

ESSENTIAL LEARNINGS: INSIDE EARTH AND PLANETS

1. Earth is made up of lots of _____ and so are other planets.
2. These layers have different _____. As layers get created, it is known as the process of _____. Planets form layers because _____ pulls down materials toward the center of the planet and the more dense materials sink to the core.
3. Energy is transformed inside of the Earth because of this. The friction from the materials sliding past each other as they form layers creates a lot of _____ that makes the inside of Earth hot. Inside of Earth there is also _____, which means that atoms break down and release a lot of _____ that also makes the inside of Earth hot.
4. With all the energy that is created inside of Earth, the matter of Earth gets moved around by it. One way this happens is when tectonic plates release seismic energy and create an earthquake and the land gets moved. Another way this happens is through _____, which happen because more dense, cold matter _____ and less dense, warm material _____ . Because the inside



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of Earth is so hot, it heats up matter in the mantle, which rises as it gets less dense. It cools near the surface, gets more dense, and sinks back down. This cycle happens over and over and causes tectonic plates to move.

5. The layers of Earth are the _____, _____, _____, and _____. The outer core is the only layer that is _____, while the others are all solid.

6. We know about the inside of Earth specifically because of what information we can gather from earthquakes. The waves from earthquakes are known as _____ waves.

7. There are body waves, which travel through the Earth, and surface waves, which travel on the outside of Earth. The two types of body waves, _____ and _____ are both similar and different.

8. _____ are the first kind of wave that comes from an earthquake and they are the fastest waves. They are longitudinal waves and they can travel through solids and liquids, so therefore, they can go through the outer core.

9. _____ are the second kind of wave that comes from an earthquake and they are the second fastest wave. They are transverse waves and because of this, they cannot travel through liquids. S-waves will NEVER go through the _____.

10. When P- and S-waves travel through Earth, they have specific behaviors that they exhibit. They both can _____, which means that they can be bounced back when they come to a new layer. They can also _____, which means that their paths will bend when they travel through a layer. They refract and reflect because the _____ of the layers change and affect the waves' behaviors.

11. Both P- and S-waves will travel faster when the density of the medium they are traveling through is _____ dense. This means that as waves travel deeper to the center of Earth they get faster and faster. When they get to a new layer they often jump up in speed very quickly as the density of the new layer affects them. When they get to the outer core, P-waves will _____ and S-waves will _____.