

Geography Series
EARTH 4: MAJOR GEOGRAPHIC FEATURES OF EARTH

NAME _____ SCHOOL _____

DATE STARTED _____ DATE COMPLETED _____

PREREQUISITE: Earth 3—Where on Earth? course or knowledge of continents, oceans, and beginning level knowledge of latitude and longitude, major land forms, and biomes.

HOW TO DO THIS COURSE: Do the steps one at a time, in order. When you finish a step, put your initials and the date on the sign-off line on the right. A split line means to get a pass (and an initial) from another student (or your Academic Supervisor if it says that). A * means get a checkout. All written work is turned in to the Academic Supervisor.

PURPOSE: Learn more about the biggest parts of the geography of the planet and how those things affect life.

ESTIMATED TIME: 12–15 hours.

MATERIALS NEEDED FOR THIS COURSE _____

Data Sheet #7986 Worksheets for Earth 4, to be attached to this study guide.

Study booklet, *Earth 4—Major Geographic Features of Earth*, with these data sheets (DS):

9016 6123 1528 6182 6183 590 591 6184 6185 6186
6187 6188

Exams: 594, 8999 (answers), 7203 (review), 9000 (answers)

Other texts/references:

National Geographic World Atlas for Young Explorers. Page numbers are given for the Third Edition and the Revised & Expanded Edition, but other editions might be used.

Other materials:

Standard classroom globe with latitude and longitude lines.

Plastic inflatable globe, 27 inches in diameter, with oceans clear or blue, available from many sources on the Internet. (On the Internet search for *inflatable topographic globes 27 inch*.) The globe must show major latitude and longitude lines and some physical features of the continents. It does not need to show countries. The globe must have lines marking the equator and tropics. If the globe does not have lines marking the polar circles, they should be drawn in carefully using a permanent marker. It is preferable to have a pump to blow it up and you will need a repair kit (usually supplied with the globe).

Plastic wrap for institutional use—18 in. wide.

Selection of permanent marking pens: regular-tip: black; fine-tipped: blue, green, orange, red; selection of crayons or water-based markers for coloring biome maps; lamp with bare light bulb; access to pictures of landforms (could be Internet images); tray or tub, modeling clay, spray bottle of water; 2 liter bottles, access to a car; materials for making river.

NOTE REGARDING MAINTAINING GLOBES _____

Unwanted marker lines on globes and furniture can be erased with cleaners such as Mr. Clean Magic Eraser, rubbing alcohol, non-oily hairspray or nail polish remover, using cloth, cotton swabs or cotton balls. (See the Internet for additional advice.) You will have to work out a place to store the globes when not in use and work out a standard procedure for inflating and repairing the globes, as needed.

A. INTRODUCTION

1. **PRACTICAL APPLICATION:** Get a large inflatable globe of the world and make sure it is pumped up. You are going to label places on this globe with permanent markers, so the first thing you need to do is to cover the entire globe with plastic wrap to protect it. The wrapping should be good enough that it won't fall apart while you are working with it throughout this course. Do this with a helper—it is best to work with someone who already knows how to do it. Here's one way to do it:

- Using a roll of 18-inch wide plastic wrap, pull out about two feet of wrap and spread it out on a table, but don't cut it off from the roll yet.
- Put the globe in the center of the plastic wrap with equator facing down.
- Press the ends of the plastic wrap against the globe to make it stick and roll the globe along the equator. Keep pulling out more wrap from the container and keep rolling the globe until the equator is entirely covered with plastic wrap and overlaps.
- Use the cutter on the plastic wrap box to cut off the plastic and press down on the plastic wrap so that it sticks.
- Try to smooth out the plastic wrap and push all the loose pieces of the plastic down on the globe so nothing is sticking up. If some piece of the plastic won't stick, tape it down with clear tape.
- Turn the globe upside down so that you are now looking at the South Pole. Wrap it the same way you did the equator. Start a new piece of plastic at the South Pole, roll the globe so that goes over the North Pole and then back to the South Pole again with some overlap. Cut off the piece of plastic wrap. Again make sure everything sticks.
- Make a third wrap. Start at the South Pole and go over the North Pole again, but this time wrap it so that you cover the rest of the globe that still doesn't have any plastic wrap on it. Cut off the piece again and make sure everything sticks.

Supervisor pass.

2. **PRACTICAL APPLICATION:** Using a regular-tipped black marking pen, label the following in capital letters on your globe:

a) the seven continents _____

b) these oceans: Arctic Ocean, Atlantic Ocean, Pacific Ocean, Indian Ocean and Southern Ocean _____

B. REVIEW SECTION

B1. Earth 2 Review

You may skip this section if you did Earth 2 or pass a supervisor check on this section, but you are still responsible for knowing the information.

Supervisor approval to skip section: _____

1. READ: Data Sheet (DS) #9016 Important Directions on a Globe. _____
2. DEMONSTRATE:
 - a) Point to north, south, east and west on a globe. ____
 - b) Find the equator line on a globe. _____
3. READ: DS #6123 How the Earth Rotates. Make sure you know the difference between the words “rotate” and “revolve.” _____
4. DEMONSTRATE: Using a globe and other objects, demonstrate how the earth rotates on its axis and revolves around the sun. _____
5. DEMONSTRATE: Why it looks like the sun rises in the east and sets in the west. _____
6. READ: DS #1528 Seasons. _____
7. DEMONSTRATE: Using any globe and other objects, demonstrate how the revolution and tilt of the earth around the sun can produce four seasons.
Supervisor pass. _____

B2. Earth 3 Review

If you did Earth 3 in the last 12 months, skip this section and do section B3 instead.

