

Instructions:

You will be piecing together a puzzle of the supercontinent Pangea based on fossil and rock evidence on the present day continents.

1. On the puzzle pieces handout, assign a color to each type of fossil or mountain belt in the legend and color the areas on the landmasses according to the legend.
2. Use scissors to cut along the borders of the continents. These are the approximate shape of the continents after Pangea broke up.
3. Place the continents on a piece of construction paper and move them around using the fossil and mountain chain evidence to match the continents together in the position they were in when they were part of Pangea. The pieces may not fit together exactly!
4. When you have assembled Pangea based on the fossil and rock locations, glue the continents onto your construction paper in the shape of the supercontinent. Glue the legend to your puzzle.

Questions:

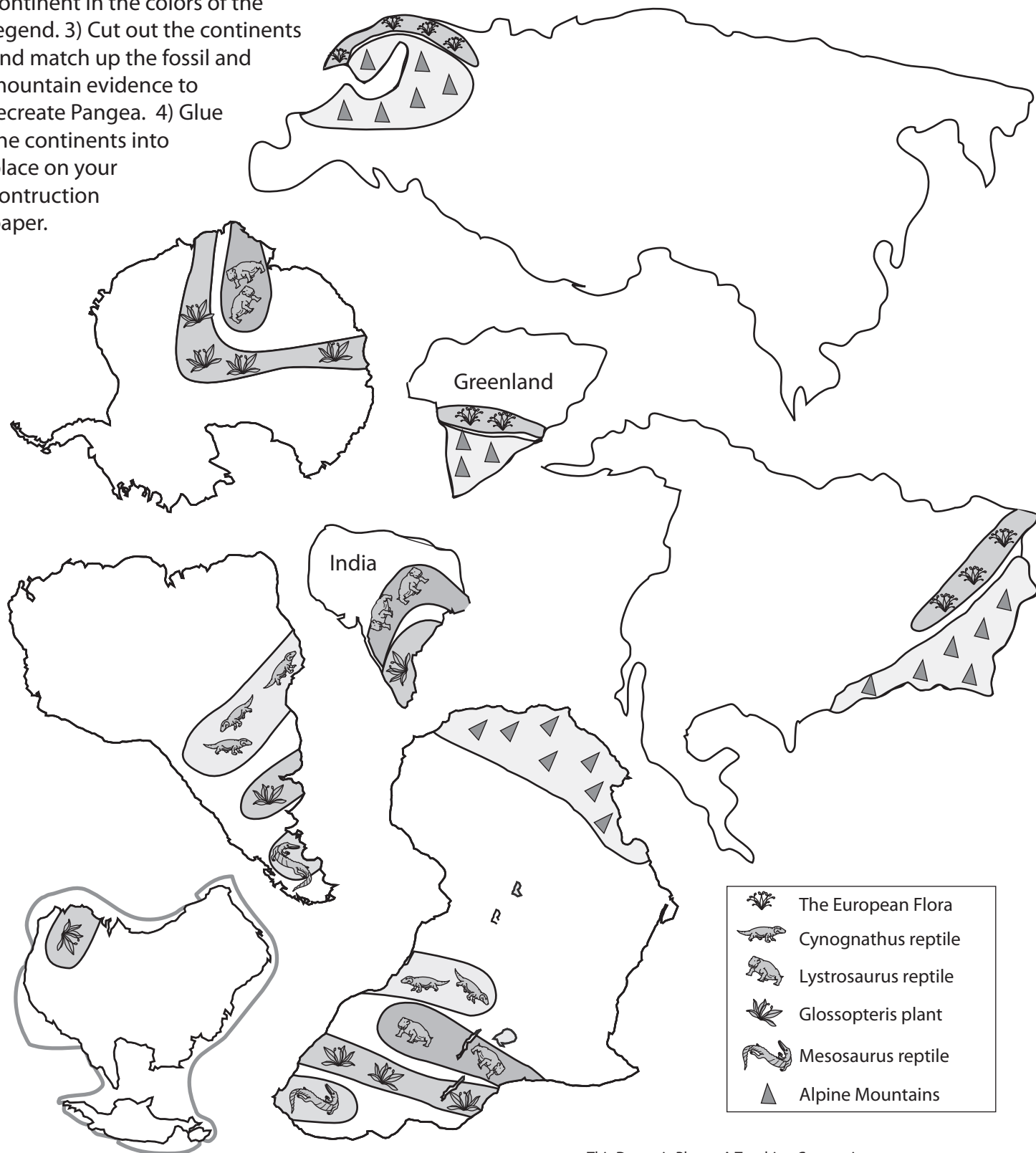
1. What is the idea of Continental Drift?
2. Which 2 continents have the most obvious fit of the coastlines?
3. How were the fossil symbols and mountain belts helpful in deciding where to move the continents?
4. Why don't the present shapes of the continents fit perfectly into a supercontinent?
5. Which fossil occurs on the most landmasses? What does this suggest about when these particular continents broke up?

