



Name: _____

Period: _____

Hot Models

Introduction:

Today, we will be developing and using models to understand how scientists have concluded that the core is the hottest portion of the Earth.

Phenomenon: What do you notice or observe with the graph? What are you wondering about?

Observations:

Wondering:

Why is the Earth's interior hot? List two main reasons below.

*

*

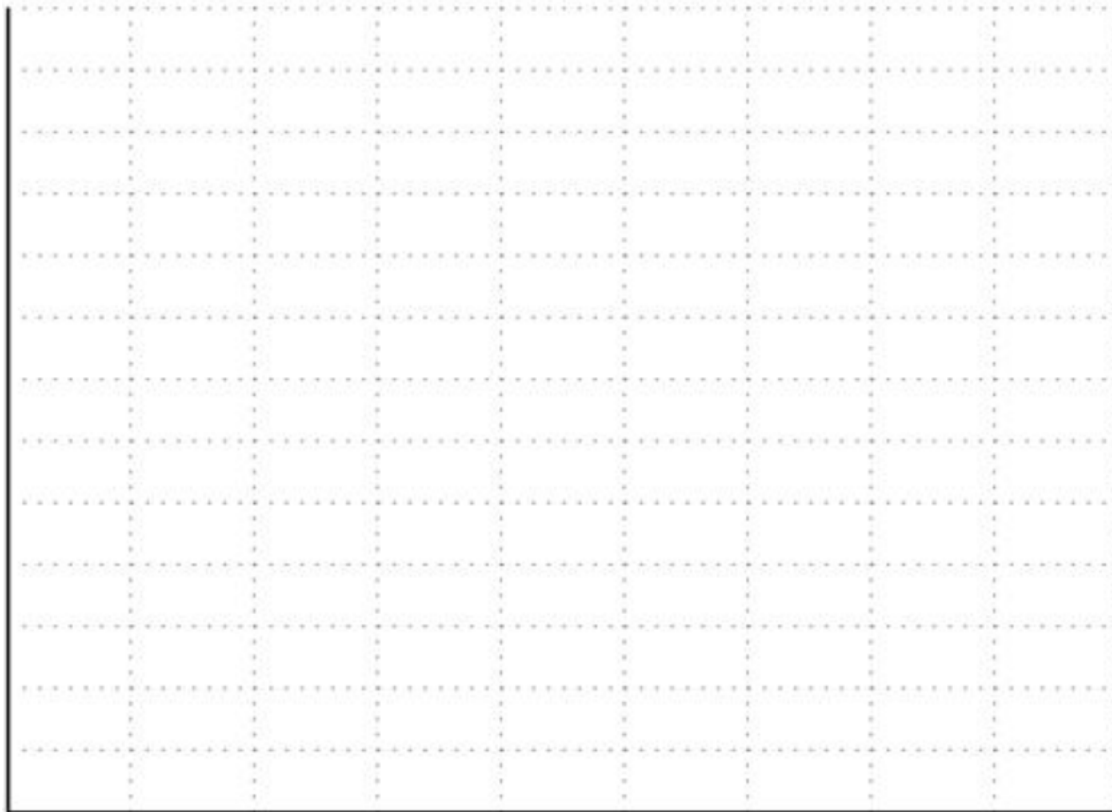
Model Radioactive Decay with a Radioactive Atom. Emphasize the **matter** and **energy**.

Engage: Evidence #1

How deep was the Kola superdeep borehole?

Based on the information in the video, what happens to the temperature (energy) of Earth's crust (matter) the deeper we bore?

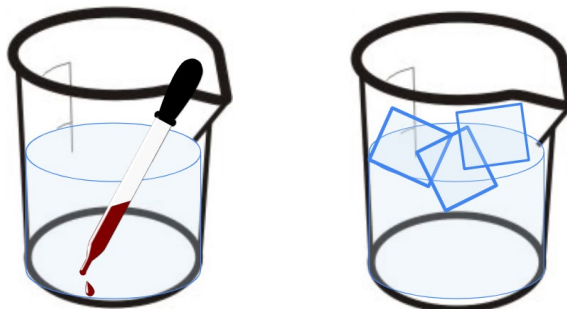
Graph: Using the data from the PowerPoint, model the temperature changes with depth on the following graph. Label the temperature as the Y-axis and depth as the X-axis. Identify where the higher energy is located on the graph.