- *1. READ: DS #6182 Latitude and Longitude, sections “Grid Lines on Globes” and “Latitude.” As you read, do what it says with a globe. _____
2. DEMONSTRATE: Find all the latitude lines that are marked on a globe and the degree numbers that are marked. _____
3. PRACTICAL APPLICATION:
 - a) Find the equator on a classroom globe or map. Locate the same line on your globe. Write “equator 0° latitude” on the equator line of your globe with a fine black marker. ____
 - b) Here is a list of some of the latitudes that should be shown on your globe. Check to see if any numbers are missing:
30°N, 60°N, 70°N _____ 30°S, 60°S, 70°S _____

c) If any are missing on your globe, write them on the right latitude lines of your globe. _____

*4. READ: DS #6182, section "Longitude." As you read the data sheet, do what it says with a globe. _____

5. PRACTICAL APPLICATION:

a) Find the line of zero degree longitude on a classroom globe or map. Locate the same line on your globe and write "0° longitude" on it. _____

b) Here is a list of some of the longitudes that should be shown on your globe. Check to see if any numbers are missing:

30°E, 60°E, 90°E, 120°E, 150°E _____

30°W, 60°W, 90°W, 120°W, 150°W _____

180° (There is only one 180°! Do you see why?) _____

c) If any are missing, write them on the right longitude lines of your globe. _____

*6. READ: DS #6182, section "Hemispheres." _____

7. DEMONSTRATE: Label the Northern and Southern Hemispheres on your globe with a regular marker. Then label the Eastern and Western Hemispheres. _____

8. PRACTICAL APPLICATION: New York City is approximately 41°N and 74°W. Sydney, Australia is approximately 34°S and 151°E. Use the latitude and longitude lines that are on your globe to help you find those cities on the globe. If your globe doesn't show it very well, look at the latitude and longitude maps on other globes and maps for help. _____

9. DEMONSTRATE: (5 demonstrations)

a) Look at any globe, and find the approximate latitude and longitude where you are. You may have to estimate between the lines shown on the globe. For example, 30° north latitude (30° N) and 120° west longitude (120° W). Write your latitude and longitude here.

b) Find a place on the globe half way around the world that is on the same latitude as where you are. You can figure that out by tracing your latitude on the globe to the other side of the world. Write down what you notice there on the globe (for example, a city, ocean, desert, etc.). _____

c) Trace your longitude over the North or South Pole to the other side of the earth to the place it crosses your latitude. For example if you are now at 120° west longitude (120° W), the longitude half way around

the world will be 60° east longitude ($60^\circ E$). Write down the name of that longitude here. _____

- d) On that same longitude (c), find your latitude again. Then find the same latitude in the *opposite* hemisphere. For example, if your spot was $30^\circ N$, $60^\circ E$, the spot at the opposite latitude will be $30^\circ S$, $60^\circ E$. From where you are now, that spot is farther away than any other place on earth. Write down that latitude and what you notice there on the globe. _____
- e) Check to see if you have the right spot. If you do, the latitudes you wrote (a) and (d) should be the same with one labeled *N* and the other *S*. The longitudes found in (a) and (c) and should add up to 180° , with one labeled *W* and the other *E*. _____

10. READ: DS #6182, section “Lines on Flat Maps of the World.” _____

11. DEMONSTRATE: Look at how the longitude lines come together on a globe at the poles. Then find a flat map in an atlas where the longitude lines are not curved at the poles or curve a different way. _____

12. READ: DS #6183 Climate, to heading “Special Latitudes—The Tropics.” _____

13. DEMONSTRATE:

a) Get a lamp with a bare light bulb to represent the sun and turn it on. Hold your hand about a foot away from the light bulb and feel the heat. First hold your hand straight up and down with your palm toward the light bulb. Decide if your hand is heated evenly or if one part of your hand gets more heat than the others. Then keep your hand about the same distance from the light bulb, but tilt your hand nearly flat so your fingers point toward the light bulb. Which part of your hand gets the most heat now? Which part gets the least heat? _____

b) Using a globe instead of your hand, show that the sun (the bulb) shines more or less straight at the equator, but gets less intense further north and south of the equator because the Earth slants away from the sunlight. _____

14. READ: DS #6183 Climate, section “Special Latitudes—The Tropics.” _____

15. PRACTICAL APPLICATION:

a) Find the equator and the two tropic latitude lines on a classroom globe or map. The tropic latitude lines on a globe usually are dotted lines south of latitude $30^\circ N$, and north of latitude $30^\circ S$. _____

b) Label the two tropics lines “Tropic of Cancer” and “Tropic of Capricorn” on your globe with a fine marker. _____

16. READ: DS #6183 Climate, section “Special Latitudes—Polar Regions.” _____

17. DEMONSTRATE: Using a globe, show how the sun is always straight overhead somewhere in the tropics, but can never be straight overhead at the poles. _____

18. READ: DS #6183 Climate, section “Special Latitudes—Temperate Zones.” _____

19. PRACTICAL APPLICATION:

a) Find the two polar latitude lines (polar circles) on a globe or map. The polar latitude lines on a globe usually are dotted lines north of latitude 60°N, and south of latitude 60°S. ____

b) Label them “Arctic Circle” and “Antarctic Circle” on your globe with a fine marker. ____

c) Label the areas between all the special latitude lines:

- Label the tropics region “tropics.” ____

- Label the temperate regions “North Temperate Zone” and “South Temperate Zone.” ____

- Label the Polar Regions “Arctic” and “Antarctic.” ____

20. READ: DS #6183, section “Some Other Things That Affect Climate” to the end of the data sheet. _____

21. PRACTICAL APPLICATION:

a) Find the place where you live on a globe or map again. On a piece of paper write down what climate zone you live in. ____

b) List all the things you can think of besides latitude that could affect climate. Then explain in writing which of these affect your climate and why you think so. ____

c) Imagine that the place where you are living is 2,000 feet higher than it actually is or 2,000 feet lower than it actually is. Explain in writing what difference this might make to the climate and if you think it would be an important difference. ____

Supervisor pass. _____

22. READ: DS #590 Some Land Features, up to heading “Landforms and Water.” _____

23. DEMONSTRATE: Look at pictures of any landforms you read about in the last step that you don’t yet feel familiar with. A good way is to do an Internet search for images. For example, you could search for images of *canyons*. You can also use pictures from an encyclopedia or geography book. _____

24. READ: DS #590, section “Landforms and Water”. _____

25. DEMONSTRATE: Why a lake can be thought of as a landform. _____

26. DEMONSTRATE: Look at pictures of any landforms you read about in the last step that you don't yet feel familiar with. _____

27. PRACTICAL APPLICATION: Make a clay model that shows these landforms: plains, plateaus, mountains, hills, valleys, lakes, rivers (show a delta at the mouth of the river). If you want, you can make up names for them (like “The Blue Hills” or “Lake Fred”). Put the names on with labels. You may also include some other landforms and other features that you learned, if you want. **Supervisor pass.** _____

