

## Introduction to Plate Tectonics

Page 1

**Learning Objectives:** *By the end of lab, students will be able to*

- interpret maps/images and identify patterns/features.
- identify the type of plate boundary based on the features and activities present.
- link *surface* features and activities present on the Earth's surface to tectonic processes. (includes features of plate boundaries and evidence that supports plate tectonic theory).
- enhance their communication skills and group-working skills.

**Pre-lab:** Prior to lab, read the provided passage on evidence related to one of the following features: earthquakes, volcanoes, topography & seafloor ages/anomalies, and faults. You will discuss the reading in class with a small group of students who read the same passage.

- Record your thoughts, ideas, hypothesis, theory, or parts you do not understand about your reading. Include:
  - What is the main idea of the reading passage?
  - What could explain the phenomena described in the passage?
  - What questions do you still have?
  - What would you like to know more about?

## Introduction to Plate Tectonics

Page 2

**Expert Group topic:**

**Group members:**

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**Part 1:** Discuss the pre-lab reading and have one group member record your answers to the following questions. (~10 min)

What is the main idea of the reading passage?

What could explain the phenomena described in the passage?

What questions does the group still have?

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**Part 2:** Examine the map provided. Look for patterns and discuss them within your group. (~15 min)

Each member of the group should create a short list of the patterns and observations. (You will need this list to share your observations in a new group made up of members from each of the other groups in the class.)

## Introduction to Plate Tectonics

Page 3

### Mixed Group Members:

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**Part 1:** Each member of the new group should provide a short summary of the patterns and observations from your expert (first) group. Have one group member record your answers to the following questions; the group will share its summary with the whole class. (~15 min)

Do the patterns overlap?

How do you explain what you see?

What questions does the group have?

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**Part 2:** Examine the three regional data sets - these data sets include the more detailed data with multiple features. Have one group member record your answers to the following questions; the group will share its summary with the whole class. (~20 min).

What type of boundary do you think this is? What is the evidence?

What do you think is happening at this plate boundary?

## Introduction to Plate Tectonics

Page 4

What other information would you like to better confirm this hypothesis?

Does the new GSP data change your hypothesis? Explain why it supports or does not support your previous hypothesis about each region.

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**Part 3:** With your new group examine the six new regional maps (take ~2 min per region) - Record the name of the map region, the type of plate boundary, and your reasoning for assigning that boundary type. (~10 min).

**Region Name:**

**Hypothesis for plate boundary type:**

**Hypothesis reasoning:**

**Region Name:**

**Hypothesis for plate boundary type:**

**Hypothesis reasoning:**

**Region Name:**

## **Introduction to Plate Tectonics**

**Page 5**

**Hypothesis for plate boundary type:**

**Hypothesis reasoning:**

**Region Name:**

**Hypothesis for plate boundary type:**

**Hypothesis reasoning:**

**Region Name:**

**Hypothesis for plate boundary type:**

**Hypothesis reasoning:**

**Region Name:**

**Hypothesis for plate boundary type:**

**Hypothesis reasoning:**

## Introduction to Plate Tectonics

Page 6

Return to **Expert group** (first group)

Discuss the pre-lab reading and have one group member record your answers to the following questions. (~15 min)

What do you now see as the main idea of the reading passage?

How would you now explain the phenomena described in the passage?

How do your ideas and explanations differ from what you recorded at the beginning of the class session?

What questions does the group still have?

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**"Minute Paper"** (response to prompt provided by instructor)