Does this graph confirm or refute the theory that the core of the Earth is the hottest layer of the Earth?

Explore: Evidence #2

You'll be given 2 beakers of water, some hot water colored red, ice, and a pipet.



Modeling:

Using the pipet, gently squeeze some hot water into the bottom of one of the beakers of room temperature water. What do you observe?

Develop a model: Label the food coloring water as a higher-density or a lower-density matter. Also, label what water is hot or cold in the model (identify high or low energy).

Next, take some colored ice and place it into the other beaker of room-temperature water. What do you observe?

Develop a model: Label the food coloring water as a higher-density or a lower-density matter. Also, label what water is hot or cold in the model (identify high or low energy).

Using the information from the lab, explain how the matter in Earth's interior would behave if it were near the cooler crust or if it were near the hot core.

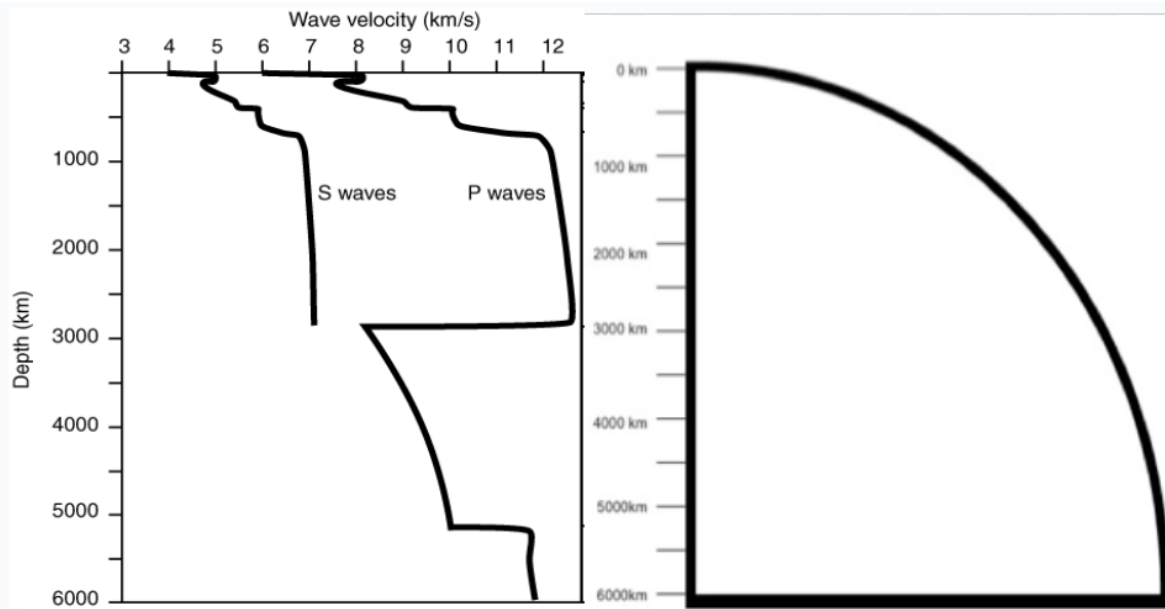
Define convection in terms of density.

Develop a model for convection that shows matter and energy changes:

