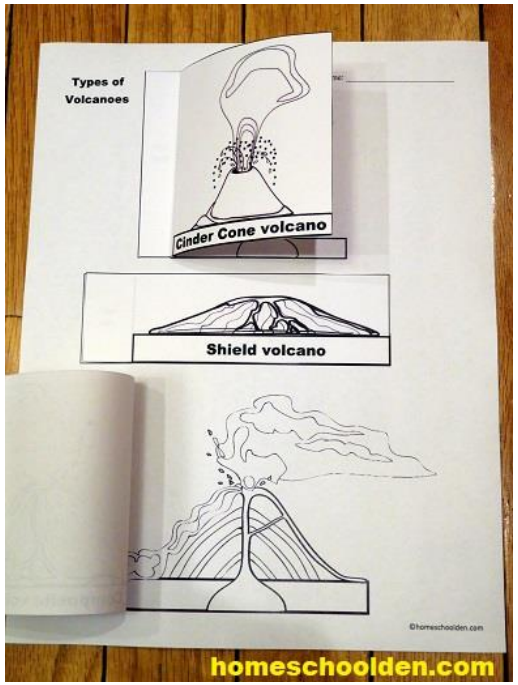
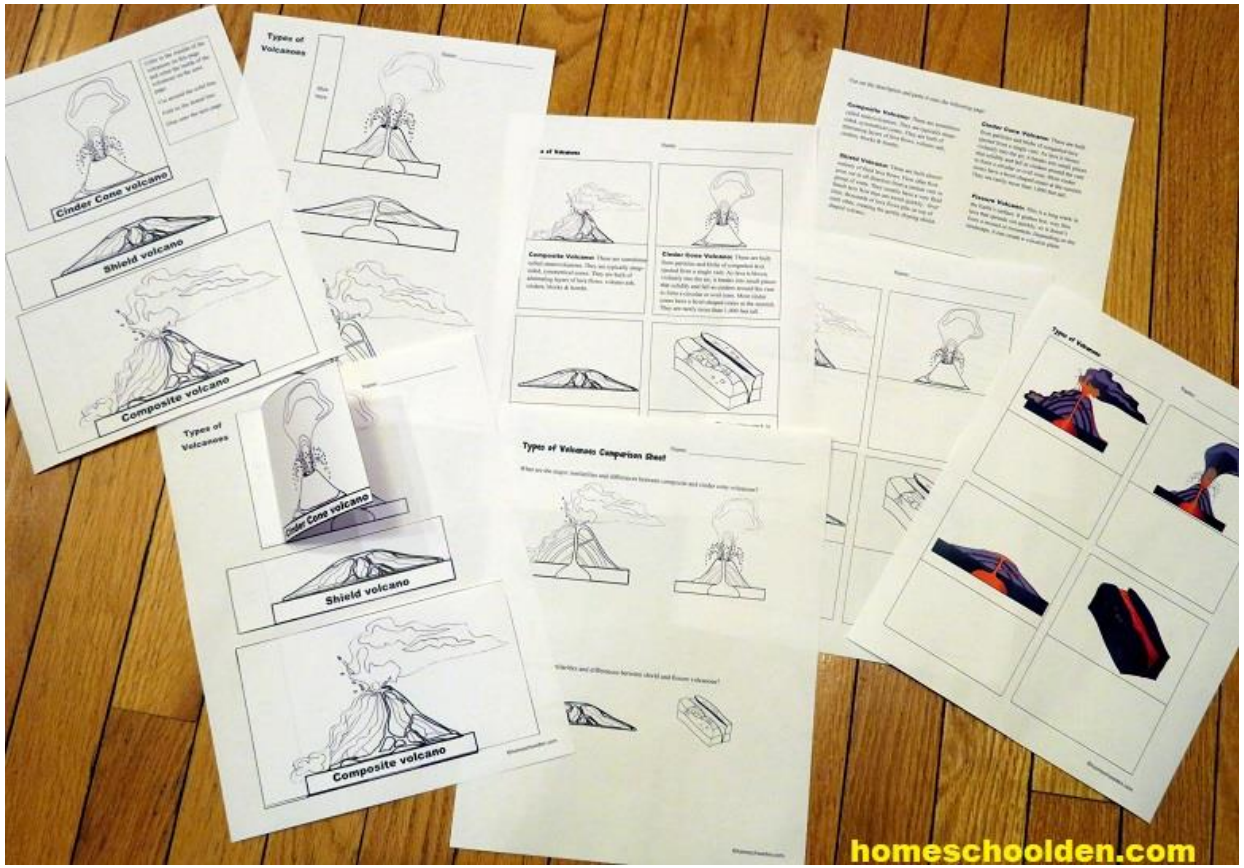
Volcano Lapbook - Interactive Notebook Pieces



