

Name _____ Period _____

Models of Earth

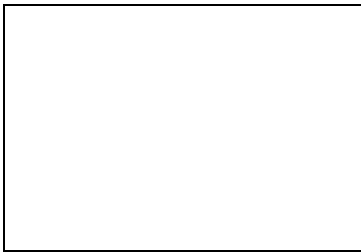
Introduction: We make models of almost everything. Can you think of some models that you have seen? It is very difficult to make models of things that we cannot see but can learn about by using tools. In this activity you will see some of the early models of the inside of the Earth along with a current model.

Prediction/Hypothesis: If you asked a first grader what the inside of the earth looked like how do you think they would describe it?

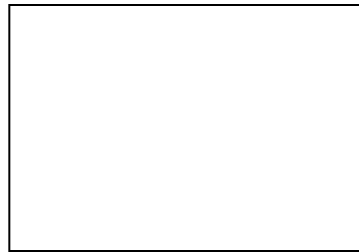
Procedures:

1. Use the toothpicks or skewers and gently probe the “Earth” your teacher has provided. Draw a picture of what you think it looks like inside. Remove the clay and draw what was really there.

What I think is inside:



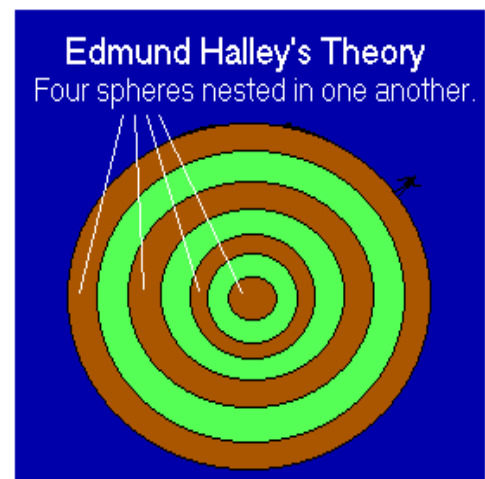
What was inside:



2. Read the information below about three models of Earth that have been proposed in the past and write down evidence that may show that was a correct model and evidence that the model may be wrong. Then in small groups talk about your answers and combine your answers to make a really good answer.

Model 1:

Edmund Halley claimed that the Earth was hollow and populated by humans and beasts. Halley's Hollow Earth idea was developed further during the eighteenth and nineteenth centuries, and sometimes backed by sound scientific reasoning. None of the claims of Hollow Earth proponents have been substantiated, however. Halley's theory was based on the fact that the earth's magnetic field varies over time. Halley suggested that there were several magnetic fields, one of which emanated from a sphere within the earth. Halley eventually developed the idea that there were four concentric hollow spheres within the earth. He believed the inner earth was populated with life and had a luminous atmosphere. The aurora borealis (Northern Lights), he concluded, was actually an emanation of radiant gases from within the earth that escaped through thin layers of crust at the poles.



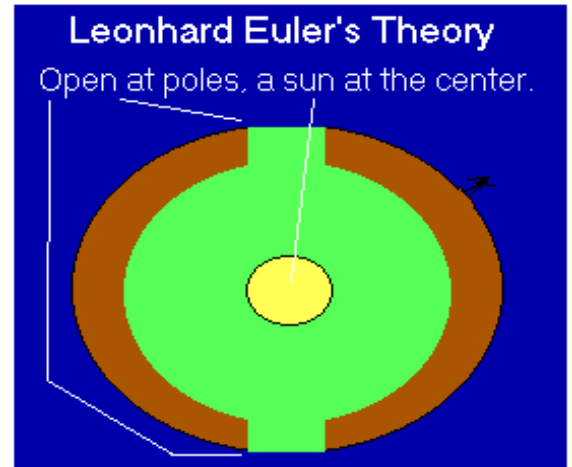
1. What evidence is there that this is a good model?

2. What evidence is there that this is NOT a good model?

Model 2:

In 1846 the discovery of an extinct woolly mammoth frozen in ice in Siberia was used by Marshall Gardner as evidence of a hollow earth. Gardner subscribed to the single-sun-inside-the-earth theory and suggested that the mammoth was so well-preserved because it had died recently. Gardner thought that mammoths and other extinct creatures wandered freely in the interior of the earth. This one had wandered outside by using the hole at the North Pole, then was frozen and carried to Siberia on an ice flow.

1. What evidence is there that this is a good model?
2. What evidence is there that this is NOT a good model?



Model 3:

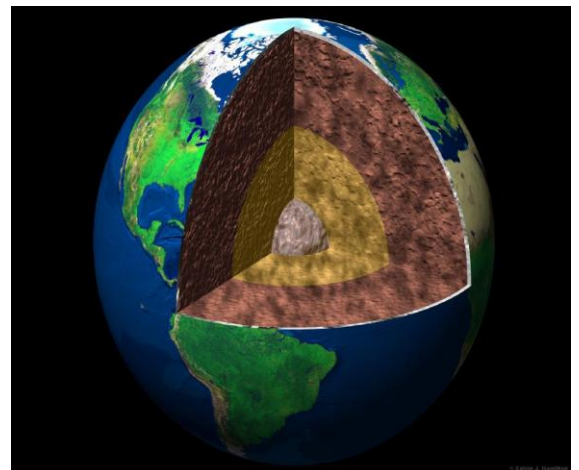
Our current model of the earth:

Geophysics, which studies the physics of the Earth, has led to many significant discoveries about the Earth and its make-up. Earthquake studies of the Earth have uncovered new information about the interior of the Earth that has helped to give evidence to layers in the Earth.

Scientists hypothesize that the circulation of the outer core causes the magnetic field around the earth. It is believed to be circulating in the counter-clockwise direction giving us the north pole in its present location. It switches about every million years. A record of this "switching" is recorded in the rocks both on land and in the ocean crust.

Circulating currents in the mantle carry the warmer material up and the cooler material down. These circular currents are called **convection currents**. The circulating convection currents cause the plates to move.

1. What evidence is there that this is a good model?
2. What evidence is there that this is NOT a good model?



Conclusion: What are two things you learned?