V1

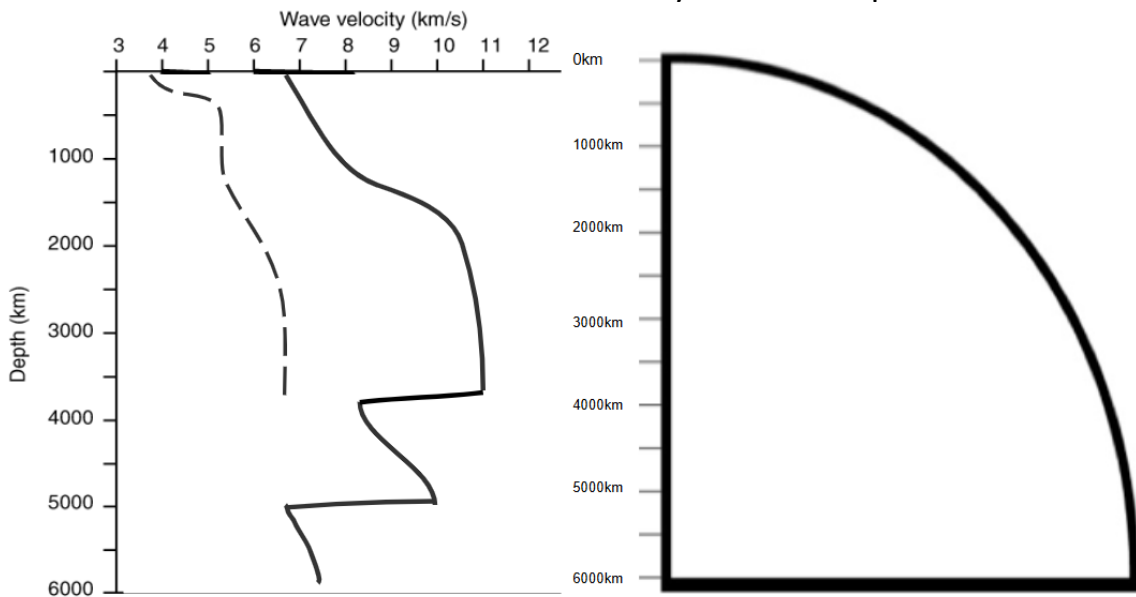
Evidence #3

Earth's S and P Waves



1. List the three pieces of evidence contributing to our understanding of the layers and temperatures inside the Earth.

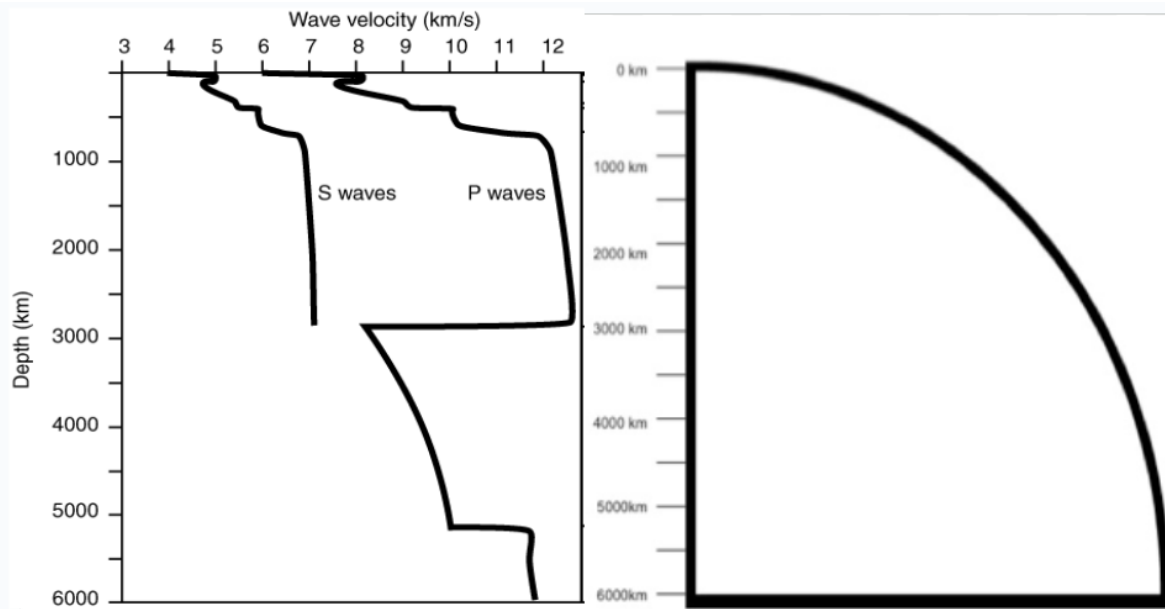
2. Based on the S and P wave data, what would the **layers, temperature, and thermal convection** currents look like in the newly discovered planet below? S wave --- P wave —