*28. READ: DS #591 Ecosystems and Biomes, to heading “Grassland Biome.” _____

29. PRACTICAL APPLICATION:

a) Find all the forest biomes that you can (tropical rain forests, boreal forests, temperate forests) on the biome maps at the end of DS #591. _____

b) Pull off worksheets 2 and 3 attached to the end of this study guide (DS #7986 Worksheets for Earth 4). Notice that on each worksheet there is a blank box for each biome. There is also a solid line for the equator. The dotted lines are special latitude lines covered earlier. You will be using water color markers or crayons to fill in these worksheets. _____

c) On each worksheet, find the blank boxes for tropical rain forest, temperate forest and boreal forest. Choose a different color for each kind of forest and color in the boxes on the worksheets. (You don't have to use the same colors that are used on the biome maps at the end of DS #591.) _____

d) Color in all three types of forests on both biome worksheets, using the colors you chose. Use the biome maps at the end of DS #591 to help you figure out where the forests are. _____

Save your worksheets for the rest of this course so you can fill in more biomes. _____

30. READ: DS #591, section “Grassland Biome.” _____

31. PRACTICAL APPLICATION:

a) Find all the grassland biomes on the biome maps at the end of DS #591. _____

b) Choose a different color for grasslands and fill in that color in the Grassland box on both biomes worksheets. _____

- c) Color in all the grasslands on the biome worksheets, using the color you chose. Use the biome maps at the end of DS #591 to help you figure out where the grasslands are. ____

32. READ: DS #591, section “Desert Biome.”

33. PRACTICAL APPLICATION:
- a) Find all the desert biomes on the biome maps at the end of DS #591. ____
- b) Choose a different color for deserts and fill in that color in the Desert box on the biomes worksheets. ____
- c) Color in all the deserts on the biome worksheets, using the color you chose. Use the biome maps at the end of DS #591 to help you figure out where the deserts are. ____

34. READ: DS #591, section “Tundra Biome.”

35. PRACTICAL APPLICATION:
- a) Find the tundra biome on the biome maps at the end of DS #591. ____
- b) Choose a different color for tundra and fill in that color in the Tundra box on the biomes worksheets. ____
- c) Color in the tundra on the biome worksheets, using the color you chose. Use the biome maps at the end of DS #591 to help you figure out where the tundra is. ____

36. READ: DS #591, section “Ocean Biome.”

37. DEMONSTRATE: Look at your globe and notice just how huge the ocean biome is compared to the land biomes.

38. READ: DS #591, section “Smaller Biomes.”

39. DEMONSTRATE: Look at color pictures of any biomes in the data sheet that you don’t yet feel familiar with.

40. DEMONSTRATE:
- a) Find the chaparral and alpine biomes on the biome maps at the end of DS #591. ____
- b) Choose different colors for chaparral and alpine biomes and fill in those colors in the Chaparral and Alpine boxes on the biomes worksheets. ____
- c) Color in the chaparral and alpine biomes on the worksheets, using the colors you chose. Use the biome maps at the end of DS #591 to help figure out where they are. ____

41. DEMONSTRATE USING CLAY: An imaginary continent that has three or more biomes. Also include some of the land features you have learned. _____
42. READ: DS #591, sections “People Can Change Ecosystems” and “Summary.” _____
43. DRILL: Pull off Worksheet 1 (2 sheets) of DS #7986 Worksheets for Earth 4 attached to the end of this study guide. Do what it says to do, using water color markers or crayons to fill them in (don’t use a permanent marker for this). After you finish the drill, check the answers on page 2 of the worksheet. If you don’t understand an answer, get help from your supervisor. _____

B3. Brief Review of Earth 3

If you did section B2, skip this section and go on to section C.

- *1. READ: DS #6182 Latitude and Longitude. _____
2. PRACTICAL APPLICATION:
- a) Find the equator on a classroom globe or map. Locate the same line on your globe. Write “equator 0° latitude” on your globe with a fine black marker. _____
- b) Here is a list of some of the latitudes that should be shown on your globe. Check to see if any numbers are missing:
 30°N, 60°N, 70°N _____ 30°S, 60°S, 70°S _____
- c) If any are missing, write them on the right latitude lines. _____
3. PRACTICAL APPLICATION:
- a) Find the line of zero degree longitude on a classroom globe or map. Locate the same line on your globe. Write “0° longitude” on your globe. _____
- b) Here is a list of some of the longitudes that should be shown on your globe. Check to see if any numbers are missing:
 30°E, 60°E, 90°E, 120°E, 150°E _____
 30°W, 60°W, 90°W, 120°W, 150°W _____
 180° (There is only one 180°! Do you see why?) _____
- c) If any are missing on your globe, write them on the right longitude lines. _____
4. DEMONSTRATE: Label the Northern and Southern Hemispheres on your big globe with a regular marker. Then label the Eastern and Western Hemispheres. _____
- *5. READ: DS #6183 Climate. _____

6. PRACTICAL APPLICATION:

- a) Find the equator and the two tropic latitude lines on a classroom globe or map. The tropic latitude lines on a globe usually are dotted lines south of latitude 30°N, and north of latitude 30°S. ____
- b) Label the two tropics lines “Tropic of Cancer” and “Tropic of Capricorn” on your globe with a fine marker. ____
- c) Find the two polar latitude lines (polar circles) on a globe or map. The polar latitude lines on a globe usually are dotted lines north of latitude 60°N, and south of latitude 60°S. ____
- d) Label them “Arctic Circle” and “Antarctic Circle” on your globe with a fine marker. ____
- e) Label the areas between all the special latitude lines with a fine marker:
 - Label the tropics region “tropics.” ____
 - Label the temperate regions “North Temperate Zone” and “South Temperate Zone.” ____
 - Label the Polar Regions “Arctic” and “Antarctic.” ____

7. DEMONSTRATE: Using a globe and other objects, demonstrate:

- a) summer in the Northern Hemisphere; then summer in the Southern Hemisphere. ____
- b) how places in the Polar Regions might be in sunlight or darkness 24 hours a day during parts of the year. ____

8. DRILL: Pull off all the worksheets attached to the end of this study guide (DS #7986 Worksheets for Earth 4). (You won't be using Worksheets 2 and 3, so you can discard them.) Take Worksheet 1 and do what it says to do, using water color markers or crayons to fill them in (don't use a permanent marker for this). Check your answers using page 2 of the worksheet. If you don't understand an answer, get help from your supervisor.

