



Earth Science

LAB #21: RING OF FIRE

Name: _____

Date: _____

Ring of Fire

Lab #21

Discussion: We have learned that we do not know how to predict when an earthquake will happen, but it is possible to predict volcanic eruptions. But what causes earthquakes and volcanoes? To what do seismologists refer when they talk about the Ring of Fire? In this lab, we locate the Ring of Fire on the Tectonic Plates map from the PS/ESRT, page 5.

Objectives: Become more familiar with the Tectonic Plates chart on the PS/ESRT page 5. Locate the Ring of Fire on the PS/ESRT Tectonic Plates map.

Purpose: Use what we have learned about how the three types of rocks form and how weathering occurs to deduce the order of geologic events.

Hypothesis: Many events and features of the Earth (volcanoes, earthquakes, orogeny, ocean trenches, ocean ridges, and island arcs) can be explained by the theory of plate tectonics.

Theory: Earth's crust is divided into sections called plates. The plates float and move about on the asthenosphere. Interactions at the plate boundaries can explain many of Earth's events and features such as earthquakes and volcanoes.

Materials:

Ruler, red and blue colored pencils.

Method:

Part A: Plot the earthquakes on the Tectonic Plates map (see page 3) using a blue X.

Part B: Plot the volcanoes on the Tectonic Plates map (see page 3) using a red O.

Earthquakes

37° N, 120° W
19° N, 102° W
50° N, 175° W
46° N, 124° W
4° S, 147° E
30° N, 156° E
23° S, 178° W
42° S, 121° W
3° S, 102° W
33° N, 118° W
37° S, 176° E
31° N, 116° W
57° N, 156° W
36° N, 139° E
18° S, 110° W

Volcanoes

44° N, 120° W
55° N, 157° W
12° N, 115° W
40° N, 124° W
24° S, 122° W
4° S, 138° E
53° N, 170° E
11° S, 177° W
16° S, 124° W
53° N, 166° W
34° N, 131° E
49° S, 121° W
42° S, 168° E
15° S, 143° E
7° S, 169° E

Conclusions:

1. Describe the pattern of earthquakes and volcanoes.

2. What causes earthquakes and volcanoes?

3. The borders of which plate are known as the Ring of Fire?

4. Explain why earthquakes form at the borders of a tectonic plate.

5. Explain why volcanoes occur at the borders of a tectonic plate.

6. Japan has an average of two earthquakes per week. Show your work and calculate how many earthquakes you would have experienced if you had lived all your life in Japan.

7. What other natural disaster occurs often in Japan that can be caused by earthquakes and volcanoes of which all people living on the coastlines of the Ring of Fire need to be aware?

Tectonic Plates