V2

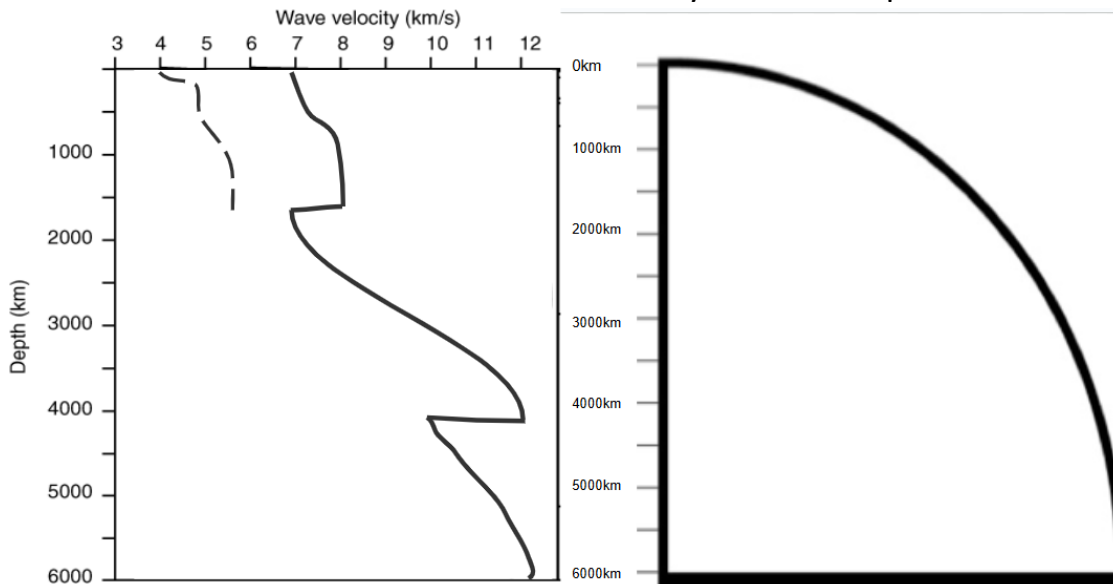
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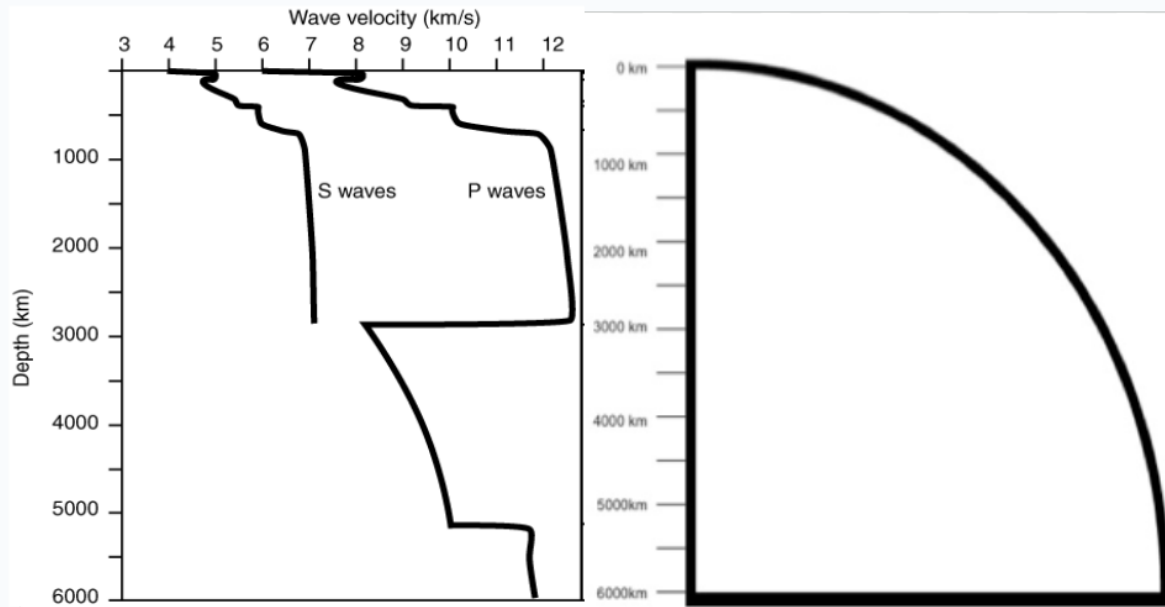
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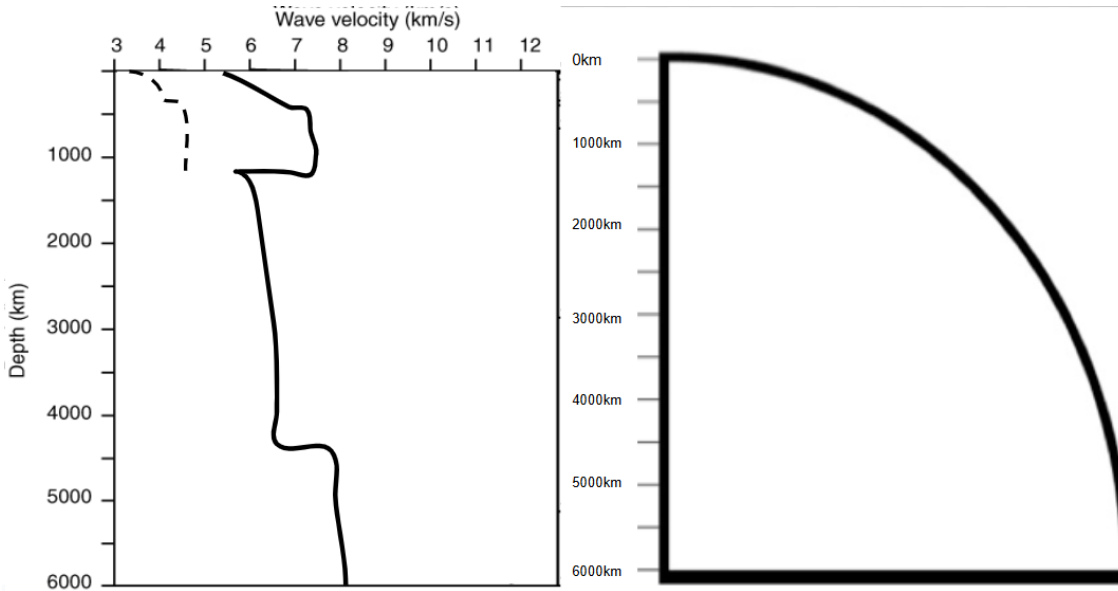
