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The Puzzle of the Plates

Objective:

Some scientists believe that the Earth’s crust is divided into large plates. These plates may have moved in the past, and may still be moving. The Continental Drift Theory explains how the plates have moved slowly to their current location. The theory also suggests that continents were once connected as one large landmass called Pangaea. In this activity you will show the current location of the continents and where the boundaries of these plates are located. The puzzle in this activity will show you the continental plates and you will put them together to create the Earth.. Follow the directions below and discover where these plate boundaries are.

Materials:

* Puzzle map
* Colored pencils or crayons
* Scissors
* Glue
* Piece of construction paper
* Map or globe of the world

Procedure:

1. Outline the edge of each puzzle piece in **RED** pencil or crayon.
2. Use a **BROWN** pencil or crayon to shade in all the LANDMASSES only. How many continents are there? \_\_\_\_\_\_\_\_\_\_\_\_\_
3. Name the continents: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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4. Cut out each puzzle piece.
5. Fit the pieces together as you would a jigsaw puzzle. Glue the assembled puzzle onto a piece of construction paper.
6. You outlined the edge of each puzzle piece in red. Many scientists believe these to be the boundaries of crustal plates, large sections of Earth’s crust. Note that some of the plates do not have continents on them. Describe the location of one such plate.

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1. The crustal plates are usually named according to land or ocean areas found on them. Their names are found in the data table included here. Find each plate on your puzzle map. Using pages 281 and 301 in your text, label each plate with a **BLUE** pencil. (Some plates may be divided into two puzzle pieces; in that case label both pieces with the same name.)
2. The data table also indicates the direction in which crustal plates are thought to be moving. Use a **GREEN** pencil to place large arrows on each plate showing its direction of motion.

|  |  |
| --- | --- |
| **Plate name** | **Direction of motion** |
| American Plate | West- Northwest |
| Pacific Plate | West-Northwest |
| Indo-Australian Plate | Northeast |
| Caribbean Plate | West |
| Nazca Plate  | East |
| African Plate | East-Northeast |
| Eurasian Plate | Southeast |
| Antarctic Plate | No known motion |
| Cocas Plate | Northeast |
| Philippine Plate | West-Northwest  |

1. Using an atlas (or the internet at home,) identify and label the locations of Africa’s Great Rift Valley, the Aleutian Islands, the Andes Mountains, the Himalaya Mountains, the Mariana Trench, the Mid-Atlantic Ridge, and the San Andreas Fault.
2. There are some very prolific diamond mines in South Africa. What do you suppose the chances are that one could find diamonds in South America? Use plate evidence to support your answer
3. The coal deposits mined in Pennsylvania were formed from plants that grow in tropical climates. What does this suggest about where Pennsylvania was once located? What does this suggest about the locations of North and South America?
4. The fit between Africa and South America along their coastlines is not exact. What might explain why the fit is not exact?
5. The cut along the northern edge of India is where the Himalayan Mountains are located. How do you think those mountains were formed?
6. How would you evaluate the evidence to support the Continental Drift Theory in terms of your fit: Where was the evidence good and where was it bad?
7. Does the evidence suffice, in your opinion, to support the theory of Continental Drift? Explain your answer.