C. MOUNTAINS OF THE WORLD

In this section you will use maps in the *National Geographic World Atlas for Young Explorers* to help you find the mountains. Then you will draw the mountains called for on your globe. Try to write small enough so that you have enough room.

- 1. DEMONSTRATE: Look at some pictures of mountains. A good way to do it is to do an Internet search for images of mountains. You also can use pictures from an encyclopedia or geography magazine.

2. READ: DS #6184 Mountains, to the subheading “Asia.” _____

3. READ: You are going to draw some mountain ranges on your globe in relief. **Relief** is showing different heights on a map or globe by adding lines, shading, coloring or actually building up the surface. For this section, show mountains in relief by drawing lines like this M/M/M with a fine black permanent marker. _____

4. PRACTICAL APPLICATION:

a) Using the world atlas, turn to the map of Europe that shows physical features. (If you have the Third Edition, see the map on p. 92. If you have the Revised & Expanded Edition, see the map on pp. 82–83.) _____

b) On that map find the Ural Mountains, the Ural River, the Caspian Sea, the Caucasus Mountains, the Black Sea, and the Bosphorus and Dardanelles Straits, and notice that together they make a boundary that separates Europe from Asia. _____

c) Draw the Ural and Caucasus Mountains in relief on your inflatable globe with a fine marker using the symbols M/M/M for mountains. Then with a fine marker, draw a line to mark the boundary between Europe and Asia from the Ural Mountains to the Dardanelles Straits. _____

d) In the atlas, find any other mountain ranges and mountains mentioned in the section of the data sheet on Europe. _____

e) Label these features on your globe and draw in relief with a fine marker as best you can:

Alps (mountains) _____

Pyrenees (mountains) _____

Balkans (peninsula) _____

5. READ: DS #6184 Mountains, sections “Asia” and “Africa.” _____

6. PRACTICAL APPLICATION:

a) Using your world atlas, turn to the map of Asia that shows physical features. (Third Edition, see the map on p. 110. Revised & Expanded Edition, see the map on pp. 120–121.) _____

b) Find the mountain range and mountain mentioned in the section of the data sheet on Asia. _____

c) Turn to the map of Africa that shows physical features. (Third Edition, see the map on p. 134. Revised & Expanded Edition, see the map on pp. 102–103.) _____

d) Find the mountain ranges and mountain mentioned in the section of the data sheet on Africa. _____

e) Label the Himalayas on your globe with a fine marker and draw in the relief. _____

7. READ: DS #6184, sections “North America” and “Hawaii.” _____

8. PRACTICAL APPLICATION:

a) Using your world atlas, turn to the map of North America that shows some physical features. (Third Edition, see the map on p. 62 for North America; pp. 70–71 for Alaska and Hawaii. Revised & Expanded Edition, see the map on pp. 34–35 for North America; pp. 46–47 for Alaska and Hawaii.) _____

b) Find the mountain ranges and mountains mentioned in DS #6184 sections “North America” and “Hawaii.” _____

c) Mark these features on your globe in relief and label them:

- | | |
|-------------------------------|---------------------------------|
| Rocky Mountains _____ | Mauna Kea ¹ _____ |
| Sierra Nevada Mountains _____ | Mt. Whitney _____ |
| Cascade Range _____ | Coast Range _____ |
| Appalachian Mountains _____ | Mt. Mitchell ² _____ |
| Denali (Mt. McKinley) _____ | |

9. READ: DS #6184, section “South America.” _____

10. PRACTICAL APPLICATION:

a) Using your world atlas, turn to the map of South America that shows some physical features. (Third Edition, see the map on p. 78. Revised & Expanded Edition, see the map on pp. 66–67.) _____

b) Find the mountain range and mountain mentioned in DS #6184 section “South America.” _____

c) Mark them on your globe in relief and label them:

- | | |
|-------------|----------------------|
| Andes _____ | Cero Aconcagua _____ |
|-------------|----------------------|

11. READ: DS #6184, sections “Australia” and “Antarctica.” _____

12. PRACTICAL APPLICATION:

a) Using your world atlas, turn to the map of Australia that shows some physical features. (Third Edition, see the map on p. 150. Revised & Expanded Edition, see the map on pp. 142–143.) _____

¹ Mauna Kea is shown on the map in the Revised & Expanded Edition, but not the Third Edition. If you are using the Third Edition, mark and label it on the island of Hawaii to the west of Hilo.

² Mt. Mitchell is not shown on the map in the world atlas but can be found on the map of the United States in the state of North Carolina (Third Edition, p. 71; Revised & Expanded Edition, p. 45).

- b) Find the Great Dividing Range. Then mark it on your globe in relief and label it. _____
- c) Using your world atlas, turn to the map of Antarctica that shows some physical features. (Third Edition, see the map on pp. 162–163. Revised & Expanded Edition, see the map on pp. 156–157.) _____
- d) Find the Transantarctic Mountains. Then mark them in on your globe in relief and label them. _____

13. DRILL: Learn the names of these mountain ranges that you have marked on your globe. Drill them until you can point out or name each mountain range on your globe when asked:

Ural Mountains	Rocky Mountains	Andes
Caucus Mountains	Sierra Nevada	Alps
Himalayas	Cascades	Pyrenees
Great Dividing Range	Coast Range	
Transantarctic Mts.	Appalachians	

14. DRILL: Learn the names of these specific mountains that you have marked on your globe. Drill them until you can point out or name each one on your globe when asked.

Mt. Blanc	Mt. Whitney
Mt. Everest	Mt. Mitchell
Mt. Kilimanjaro	Cero Aconcagua
Denali (Mt. McKinley)	Mauna Kea

D. RIVERS OF THE WORLD

For this section, use the same maps from section C to help you find the features before marking and labeling them on your globe. Try to write small enough so that you have enough room.

- 1. READ: DS #6185 Rivers, to heading “Africa.” _____
- 2. DEMONSTRATE: Look at some pictures of rivers. A good way to do it is to do an Internet search for images of rivers, but you also can use pictures from other sources. _____
- 3. PRACTICAL APPLICATION:
 - a) Make a model of a “river” with some tributaries. You could make it outside (for example, in a sandbox or a garden) or indoors make a model in a basin or tray in a sink with clay or other material. When the model is ready, gently pour water onto it and notice how the water runs off.