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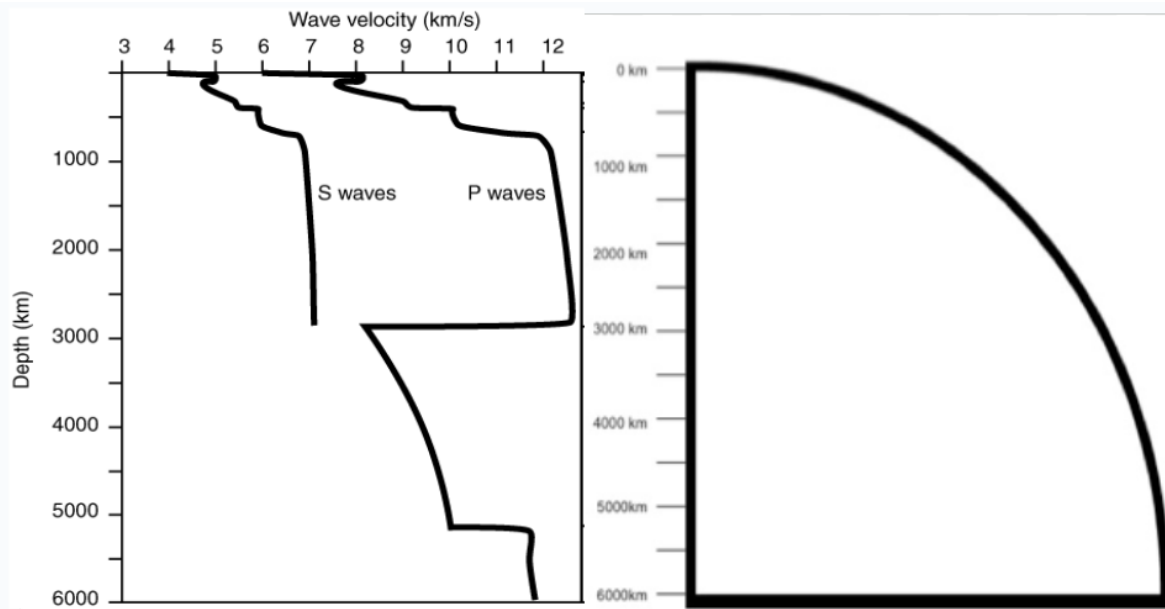
2. Based on the S and P wave data, what would the **layers, temperature, and thermal convections** currents look like in the newly discovered planet below? S- wave --- P wave —



