

Layers of the Earth

Engage

Materials: Layered wafer cookie for each student, paper towels

What To Do:

1. Observe the wafer cookie your teacher give you.

2. Draw and color it in the space below.

3. Describe the different types of layers. Be sure to include the color and texture.

4. How many hard layers are there? _____

5. How many soft layers are there? _____

6. When you have finished dispose of the cookie as your teacher says.

Explore

Materials: Colored pencils, scissors

What To Do:

1. Read the information about each layer of the Earth found on the third page.

2. As you read, underline the following information.

1. State of matter (liquid or solid)
2. Elements found in the layer
3. Temperature
4. Thickness

3. Cut only along the dotted lines on the top sheet.

4. Cut out the Top Sheet and the Bottom Sheet on the next page.

5. Glue Bottom Sheet into your notebook.

6. Match the solid outline on the top sheet with the bottom sheet.

7. Apply glue to the labeled area.

8. Lay the top sheet on top of the bottom so that the shapes match.

9. Label the first flap of the Top Sheet at the pointed end of the cone “Inner Core”

10. Fold the flap back and record the underlined information from your reading.

11. Continue placing the name and the information under each flap.

12. Color the layers a different color as follows:

Crust/lithosphere -green

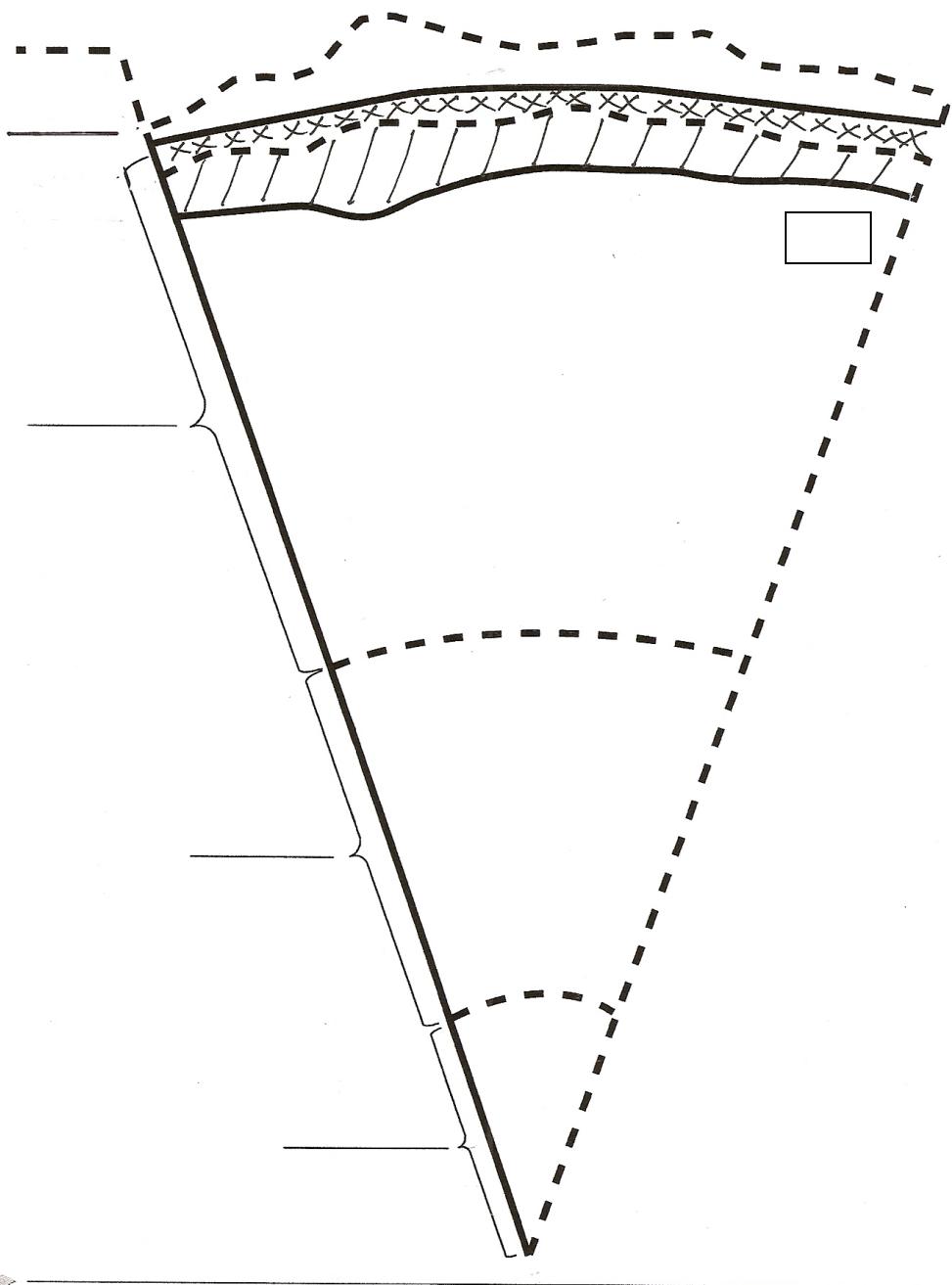
Outer Core - orange

Mantle/asthenosphere -yellow

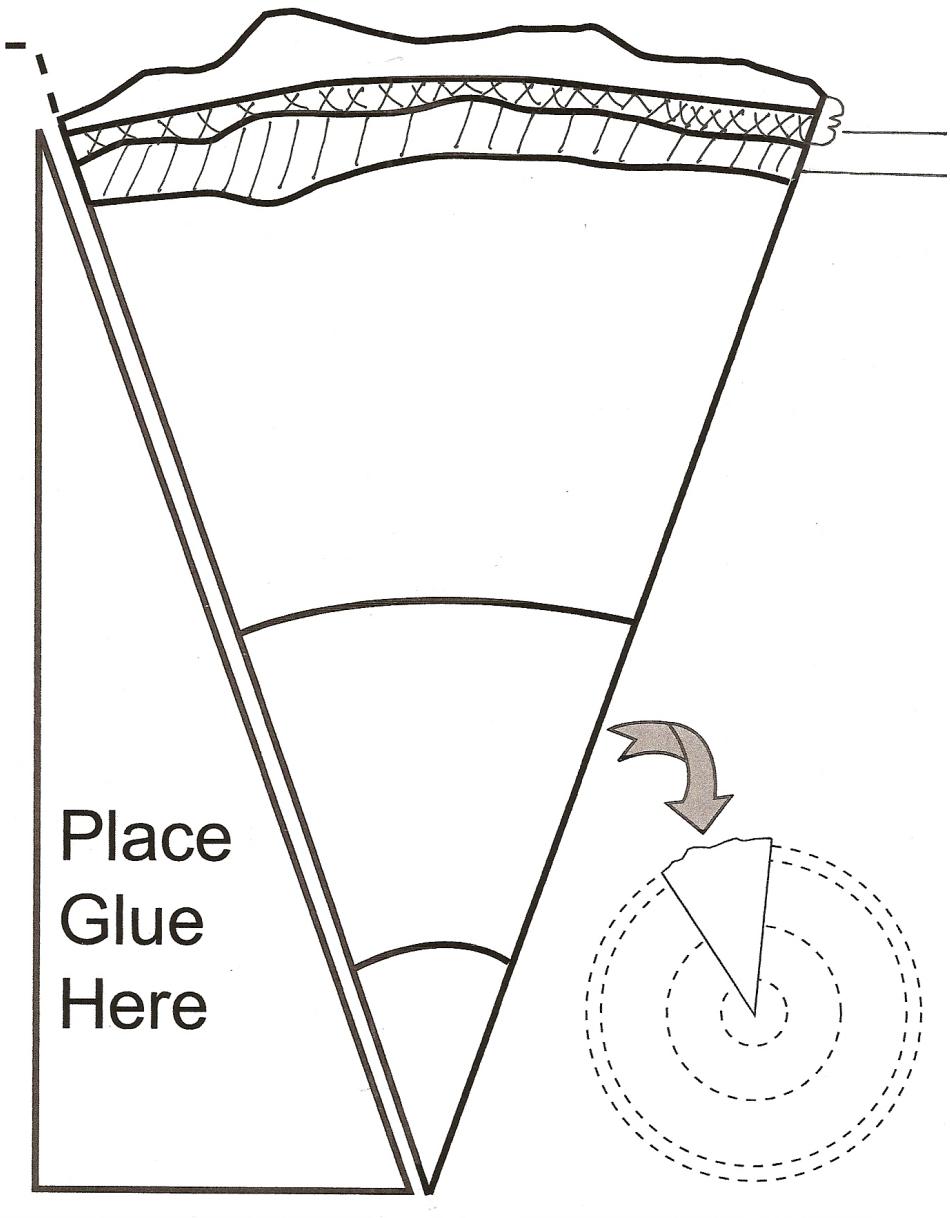
Inner core – red

13. Color the circle at the bottom the correct colors.