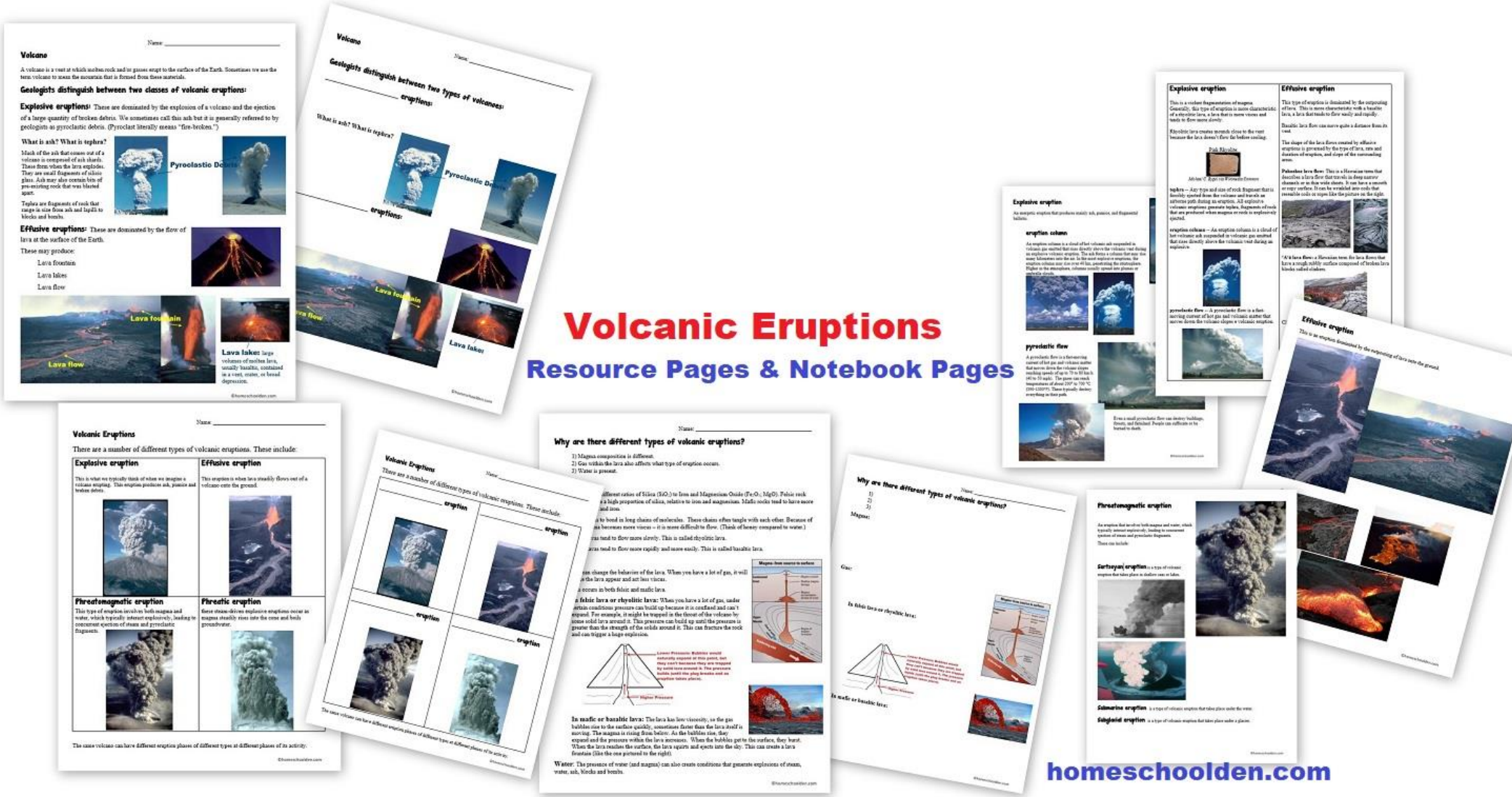
Types of Volcanoes Activities

Interactive Flapbook - Notebook Page

Cut & Paste Activity (with information about Composite, Cinder Cone, Shield and Fissure Volcanoes)