- b) Make a sketch of your model. ____
- c) Explain what happened in writing and attach your sketch. ____
4. READ: DS #6185 Rivers, section “Africa.” _____
5. PRACTICAL APPLICATION: Using the world atlas, refer to the map of Africa and look for the rivers, which appear as blue lines. Then trace (draw in) these rivers on your globe with a fine blue permanent marker as best you can and label them (use blue to draw and label all water places in this section).
Nile R. (River) ____ Congo or Zaire R. ____ _____
6. READ: DS #6185, section “South America.” _____
7. PRACTICAL APPLICATION: Refer to the map of South America. Then trace the Amazon on your globe with a blue marker and label it. _____
8. READ: DS #6185, section “North America,” subsections “The Mississippi” and “The Great Lakes Region.” _____
9. PRACTICAL APPLICATION: Using your world atlas, turn to the map of the United States that shows some physical features. (Third Edition, see the map on pp. 70–71. Revised & Expanded Edition, see the map on pp. 44–45.) Then trace and label on your globe the rivers and lakes mentioned in the last reading with a blue marker. You don’t have to label each of the Great Lakes. Just write “Great Lakes.” _____
10. READ: DS #6185, section “North America, subsection “Rivers of the West and the Great Divide.” _____
11. PRACTICAL APPLICATION: This is a demonstration of how the shape of land can affect where rainfall flows. You are going to use the hood of a car as a mountain and you will use a bottle of water to make rain.
- Get permission to pour tap water on someone’s car. ____
 - Get a 2-liter bottle and fill it with tap water. ____
 - Go out and pour a little water on the hood of the car. (Make sure the windows are rolled up.) ____
 - Pour a little water on different parts of the hood and try to find a place where the water mostly runs to one side and where it mostly runs to the other side. In the same way, water on one side of a mountain might run off in a completely different direction than on the other side. ____
 - Find a line where the side edge of the hood meets the side of the car or a fender. Pour water on the side edge of the hood and notice that it

tends to run off between the hood and the fender. Water running off a mountain can create a stream the same way. ____

- f) Pour some water on other parts of the car, such as the roof and the trunk, and guess which way the water will run off. ____

12. PRACTICAL APPLICATION: Refer to the same map of the United States again. Then trace and label on your globe the rivers mentioned in the last reading with a blue marker. _____

13. READ: DS #6185, sections “Europe” and “The Rhine-Main-Danube (RMD) Canal.” _____

14. PRACTICAL APPLICATION: In this activity you will use several maps to piece together a water route that now exists from the Netherlands to Romania.

- a) On the Internet, do an image search for *Rhine Main Danube*, and look at several of the maps to get a general idea of the route so that you will be able to find the route on a more detailed map. ____

- b) Using the world atlas, turn to the map of Western Europe that shows some cities and rivers. (Third Edition, see the map on p. 101. Revised & Expanded Edition, see the map on pp. 92–93.) ____

- c) Find the Netherlands on the North Sea (it is part of the Atlantic Ocean). Then find Rotterdam, and the Rhine River nearby, which empties into the North Sea. ____

- d) Follow the Rhine River east into Germany and then south toward Bonn and Mannheim. Before you come to Mannheim, another river joins the Rhine from the east, and Frankfurt is on that river. That river is the Main River, but it is not labeled on the map. Continue east on the Main River past Frankfurt until you come to a north-south canal. (Make sure you know the map symbol for canal that is used on the map.) ____

- e) Follow the canal south past Nuremberg (spelled *Nürnberg* in the Revised and Expanded edition) until it joins the Danube River. ____

- f) Follow the Danube River east from Germany into Austria. ____

- g) Turn to the map of Eastern Europe for this step (pp. 102–103 in the Third Edition, pp. 94–95 in the Revised & Expanded Edition). Follow the Danube River east across Austria and into Hungary. ____

- h) Turn to the map of the Balkans for this step (p. 105 in the Third Edition, pp. 96–97 in the Revised & Expanded Edition). Follow the Danube River southward from Hungary into Serbia (Serbia and Montenegro³ in the Revised & Expanded Edition), then east to the

³ Serbia and Montenegro became separate countries in 2006.

border between Serbia and Romania, then along the border between Romania and Bulgaria. ____

- i) Finally, follow the Danube north into Romania, then east, where it empties into the Black Sea. ____

After you have traced the route by yourself, get a **Supervisor pass**. ____

15. PRACTICAL APPLICATION: Refer to the atlas maps of Europe and look for these waterways. Then draw in and label these on your globe with a blue marker. Try to write small.

The water route from the North Sea of the Atlantic Ocean to the Black Sea (Rhine R., Main R., canal, Danube R.) ____

Seine River ____

Ural River ____

16. READ: DS #6185, section "Asia".

17. PRACTICAL APPLICATION: Refer to the atlas maps of Asia and look for these rivers. Then trace and label these rivers on your globe with a blue marker.

Ob R. ____

Tigris-Euphrates Rivers ____

Ganges R. ____

Huang (or Yellow) R. ____

18. DRILL: Learn the names of the rivers listed below. Drill them until you can point out or name each river on your globe or other map when asked.

Amazon R. ____

Danube R. ____

Nile R. ____

Congo (Zaire) R. ____

Ganges R. ____

Rio Grande R. ____

Colorado R. ____

Mississippi R. ____

Tigris-Euphrates Rrs. ____

Columbia R. ____

Missouri R. ____

Huang (Yellow) R. ____

19. DRILL: Tell which continent each of the rivers from step 18 belongs to. You pass when you give the correct continent for each river.

E. OTHER MAJOR FEATURES OF THE WORLD

1. READ: DS #6186 Fertile Plains.

2. DEMONSTRATE: Look at some pictures of plains. A good way to do it is to do an Internet search for images of plains, but you also can use pictures from other sources.

3. DEMONSTRATE: Show why fertile plains are so important to how well people live.

4. PRACTICAL APPLICATION: Mark in these fertile plains on your globe with diagonal stripes. Use a regular green permanent marker to draw the stripes and label them.

Great Plains ____

African savanna ____

Pampas ____

European Plain ____

Fertile Crescent and Nile River Valley ____

5. READ: DS #6187 Deserts.

6. DEMONSTRATE: Look at some pictures of deserts. A good way to do it is to do an Internet search for images of deserts, but you also can use pictures from other sources.

7. PRACTICAL APPLICATION: Mark in these deserts on your globe with diagonal stripes. Use a regular orange marker to draw the stripes and label them.