Top Sheet



Bottom Sheet



Explain

The Crust and Lithosphere

The layer around the asthenosphere is known as the lithosphere. The lithosphere is the solid outer layer of the Earth that consists of the crust and the second layer of the upper mantle. This layer is made mostly of the elements oxygen (O₂) and silicon (Si). The crust is the thinnest layer of Earth and has a temperature range from 200°C - 400°C. Continental crust is thicker than oceanic crust, which is 5-8 km thick.

The Mantle and the Asthenosphere

The mantle is located outside the outer core. This layer is mostly made of iron (Fe) and magnesium (Mg) and has a thickness of approximately 2,900 km. The upper mantle has two layers and it's high temperatures of 2,800-3,200°C can melt rocks. The deepest layer in the upper part of the mantle is called the asthenosphere, and it is semisolid. Semisolid is a solid that flows like a liquid.

The Outer Core

The outer core is less dense than the inner core and, therefore, is located around the inner core. The temperatures range from 4,000°C to 5000°C. The outer core is approximately 2,200 km thick and is a combination of mostly molten iron (Fe) and nickel (Ni). Molten describes materials that change to liquid form when exposed to extreme amounts of thermal energy.

The Inner Core

The deepest layer in Earth is the inner core. It is located at the center of Earth because it is the densest material of all Earth's layers. The inner core is solid and mostly composed of the element iron (Fe). It's extremely hot temperature is estimated at 6000°C. This layer is approximately 1,250 km thick.

