Elevating Land

Students create a scatter plot that correlates the highest and lowest points of 10 countries to understand the relationship between high and low relief and plate tectonics.

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Grade Level</td>
<td>8</td>
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<tr>
<td>Duration</td>
<td>1 class period</td>
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**National Geography Standards**

**PHYSICAL SYSTEMS**

4. The physical processes that shape the patterns of Earth's surface

**Arizona Geography Strand 4**

**CONCEPT 1**

World in Spatial Terms

GRADE 6, 7, and 8

PO 1 Construct maps, charts and graphs to display geographic information.

**CONCEPT 6**

Geographic Applications

GRADE 6

PO 2 Use geographic knowledge and skills when discussing current events.

GRADE 7 and 8

PO 3 Use geographic knowledge and skills when discussing current events.

**Arizona Math Standard**

**STRAND 2 Data Analysis, Probability, and Discrete Math**

**CONCEPT 1 Data Analysis**

GRADE 8

PO 7 Formulate reasonable predictions based on a given set of data

PO 9 Solve contextual problems using scatter plots, box-and-whiskers plots, and double line graphs of continuous data

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**Overview**

Scatter plots are a graphical representation in which geographic data can be interpreted to understand the relationship between high and low relief and plate tectonics.

**Purpose**

To help the student understand plate tectonics and continental formation, the student will plot the highest and lowest points of 10 selected countries and are able to explain the relationship between elevation and plate tectonics.

**Materials**

- Data Table Worksheet
- Data Table Worksheet 2
- Scatter Plot grid

- Scatter Plot grid key
- Pictures
- World map identifying collision of tectonic plates
- Computer if the movie is shown
- Math and Geography Assessment Handouts
- Math and Geography Assessment Key

**Objectives**

The student will be able to:

1. Plot coordinate pairs on a scatter plot.

2. Interpret data from the scatter plot to reach a conclusion about the relationship between relief and plate tectonics.
Elevating Countries

Procedures

Students should have experience in scatter plots and coordinate planes.

Background information: If possible, show the animations and graphics on the lesson home page about plate tectonics. The focus of this lesson rests on continental areas that are places of plate tectonic collision. These give the big mountain ranges seen on a globe, such as the Himalayas, Alps, and Andes Mountains.

1. Distribute the Data Table Worksheet and ask the students, “Based on the high and low elevations, can you make a general prediction on what countries will have plate collision going on?” Have students put their predictions in the empty boxes titled “Plate Collision or Not.”

2. Students plot the coordinate pairs on the Scatter Plot grid. Be sure to review the axes with the students. When the students place a small circle, ask them to label the name of the country next to the circle.

3. Distribute the map identifying the collision plates. Distribute Data Table 2 Worksheet.

4. Have the students fill in the column identifying whether the plate is colliding or not on the chart marked “After examining the map.” Also, have them draw an oval around the "YES" countries and "NO" countries. A key is provided.

5. Discuss with the class the fact that the places on Earth with the highest mountains are the places where tectonic plates collide. These are big mountain chains like the Himalayan Mountains (China), the Andes Mountains (Bolivia), the Alps (Austria, France), and in Alaska (United States). Places of low relief (little difference in elevation between high and low) are places distant from collision zones (Australia, Denmark, Iceland, Israel, United Kingdom).

Assessment

There are four countries with which students work. Two of these countries experience plate tectonic collision (Chile in the Andes Mountains and India in the Himalayan Mountains). Two of the countries do not experience collision (Sudan, Uruguay).

The math assessment first asks the students to plot the high and low elevations on the same blank scatter plot they used in the lesson. Mastery is achieved by 75% (3 out of 4 are plotted correctly AND the country’s name is labeled).

The geography assessment asks the students to examine the map of collision zones. They then fill in the blank (plate collisions or not). Mastery is achieved at 75% (3 out of 4).

Extensions

Have students research land area of the countries they plotted and determine if there is a relationship between area and tectonic activity.