Arabian Desert ____

Mojave Desert ____

Gobi Desert ____

outback (it includes desert and grassland) ____

Great Basin Desert ____

Sahara Desert ____

F. THE EASTERN HEMISPHERE

1. READ: DS #6188 Major Geographic Areas, section “The Hemispheres” and “The Eastern Hemisphere—European Area.” As you read, find the places that you read about using your globe or world atlas.

2. DEMONSTRATE: Use a marker (any marker) to trace the path of an ocean current from the Gulf of Mexico to Norway on your globe. Label it *Gulf Stream*.

3. DEMONSTRATE: Look at some pictures of Europe. Your atlas has many good pictures in the section on Europe, but you can also do an Internet search or use pictures from other sources.

4. PRACTICAL APPLICATION:

a) Write “Europe” on a sheet of paper. ____

b) Using your globe or world atlas, locate all the natural boundaries that separate Europe from Asia and Europe from Africa. Then under “Europe” on your sheet of paper write “natural boundaries” and list them. ____

c) Look at a map of Europe that shows the boundaries of the countries. Find three places where natural boundaries separate countries. Then find three places where the boundaries are manmade. ____

d) Under “Europe” on your sheet of paper write “countries.” Pick at least five of the largest countries of Europe, and write down their names.

5. READ: DS #6188, section “The Eastern Hemisphere—North Africa and the Middle East.” As you read, find the regions on your globe.

6. PRACTICAL APPLICATION: Using the world atlas, turn to the maps of Asia and Southwest Asia. (Third Edition, see the maps on pp. 110–111 and p. 125. Revised & Expanded Edition, see the maps on pp. 126–127 and pp. 134–135.) Then draw a dotted line on your globe around the boundaries of the Middle East with regular black marker and label it Middle East.

7. DEMONSTRATE: Look at some pictures of the Middle East. Do an Internet search or use other sources.

8. PRACTICAL APPLICATION:

a) Using your globe or world atlas, locate the natural boundaries that separate North Africa and the Middle East from Europe and Asia. On a sheet of paper write “Middle East,” then write “natural boundaries” and list them. _____

b) Find three places where natural boundaries separate countries. Then find three places where the boundaries are man-made. _____

c) Under “North Africa and the Middle East” on your sheet of paper write “countries.” Pick at least two countries in North Africa and five from the Middle East and write their names. _____

9. READ: DS #6188, section “The Eastern Hemisphere—India and the Southeast Asian Area.” As you read, find each country that you read about using your globe or world atlas.

10. DEMONSTRATE: What monsoons are and where they occur.

11. DEMONSTRATE: Look at some pictures of India and/or Southeast Asia. Do an Internet search or use other sources.

12. PRACTICAL APPLICATION:

a) Look at a map of Asia that shows the boundaries of the countries. Find three places where natural boundaries separate countries. Then find three places where the boundaries are man-made. _____

b) Write “India and countries of Southeast Asia” on your paper. Then list India and at least five other countries from that region. _____

13. READ: DS #6188, section “The Eastern Hemisphere—Far East Asian Area.” As you read, find each country that you read about using your globe or world atlas. _____
14. DEMONSTRATE: Look at some pictures of China, Korea and/or Japan. Do an Internet search or use other resources. _____
15. PRACTICAL APPLICATION:
- a) Using your globe or world atlas, locate the natural boundary that separates Japan, and another that separates Korea, from China. _____
 - b) Look at a map of Asia (or Eastern Asia) that shows the boundaries of the countries. Find the man-made boundary that separates North Korea from South Korea. _____
 - c) Write “countries of Far East Asia” on your sheet of paper and list China, Japan, Taiwan, Hong Kong, and North and South Korea. _____
16. READ: DS #6188, subsection “The Eastern Hemisphere—Central and Southern Africa.” As you read, find each place that you read about using your globe or world atlas. _____
17. DEMONSTRATE: Look at some pictures of Africa. Your world atlas has many good pictures in the section on Africa, but you can also do an Internet search or use other sources. _____
18. PRACTICAL APPLICATION:
- a) Look at a map of Africa that shows the boundaries of the countries. Find three places in central and southern Africa where natural boundaries separate countries. Then find three places where the boundaries are man-made. _____
 - b) Write “countries of Central and Southern Africa” on your sheet of paper. Find South Africa (country) using your globe or world atlas and at least five other countries in central and southern Africa, and list them on your sheet of paper. _____
19. READ: DS #6188, section “The Eastern Hemisphere—Australia.” As you read, find each place mentioned using your globe or world atlas. _____
20. DEMONSTRATE: Look at some pictures of Australia. Your world atlas has many good pictures in the section on Australia, but you can also do an Internet search or use other sources. _____
21. PRACTICAL APPLICATION:
- a) Find Australia using your globe or world atlas. Then find the equator north of Australia and the Tropic of Capricorn where it passes through Australia. _____

- b) Find three geographic features in or around Australia that act as natural barriers. _____

G. THE WESTERN HEMISPHERE AND THE PACIFIC RIM

1. READ AND DEMONSTRATE: DS #6188 Major Geographic Areas, section “The Western Hemisphere—The North American Area.” As you read, find the places you read about using your globe or world atlas. _____
2. DEMONSTRATE: Look at some pictures of North America. Your world atlas has many good pictures in the section on North America, but you can also do an Internet search or use other sources. _____
3. READ: DS #6188, section “The Western Hemisphere—The Latin American Area.” As you read, find each place that you read about on using your globe or world atlas. _____
4. DEMONSTRATE: Find articles on “Mexico,” “Latin America” and/or “South America” in an encyclopedia or geography book and look at the pictures. Your world atlas has many good pictures in the section on South America, but you can also do an Internet search or use other sources. _____
5. PRACTICAL APPLICATION:
 - a) Using your globe or world atlas, point out Mexico, Central America and the Caribbean Sea. _____
 - b) On your sheet of paper, write “Countries and Regions of North America and Latin America.” Under that write “Canada, “United States,” “Mexico,” “Central America,” and “Caribbean Islands.” Then list at least two more countries that are part of North America and Latin America. _____
 - c) On your sheet of paper, write “Countries of South America and Latin America.” Under that write “Brazil” and “Argentina.” Then pick out and list at least two other countries that are part of South America and Latin America. _____
6. READ: DS #6188, section “The Pacific Rim.” _____
7. PRACTICAL APPLICATION: Refer to maps if needed and add these features to your globe:
 - a) Draw a dotted line around the Pacific Rim with a regular black marker. Then label it “Pacific Rim.” _____
 - b) Shade in the Ring of Fire on your globe with diagonal lines with a fine red permanent marker. Label it “Ring of Fire.” _____

H. FINAL APPLICATION SECTION

1. **PRACTICAL APPLICATION:** Suppose the frozen waters of the Arctic Ocean melted so that ships could sail through there easily. Work out what would be the shortest sea route from Iceland to San Francisco, California, and trace it in on your globe, using a fine marker.