V4

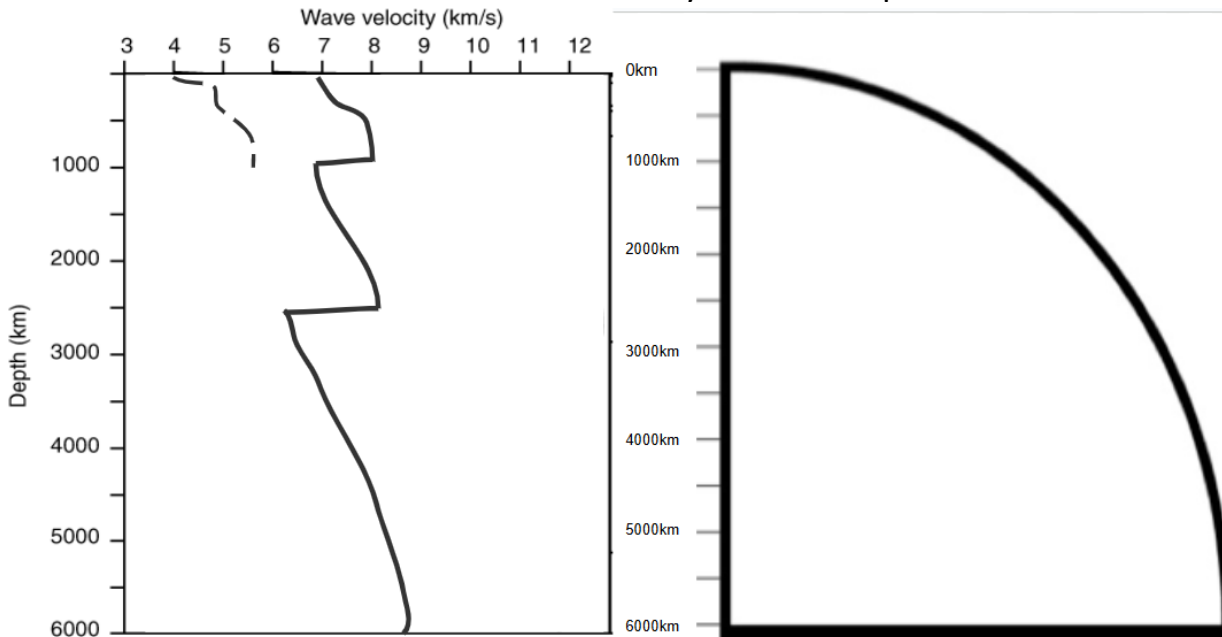
Evidence #3

Earth's S and P Waves



1. List the three pieces of evidence that contribute to our understanding of the layers and temperatures inside the Earth.

