UNIT DIRECTIONS LESSON 9

Parent Resources for Earth's Magnetic Field

Goals of this lesson:

- Students will investigate the four main layers of Earth to discover that the outer core and inner core are composed of three magnetic metals: nickel, iron and cobalt.
- Students will use a refrigerator magnet to determine if common household items are magnetic or not.
- Students will record their observations in a data table.

For additional information, copy and paste these links into your browser:

Paul the Penguin introduces magnetism and compares magnetic and non-magnetic objects:

https://clever.discoveryeducation.com/learn/player/da37461f-7c1d-4902-97e8-a822486b6413

Take a look inside our Earth, to see the four main layers of our planet:

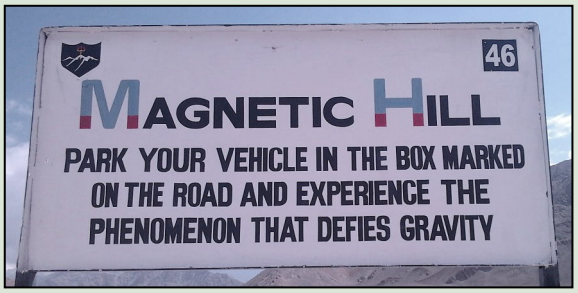
https://clever.discoveryeducation.com/learn/player/08518e0e-8c9a-4790-ac5f-a371bdaec781

This company is an excellent resource for everything magnetic:

https://www.kjmagnetics.com/

Mystery Tourist Attraction: Magnetic Hill

In New Brunswick, Canada there is a hill that seems to defy gravity-rivers run uphill and cars drift backwards as if pulled by a mysterious magnetic force. This mysterious place is appropriately named, Magnetic Hill. The folklore of the area states the spot became a tourist attraction as far back as the early 1930s.



Learn about the history (and mystery) of Magnetic Hill:

https://www.youtube.com/watch?v=lZppTvrqdOc

UNIT DIRECTIONS LESSON 9

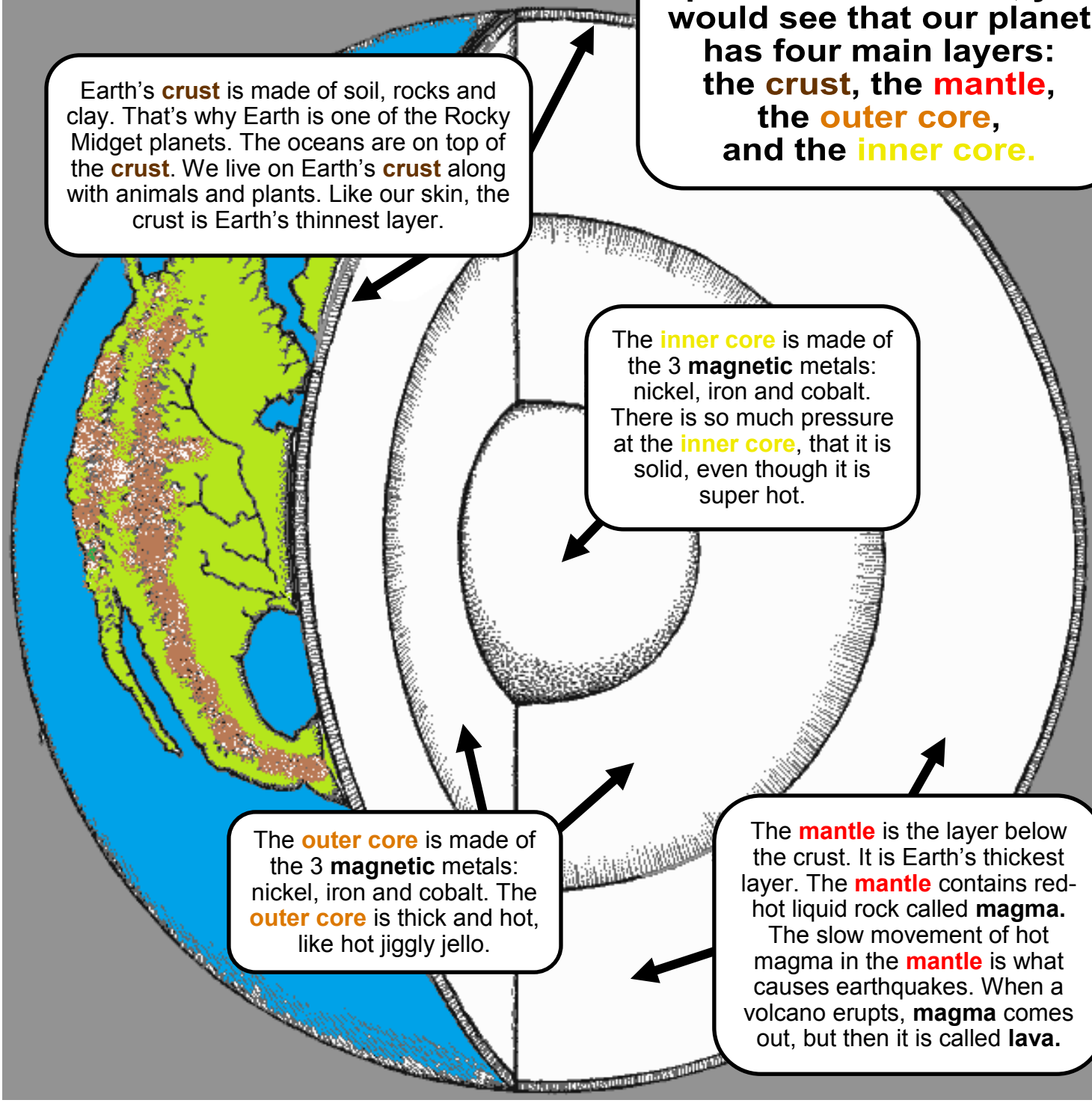
Inside Our Planet

James E. Richmond Science Center

Earth's 4 Layers

If you could cut Earth open and look inside, you would see that our planet has four main layers: the crust, the mantle, the outer core, and the inner core.

Earth's **crust** is made of soil, rocks and clay. That's why Earth is one of the Rocky Midget planets. The oceans are on top of the **crust**. We live on Earth's **crust** along with animals and plants. Like our skin, the crust is Earth's thinnest layer.



The **inner core** is made of the 3 **magnetic** metals: nickel, iron and cobalt. There is so much pressure at the **inner core**, that it is solid, even though it is super hot.

The **outer core** is made of the 3 **magnetic** metals: nickel, iron and cobalt. The **outer core** is thick and hot, like hot jiggly jello.

The **mantle** is the layer below the crust. It is Earth's thickest layer. The **mantle** contains red-hot liquid rock called **magma.** The slow movement of hot magma in the **mantle** is what causes earthquakes. When a volcano erupts, **magma** comes out, but then it is called **lava.**

Color the 4 layers of the Earth. Use brown for the crust, red for the mantle, orange for the outer core, and yellow for the inner core.

Magnetism

Magnetism is a force that can attract (pull closer) or repel (push away) objects that have special metals inside of them. They are the metals called **nickel**, **iron** and **cobalt**. Those special metals are magnetic.

Nickel, iron and cobalt are the three metals that make up the inner core and outer core of our planet. That makes Earth a giant magnet! Early explorers used a special magnetic tool called a compass to help them to find their way. (You can make your own compass in our next lesson.)

Some scientists who study migration think that migrating animals follow Earth's magnetic field. Migrating animals have extra iron in their brains, so it might just be that they each have a built-in compass to guide them.

Magnetism is very important for us, too. The electric company uses huge spinning magnets to make electricity!

See for yourself…

Use a refrigerator magnet to check for magnetic items around your house.

- Touch a refrigerator magnet to a few things around your house.
- See what sticks to the magnet, (or what the magnet sticks to), and what doesn't.
- Fill in the data table below, and check the box with what you find.

Is this item magnetic?	It stuck! It's magnetic!	It didn't stick. Not magnetic.
Wooden Toothpick		✓