



Table of Contents

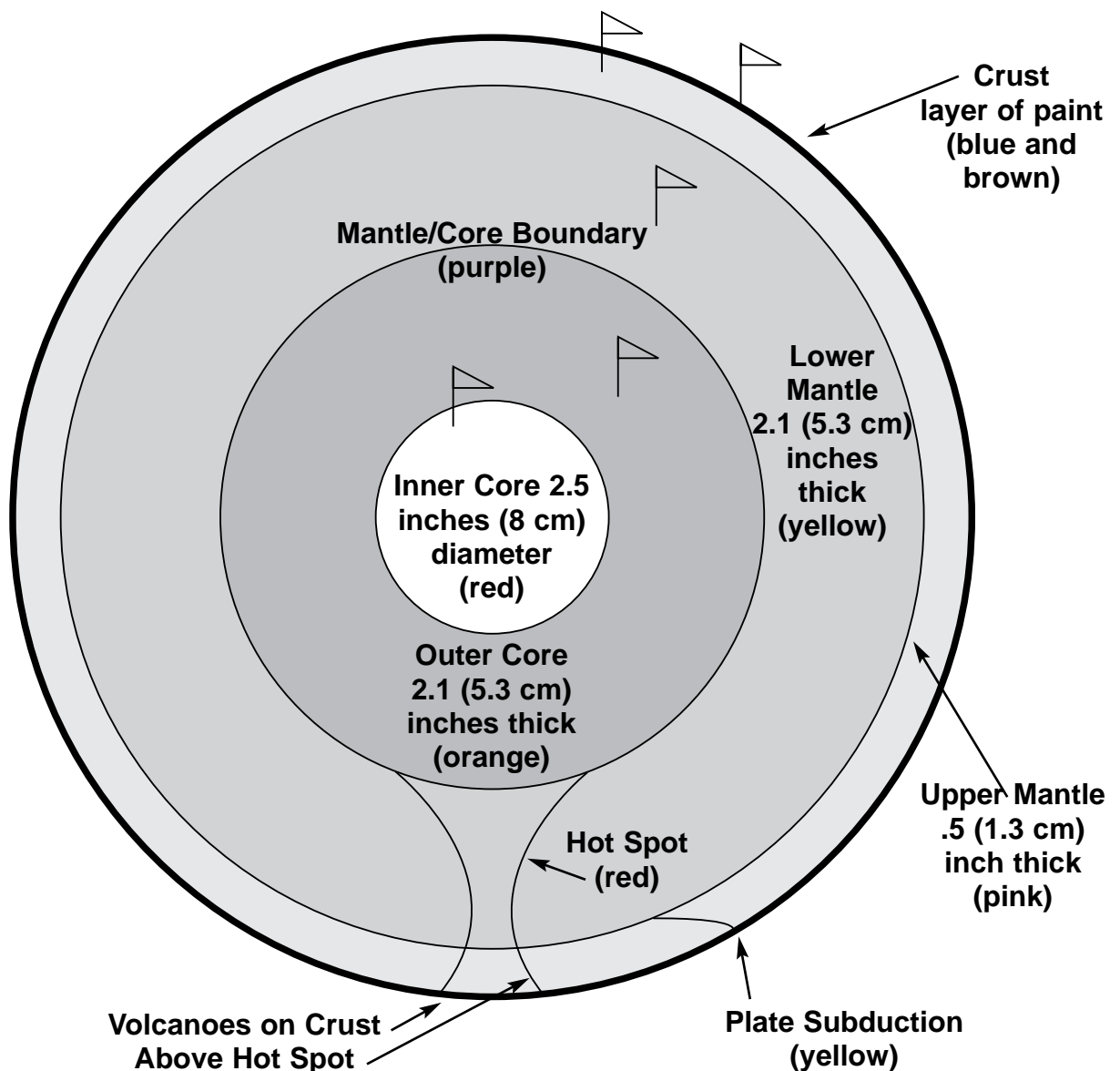
Introduction	3	Shifting Crust	
		Lesson	28
An Ant’s Eye View of Soil		The Movement of the Earth’s Crust.	29
Lesson	4	Sandwich Faults	30
Parent Letter for Soil Samples.	5		
What Is Soil?	6	Rock or Mineral?	
		Lesson	31
Let’s Eat Dirt		What’s in My Cookie?	32
Lesson	8		
		Homemade Rocks	
Mini-Rocks		Lesson	33
Lesson	10	Parent Letter for Simulated	
Parent Letter for Sand Samples	11	Rock Materials	34
Teeny Tiny Rocks	12		
		Minerals	
Earth’s Layers		Teacher Information	35
Lesson: Crust of the Earth.	13	Lesson: Sorting Minerals	36
Lesson: Earth Pizza	14	Lesson: Identifying Minerals.	37
Earth Pizza Flags	16	Parent Letter for Mineral Specimens.	38
The Inside of the Earth	17	Lesson: Matching Minerals	39
The Inside of the Earth Diagram	18	Student Data Sheet	40
		Lesson: Naming Minerals	41
Cracked Earth		Student’s Mineral Identification Key.	42
Lesson	19		
Map of Major Plates	20	Crystal Creations	
Scientific Proof That Earth’s		Lesson: Observing Crystals.	43
Continents Drift	21	Lesson: Simulated Geodes	45
Earth’s Continents: Then, Now,		Lesson: Crystal Garden	46
and Beyond.	22		
		Culminating Activity	
Walk Through the Rock Cycle		Making a Rock-and-Mineral Journal	47
Lesson	25		
Rock Cycle Script.	26	Teacher and Student Resources	48
The Rock Cycle	27		