(After you have passed this step, strip all the plastic wrap and any tape off your globe and throw it in the trash. Make sure the globe and your table are clean of any marks from markers, and show your supervisor when you have finished. Some suggested materials for cleaning up permanent marker stains are given in the Maintaining Globes box on p. 1.)

2. **PRACTICAL APPLICATION:** Choose a foreign place you are interested in that you don't know much about. (Before you start, make sure you can find information on the country you choose for this and the next step.) Research the place to learn more about the physical features and the people who live there. When you study the people, learn about jobs they have, language, clothing and shelter, and anything else you want to know about them. Write a report on what you found out. You can draw pictures to make the report clearer. **Supervisor pass.**

3. **PRACTICAL APPLICATION:** Carry out an activity relating to the place you researched in the last step such as preparing a food dish, learning a song or dance, learning and telling a story, making a costume, learning a game, etc. Show or share it with at least one other person. **Supervisor pass.**

I have completed the steps of this course. I understand what I studied and can use it.

Student _____ Date _____

The student has completed the steps of this course and knows and can apply what was studied.

Academic Supervisor _____ Date _____

The student has passed the exam for this course.

Examiner _____ Date _____

WORKSHEETS FOR EARTH 4

WORKSHEET 1

(Do all your work on the world map on the next sheet.)

1. Label all the continents on the attached map.
2. Label these latitudes and zones:

equator	Antarctic Circle	Arctic
Tropic of Cancer	tropics	Antarctic
Tropic of Capricorn	North Temperate Zone	
Arctic Circle	South Temperate Zone	

If you can't write a word small enough to fit in the space, write the word to the side (or top or bottom) and then draw a line from the word to the place on the map.

For questions 3 and 4 below, look at the biomes maps on DS #591 Ecosystems and Biomes in your study booklet, and use this list of climate zones:

tropics	North Temperate Zone	Arctic
	South Temperate Zone	Antarctic

3. Write the answers to these questions on the attached map:
 - a) Which climate zone has the most tropical rain forest? Write TROPICAL RAIN FOREST on that climate zone of the map.
 - b) Which climate zone has the most tundra? Write TUNDRA on that zone of the map.
 - c) Which climate zone has the most boreal forest? Write BOREAL FOREST on that zone of the map.
 - d) Which two climate zones have the most temperate forest? Write TEMPERATE FOREST on those two zones on the map.
 - e) Find three climate zones that have all the grassland. Write GRASSLAND on those three zones of the map.
 - f) Find the two climate zones that have all the chaparral. Write CHAPARRAL on those zones of the map.
4.
 - a) Which biome has very little water and is found only in the temperate zones and tropics? Write your answer at the top of the attached map.
 - b) Which biome has mountains as part of the biome and is shown only in the temperate zones and tropics on your maps? Write your answer at the bottom of the attached map.

After you have answered all the questions, check your answers on the next page.

ANSWERS

1. Label all the continents on the attached map. **Check with maps and globe if you need to.**

2. Label these latitudes and zones:

equator	Antarctic Circle	Arctic
Tropic of Cancer	tropics	Antarctic
Tropic of Capricorn	North Temperate Zone	
Arctic Circle	South Temperate Zone	

Check with maps and globe if you need to.

3. a) Which climate zone has the most tropical rain forest?

TROPICAL RAIN FOREST—tropics

b) Which climate zone has the most tundra?

TUNDRA—Arctic

c) Which climate zone has the most boreal forest?

BOREAL FOREST—North Temperate Zone

d) Which two climate zones have the most temperate forest?

TEMPERATE FOREST—North Temperate Zone and South Temperate Zone

e) Find three climate zones that have all the grassland.

GRASSLAND—North Temperate Zone, South Temperate Zone and tropics

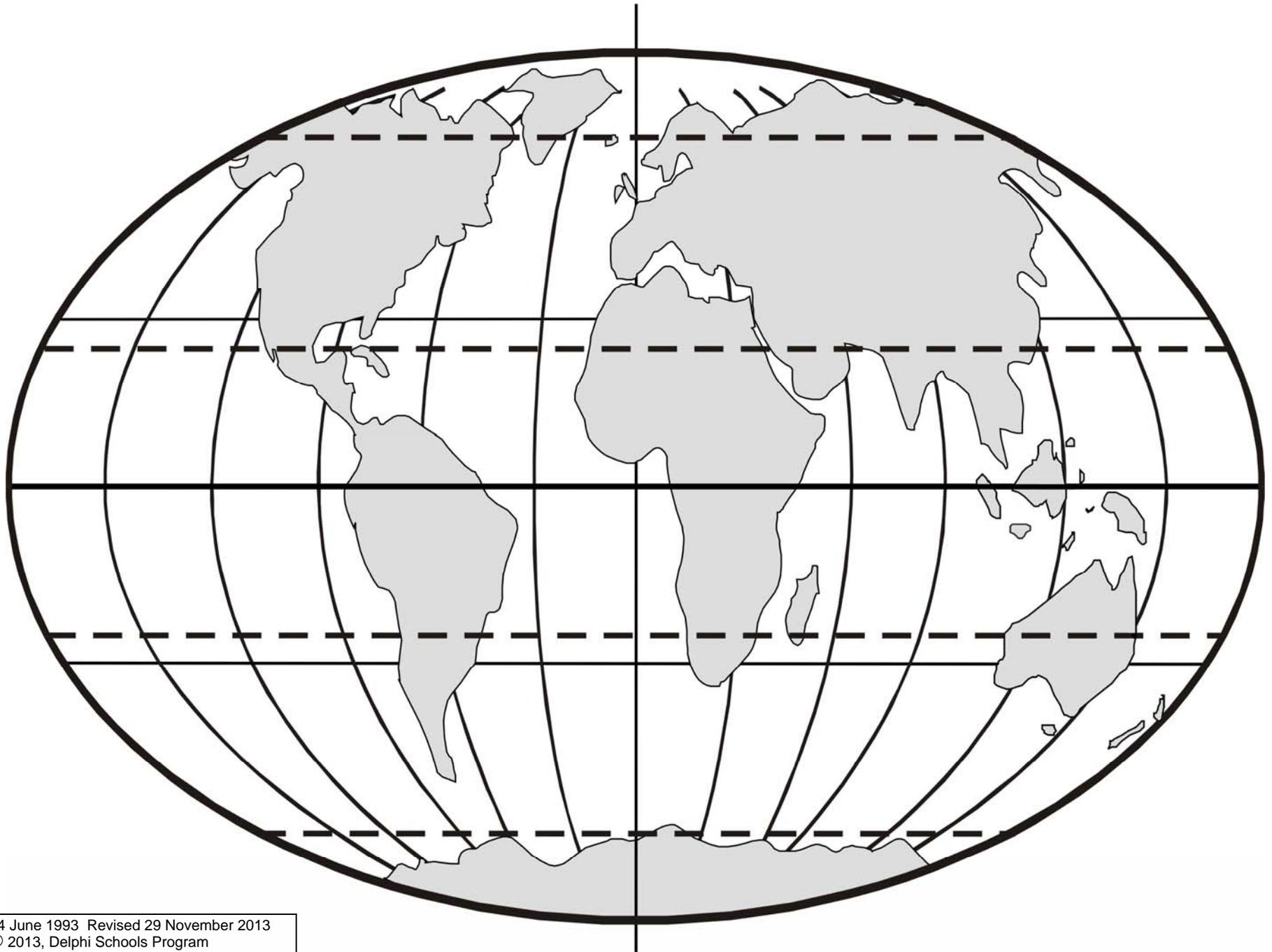
f) Find the two climate zones that have all the chaparral. **CHAPARRAL—North Temperate Zone and South Temperate Zone**