IRON

MAGNESIUM

NICKEL

SILICON

OXYGEN

ELEMENTS IN THE EARTH

Elaborate

What to Do:

1. Watch the video "Structure of the Earth" at
<https://www.youtube.com/watch?v=eXiVGEEPQ6c>
2. Use the Word Bank to help you fill in the blanks below.

WORD BANK

crust	surface	solid	largest	floats
iron	depth	inner	miles	lava

1. This is the Earth's _____.
2. It consists of all kinds of rocks, soil and everything you see above the earth's _____!
3. It extends to about 25 _____.
4. The earth's crust _____ on this layer which is called the Mantle.
5. The mantle is about 1800 miles thick and by far the _____ layer of earth.
6. The earth's outer core is made up of super-hot liquid molten substance called _____.
7. This lava is believed to be made of _____ and nickel.
8. It extends to a _____ of 3000 miles beneath the earth's surface.
9. The _____ core extends another 900 miles towards the center of the earth.
10. It is believed that this inner core is a _____ ball made of iron and nickel.

Evaluate

Name _____ period _____

EXIT TICKET

Layers of the Earth

1. What is the name of the layer at the center of the earth?
 - a. outer core
 - b. inner core
 - c. mantle
 - d. crust
2. What is the name of the layer at the top of the earth?
 - a. outer core
 - b. inner core
 - c. mantle
 - d. crust
3. What is the core made of?
 - a. rock
 - b. sponge
 - c. metal
 - d. dust
4. The core's temperature is
 - a. very hot
 - b. medium hot
 - c. warm
 - d. cool
5. Which of the following element is NOT found in the Earth?
 - a. Neptunium
 - b. Silicon
 - c. Oxygen
 - d. Iron