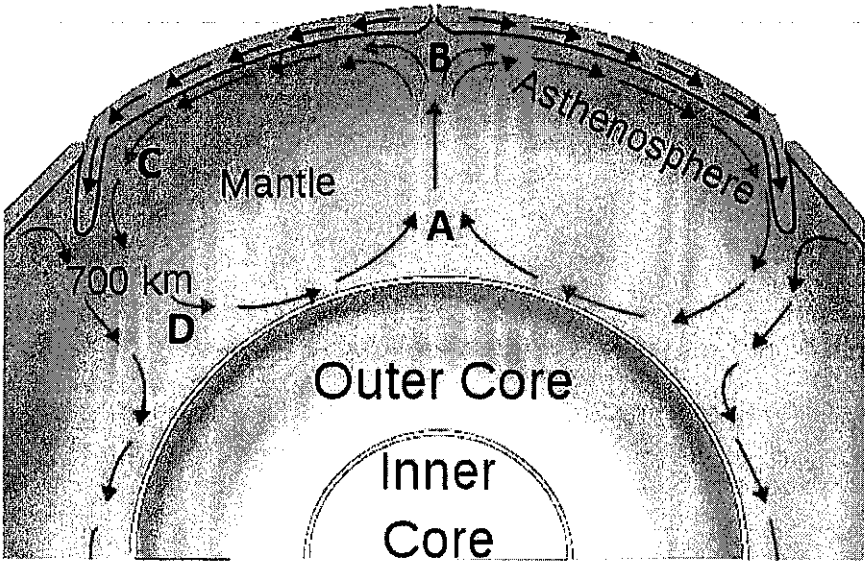
GRAPHIC ORGANIZER: CONVECTION CURRENTS



A

B

C

D

CAUSE

EFFECT

RESULT

Question: What causes convection currents in Earth's mantle?

Convection and the Mantle

To explain how heat moves from Earth's core through the mantle, you need to know how heat is transferred.

There are three types of heat transfer:

Radiation - the transfer of energy through empty space; has no direct contact between heat source and an object.

Example: Sunlight warming Earth's surface

Conduction - heat transfer by direct contact of particles of matter. Example: Metal spoon heating up in a pot of hot soup.

Convection - transfer of heat by the movement of a heated fluid (includes liquids and gases).

Heat transfer by convection is caused by differences in temperature and density within a fluid.

→ Density - measure of how much mass there is in a volume of a substance.

Example: heating water on a stove - as water on bottom gets hot, it expands, becomes less dense and rises; when the surface water starts warming up it becomes denser and moves to bottom causing a convection current, or the flow that transfers heat

Convection currents flow in the mantle - heat source is the Earth's core and from the mantle itself. These currents have been acting like a conveyor belt moving the lithosphere above for the past four billion years!