4. a) Which biome has very little water and is found only in the temperate zones and tropics? Write your answer at the top of the attached map.

DESERT BIOME

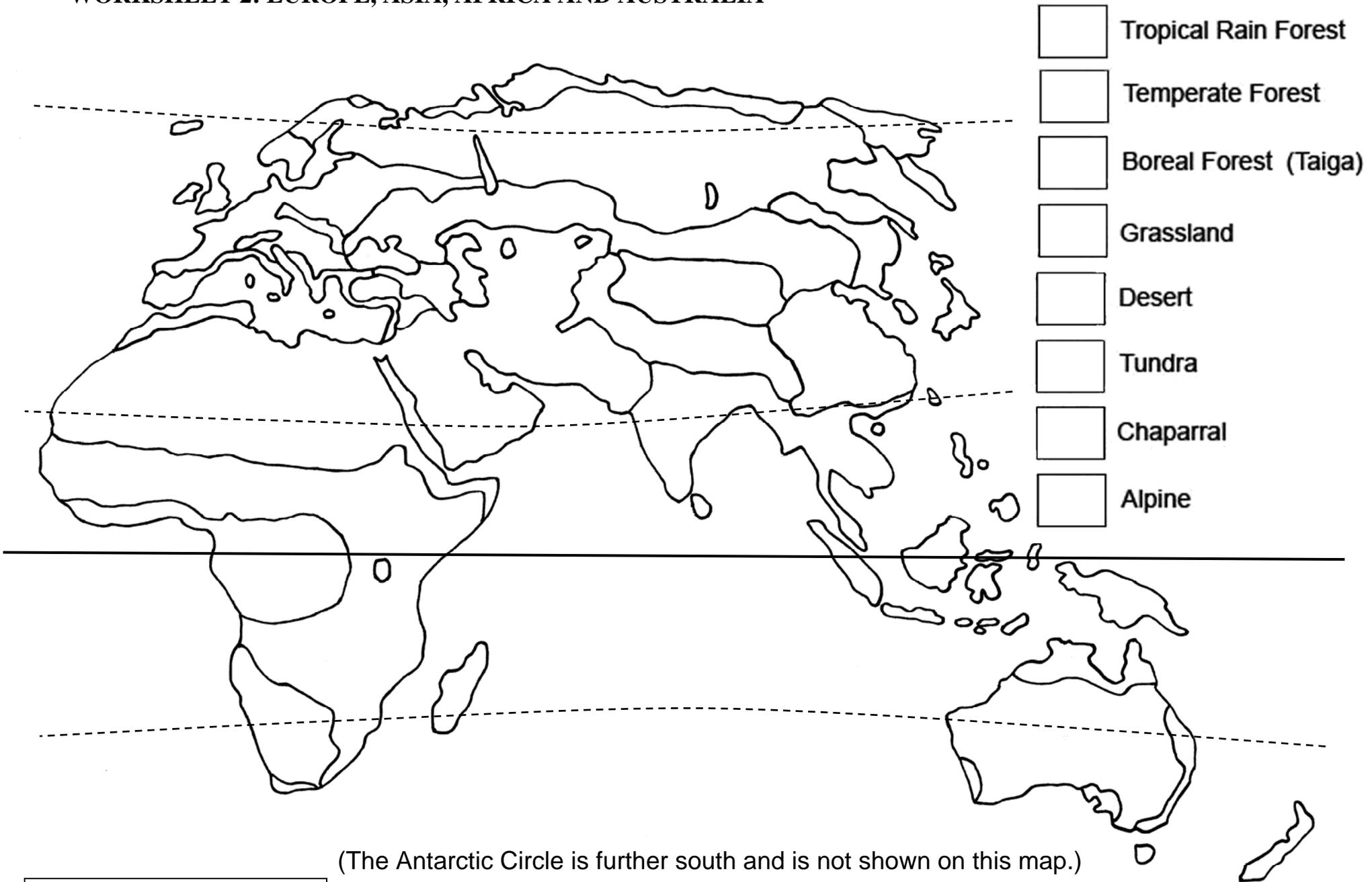
b) Which biome has mountains as part of the biome and is shown only in the temperate zones and tropics on your maps? Write your answer at the bottom of the attached map.

ALPINE BIOME



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WORKSHEET 2: EUROPE, ASIA, AFRICA AND AUSTRALIA



WORKSHEET 3: NORTH AND SOUTH AMERICA