Earth's Layers (cont.)

Earth Pizza (cont.)

Closure

- Discuss the thickness of each section with the class to help them realize how thin the crust is compared to the rest of the earth.
- Place a marker for each section, using a flag made from a small triangle cut from a file card. This flag should have the name of the section, its thickness, temperature, and state of matter (e.g., solid) of the material. Hold the flags in place with toothpicks or T-pins.
- Use tempera paint to illustrate subduction of crustal plates and fountains of hot spots as shown in the illustration below.



Extender

The model will dry within 24 hours but remains soft and flexible. This “Earth Pizza” can be divided into sections with a knife or pizza cutter for each student to keep.

Shifting Crust

Overview: *Students will simulate the layers of rock in Earth's crust.*

Materials (per group)

- 3 pieces whole wheat bread
- smooth peanut butter
- plastic spreading knife
- transparency and copies of page 29
- transparency of page 27
- copies of page 30
- strawberry jam
- 2 Tbs. (30 g) melted plain chocolate bar
- waxed paper and napkin or paper towel

Lesson Preparation

Melt the chocolate bars in the microwave or over boiling water on a hot plate.

Activity

1. Review the transparency of page 27.
2. Have the students wash their hands and then divide them into small groups. Distribute the materials to each group.

3. Instruct the students to spread the waxed paper in the middle of their work areas and put the slices of bread on it. Have them work together to make a sandwich as follows:

Spread a thin layer of chocolate on a slice of bread and spread peanut butter over it.

Spread a thin layer of chocolate on a second slice of bread and spread jam over it.

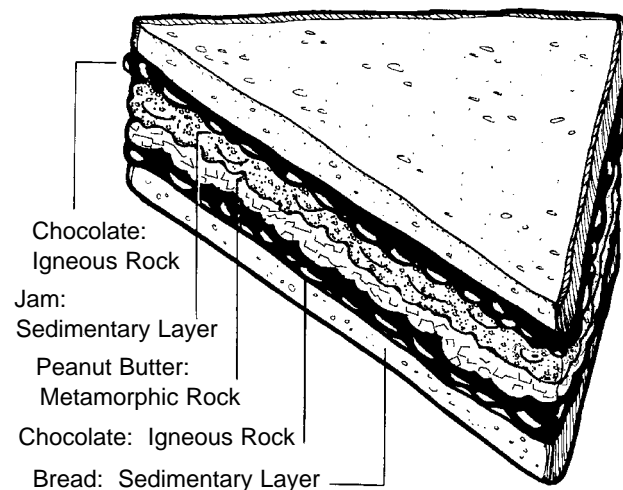
4. Explain to the students what each material represents.

Chocolate—igneous rock that was melted and forced between layers of rock.

Peanut Butter—metamorphic rock, made by rock changed through pressure and heat.

Jam—sedimentary rock with seeds being sedimentary rocks deposited in the ocean

Bread—more sedimentary layers



Closure

- Tell the students to put their bread together into a sandwich, with the bottom layer being the bread with peanut butter on it. Have them slice their sandwich in half. Show the transparency of The Movement of the Earth's Crust (page 29) and discuss it. Give a copy of it and the Sandwich Faults activity sheet (page 30), to each group and let them manipulate their sandwich to demonstrate the three types of faults. As they do so, have them draw each of these on the Sandwich Faults worksheet. Discuss the drawings with the students.