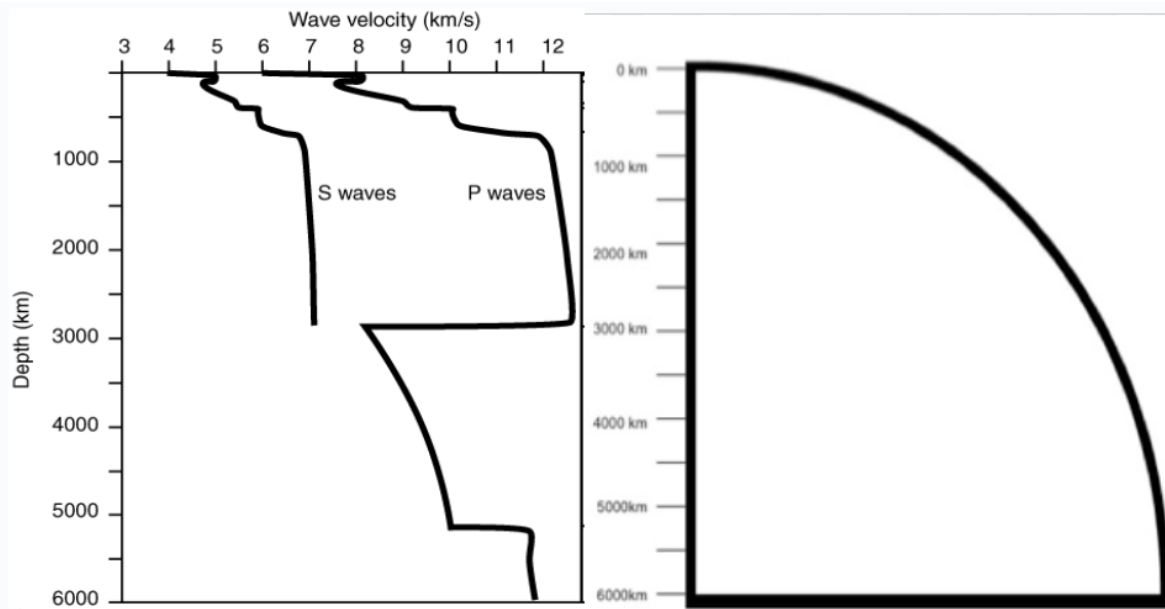
2. Based on the S and P wave data, what would the layers, temperature, and thermal convections currents look like in the newly discovered planet below? S- wave --- P wave ---



V5

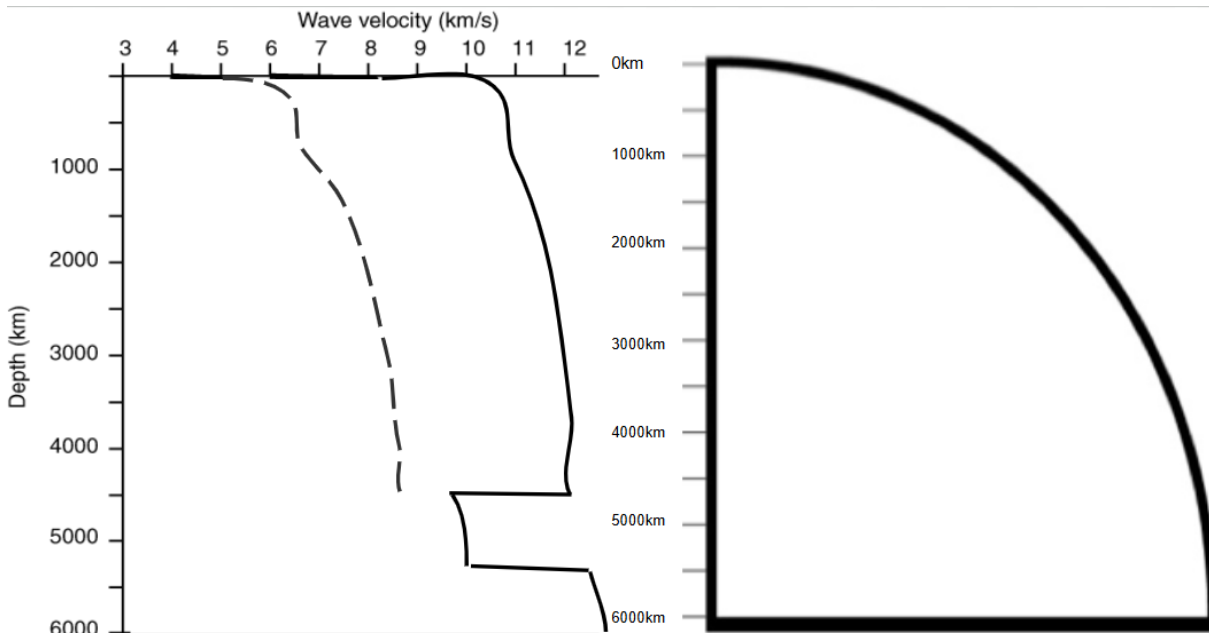
Evidence #3

Earths S and P Waves



1. List the three pieces of evidence contributing to our understanding of the layers and temperatures inside the Earth.

2. Based on the S and P wave data, What would the layers, temperature, and thermal convection currents look like in the newly discovered planet below? S- wave --- P wave —



Name _____ Hour _____

Ticket Out: The Kola superdeep borehole only nicked the crust of the Earth. How do we know the temperatures and layers further down inside the Earth?

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