

Name _____

Partner(s) _____

Date _____

Cross Sectional Model of the Earth

Objectives

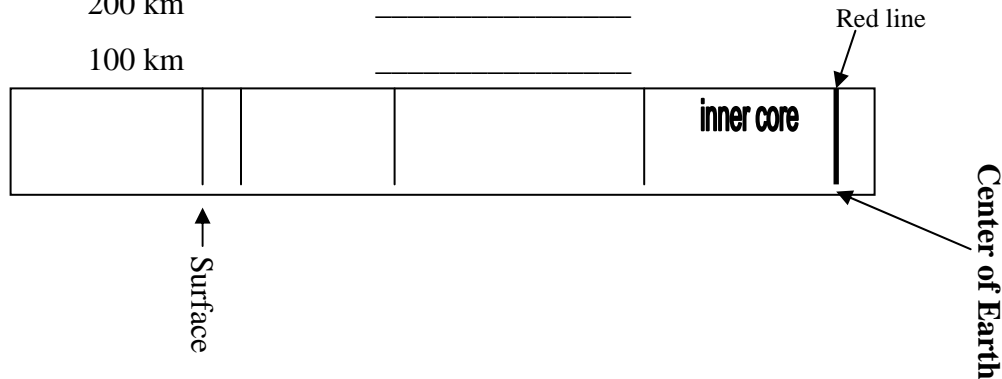
Construct a model of the layers of the earth to scale.

In this lab a model of the Earth in cross section will be constructed to a scale of **1 cm equal to 100 km** – kilometers- (or 1:100, 000).

Precedure:

1. Cut an 80 cm piece of register tape. Draw a red line 10 centimeters from one end of the tape and label it “center of the Earth.”
2. Using a pencil to mark the layers of the Earth onto the register tape based on the data table below.
(An average pencil width is approximately 0.1 cm. Therefore the width of a pencil is equal to 10 kilometer)

<u>Layer</u>	<u>Average Thickness</u>	<u>Scale Thickness (cm)</u>
Inner Core	1276 km	_____
Outer Core	2270 km	_____
Mantle	2885 km	_____
Asthenosphere	200 km	_____
Lithosphere	100 km	_____



3. Draw the layers of the atmosphere. Use the outer edge of the Earth (Top of lithosphere- Surface) as a frame of reference

<u>Layer</u>	<u>Avg Thickness</u>	<u>Scale Thickness (cm)</u>
Tropopause	12 km	_____
Stratopause	50 km	_____
Mesopause	80 km	_____
Thermopause	140 km	_____

4. Color the inner core yellow, the outer core orange, the mantle red and the asthenosphere light brown and the lithosphere lightly shade in pencil. For the atmosphere leave the troposphere blank, color the stratosphere light blue, the mesosphere dark blue and thermosphere violet. Color the remaining space black (outer space).

Questions

1. Determine the habitable thickness of the Earth by performing the following equation (show all work):

$$\frac{\text{The thickness of the troposphere in centimeters}}{\text{The thickness of the Earth in centimeters}} \times 100$$

2. The Earth is approximately 40,000 kilometers in circumference. What percentage of the Earth's circumference is represented by the width of the register tape? (show work)
3. Mount Everest is the tallest mountain on Earth rising 8,850 meters above sea level. Given this model's scale (1 cm = 100 kilometer) describe how it would appear on the register tape.
4. How accurate is this model? Reflect on some possible sources of error assuming that the scale distances are correct.
5. A student named Troy made a cross section model from the North Pole to the center of the Earth. A student named Rockie made a cross section model from the Equator to the center of the Earth. Each model was constructed using a scale of 1 cm equals 100 km (or 1:100,000). Compare and contrast these two models given that the Earth is an oblate spheroid. (Use Workbook to help)