

## ESSENTIAL LEARNINGS: CHANGES TO EARTH'S SURFACE - TECTONIC PLATES



**Glue this side into your notebook**



1. The Earth has several layers based on \_\_\_\_\_ . One of those layers is called the lithosphere, which includes the \_\_\_\_\_ and the top of the \_\_\_\_\_ .
2. The lithosphere is where we have \_\_\_\_\_ , which are the large puzzle piece rocks that make up the surface of the Earth. They float on top of the asthenosphere (the mantle) which moves the plates due to the movement of matter in the mantle. This movement of matter is called \_\_\_\_\_ , where hot, less dense magma \_\_\_\_\_ and cold, more dense magma \_\_\_\_\_ .
3. Tectonic plates make up the continents as well as the ocean floor. The difference between these is their densities. Oceanic plates under water are more \_\_\_\_\_ than continental plates. When a dense plate meets a less dense plate, they can sink below the less dense plate and this is called a \_\_\_\_\_ .
4. As plates move they interact at their boundaries differently with each other. The three types of boundaries are \_\_\_\_\_ , \_\_\_\_\_ , and \_\_\_\_\_ .

5. At \_\_\_\_\_ plate boundaries, plates come together. Here you will find:
- deep ocean trenches, where the dense oceanic crust \_\_\_\_\_ (goes beneath) the continental crust to make a deep trench,
  - \_\_\_\_\_, where more dense oceanic crust goes under the less dense continental plate
  - \_\_\_\_\_, where the subduction melts the plate and then that magma rises and explodes out as lava,
  - volcanic island arcs, where the subduction melts material and volcanoes are created along the subduction zone,
  - folded \_\_\_\_\_, where the plates aren't dense enough to subduct so they just fold when they meet,
  - and earthquakes, when the plates vibrated against each other as they move.
6. At \_\_\_\_\_ plate boundaries the plates move apart from each other. Here you will find:
- rift valleys, where two continental plates pull apart until the crust breaks and drops deeper and deeper,
  - mid-ocean ridges, where two oceanic plates pull apart and magma rises, cools, and makes new crust and \_\_\_\_\_ under water,
  - \_\_\_\_\_, where the plates pull apart under the ocean,
  - and \_\_\_\_\_, where the plates vibrate as they move away from each other.
7. At \_\_\_\_\_ plate boundaries, plates slide past one another in a parallel motion in the opposite direction. Here you will find \_\_\_\_\_, where the plates vibrate as they move past one another.
8. How do we know that plates exist and do what they do? The original ideas of plate tectonics can be attributed to \_\_\_\_\_. Before him people thought that the planet's continents are stationary. Wegner thought that continents drifted and floated through the crust of the ocean, hence the term \_\_\_\_\_. He also identified that the Earth was one supercontinent at one point in Earth's history. In the 1950s, another scientist named \_\_\_\_\_ supported Wegner's findings. Some of the evidence they used includes:
- the puzzle-like fit of the continents,
  - \_\_\_\_\_ and rocks found along matching edges of different continents,
  - finding fossils of tropical plants and animals in currently cold places,
  - the magnetic field patterns change along rocks,
  - and rocks younger in the middle of the ocean ridges but get older the farther you get, and equally so on each side.
9. Now, we know that there was a supercontinent called \_\_\_\_\_ but that the plates are floating on magma from the mantle. \_\_\_\_\_ are the reason that plates move. Our current data is improved by studying seismic data, GPS data, and looking at the sea floor.