Layers of the Earth Tic-Tac-Toe

Compare the density of the mantle to the core.	Explain how temperature and density change from the crust to the core.	Compare the temperature of the inner core to the outer core.	Compare the composition of the inner core to the outer core.
Compare the temperature of the crust to the mantle.	Compare the composition of the mantle to the core.	Compare the density of the crust to the core.	The core of the Earth is like ____ because _____.
Compare the composition of the crust to the core.	Compare the temperature of the crust to the core.	List the layers of the Earth in order from more dense to less dense.	Compare the density of the inner core to the outer core.
The crust of the Earth is like ____ because _____.	Compare the density of the crust to the mantle.	Compare the composition of the crust to the mantle.	Compare the temperature of the mantle to the core.

Layers of the Earth Tic-Tac-Toe

Directions:

- Select the block that you will ATTEMPT to “mark”. If you answer the question correctly, you may put your colored square in the block.
- If you do not know the answer, do not put your colored square in the block. If someone from your group does not agree with your answer, check the “cheat” sheet or ask the teacher.
- The next player has a turn.
- Players will keep going until one of the players has four marked squares down, across, or diagonal.

Layers of the Earth Tic-Tac-Toe KEY

Comparing Density
- Crust ↔ Mantle: The crust is less dense than the mantle
- Crust ↔ Core: The crust is less dense than the mantle
- Mantle ↔ Core: The mantle is less dense than the core
- Inner Core ↔ Outer Core: The inner core is more dense than the outer core

Comparing Temperature
- Crust ↔ Mantle: The crust has a lower temperature than the mantle
- Crust ↔ Core: The crust has a lower temperature than the core
- Mantle ↔ Core: The mantle has a lower temperature than the core
- Inner Core ↔ Outer Core: The inner core has a higher temperature than the outer core

Comparing Composition
- Composition of the Crust: rigid, very thin in comparison to other layers; brittle and can break easily; thickness under oceans varies little, but thickness under continents can vary much more; continental crust (under continents) is made up of sedimentary, metamorphic, and igneous rocks; oceanic crust (under the oceans) is made up of igneous rock that has more iron and magnesium than rocks in the continental crust
- Composition of the Mantle: semi-solid rock; made up of minerals rich in iron, silica, magnesium, and oxygen; it is divided into the upper mantle and the lower mantle; the upper mantle is weaker than the rest of the mantle and bends and flows under pressure; the lower mantle is solid;
- Composition of the Core: metallic (iron-nickel alloy) rather than stony so it is more dense
- Composition of the Inner Core: solid that is mostly made up or iron and nickel
- Composition of the Outer Core: molten (liquid) iron and nickel which spins as the Earth rotates creating the Earth's magnetic field

Explain how temperature and density change from the crust to the core: Both temperature and density (pressure) increase with depth (as you move from the crust to the mantle to the core).

List the layers of the Earth in order from more dense to less dense: Core (Inner Core, Outer Core), Mantle (Lower Mantle; Upper Mantle), Crust

The crust of the Earth is like ____ because _____. The answers to this question may vary. However, the answer should be considered correct if a reasonable connection is made in regards to any of the following: order of the layer; temperature; composition; density. Examples: shell of a boiled egg; icing on a cake; hard shell covered candy such as M&Ms; outer rim of a frozen lake or pond because it is thinner than the other parts of the lake and is easier to crack

The core of the Earth is like _____ because _____. The answers to this question may vary. However, the answer should be considered correct if a reasonable connection of made in regards to any of the following: order of the layer; temperature; composition; density. Examples: yolk of an egg; center of a cream filled pastry; a peach pit because it is in the center and it is more dense than the outer layers; a peanut in a peanut M&M; center of a fire because it is hotter than the rest of the fire;

Layers of the Earth Tic-Tac-Toe Student Responses

Compare the density of the mantle to the core.	Explain how temperature and density change from the crust to the core.	Compare the temperature of the inner core to the outer core.	Compare the composition of the inner core to the outer core.
Compare the temperature of the crust to the mantle.	Compare the composition of the mantle to the core.	Compare the density of the crust to the core.	The core of the Earth is like ___ because ____.
Compare the composition of the crust to the core.	Compare the temperature of the crust to the core.	List the layers of the Earth in order from more dense to less dense.	Compare the density of the inner core to the outer core.
The crust of the Earth is like ____ because ___.	Compare the density of the crust to the mantle.	Compare the composition of the crust to the mantle.	Compare the temperature of the mantle to the core.