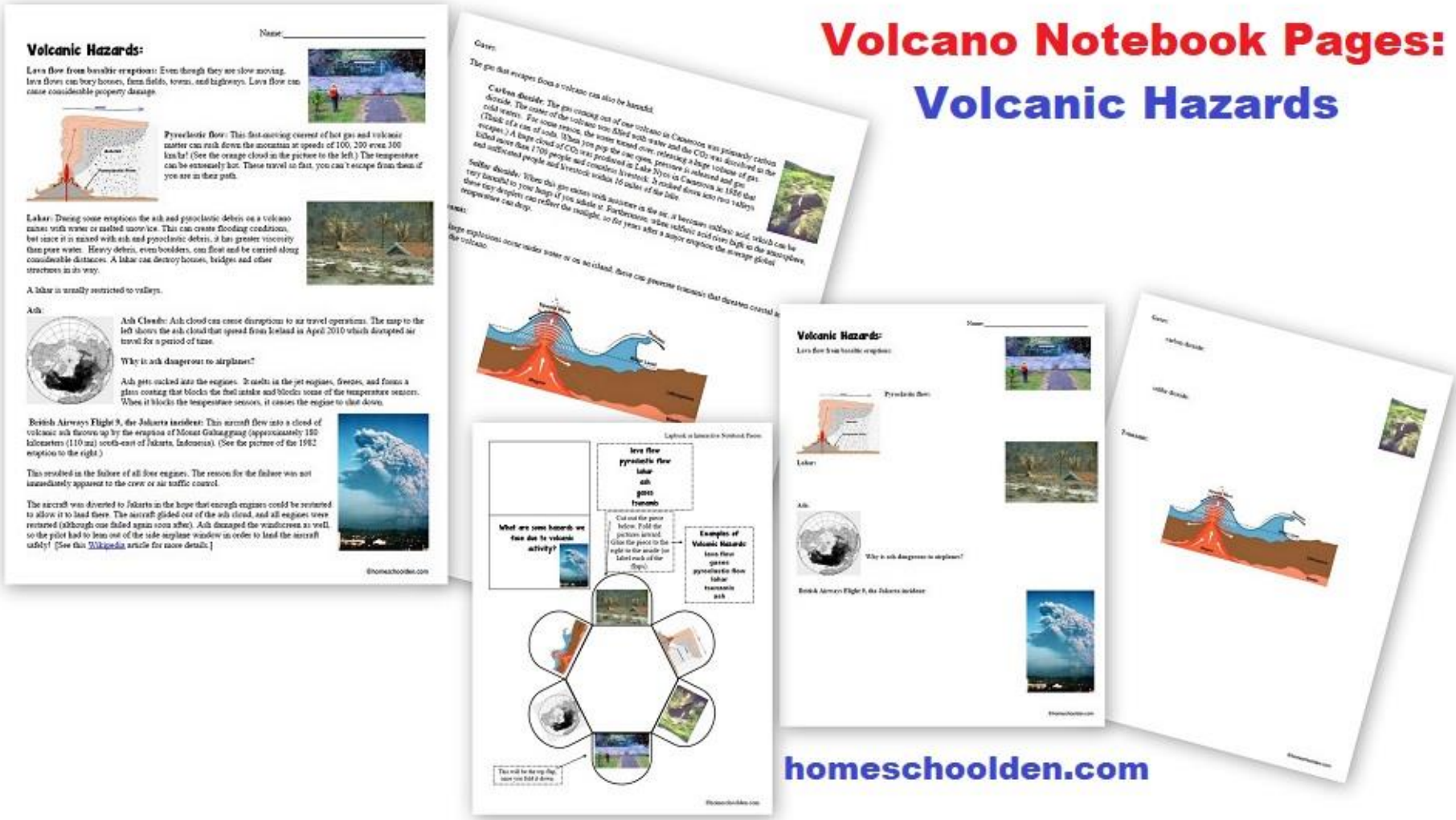
Resource Pages and Notebook Pages about Volcanic Eruptions:



The 4 different types of volcanic eruptions, the different types of lava, why there are different types of volcanic eruptions, etc.

Volcano Notebook Pages:

Volcanic Hazards



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