Evidence or Not?

On the Analyzing Evidence worksheet, read the statement in each box and check whether the statement is evidence or not in the left columns, and whether it supports the movements of the continents in the right columns.

USGS Fossil and Mountain Chain Evidence

DIRECTIONS: 1) Label each continent with its name.
 2) Color the fossils or mountains in the legend
 and color the symbols on each
 continent in the colors of the
 legend. 3) Cut out the continents
 and match up the fossil and
 mountain evidence to
 recreate Pangea. 4) Glue
 the continents into
 place on your
 construction
 paper.



Modified From:
 U.S. Department of the Interior
 U.S. Geological Survey

This Dynamic Planet; A Teaching Companion
 Wegener's Puzzling Continental Drift Evidence
 U.S. Geological Survey, 2008
 For updates see <<http://volcanoes.usgs.gov/about/edu/dynamicplanet>>

Analyzing Evidence: Continental Drift

Is it evidence?		Statements	Does it support the idea that the continents have moved?	
			Yes	No
		1. 1858: Geologist Eduard Seuss points out that fossils of the Glossopteris plant are found in southern Africa, South America, Australia, Antarctica, and India.		
		2. Wegener examines the location of tiny rocks and the direction of grooves formed by large glaciers scraping across southern areas of Africa, South America, Australia, Antarctica, and India. He concludes that if all these places were fitted together, they would form a continuous ice sheet expanding outward in all directions.		
		3. Frankfurt News, January 6, 1912: Announcement that German scientist Alfred Wegener will speak at the Geological Association meeting.		
		4. Popular Geology magazine, March 12, 1912: "Continents are so large they must always have been where they are."		
		5. Wegener observes that a South American mountain range in Argentina lines up with an ancient African mountain range in South Africa when the two continents are placed together. He writes: "It is just as if we were to refit the torn pieces of a newspaper by matching their edges and then check whether the lines of print ran smoothly across. If they do, there is no thing left but to conclude that the pieces were in fact joined in this way."		
		6. 1927: Geologist Alexander du Toit observes rock layers on the western coast of Africa in the following sequence: basalt rock, shale containing fossil reptiles, coal layers containing Glossopteris fossils, rocks containing Mesosaurus fossils, and shale. He discovers an almost identical sequence of rock layers on the eastern coast of South America.		
		7. 1944: Geologist Baily Willis calls Wegener's theory a fairy tale. He argues that the theory should be ignored.		
		8. 1965: Geologist Edward Bullard uses computers to match coasts of South America and Africa. They match extremely well at an ocean depth of 1,000 meters.		
		9. 1980s: Satellites and lasers are used to measure the movement of continents. They continue to move at an average of about 2 cm (0.8 in) per year.		
		10. Fossils of Megascolecina earthworms are found in South America, Africa, India, and Australia, as well as the islands of Madagascar and New Guinea.		