

Peter H. Reynolds presents

David Smith's

Mapping the World by Heart™



An innovative approach
to learning geography

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LEARNING

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David J. Smith
Vancouver, BC

About the Author



David J. Smith has 26 years of experience teaching geography, history, and English in public and private schools. The U.S. Department of Education honored him in 1992 with their “Breaking the Mold” Award for this curriculum; and that, along with feature stories on *The Today Show*, and in *TIME Magazine*, the *Boston Globe*, the *New York Times*, *The International Educator*, and other media, propelled him out of the classroom and into a full-time consulting practice. Since 1992 he has given workshops, seminars, and addresses in more than 50 countries and in 48 states, on the *Mapping the World by Heart* curriculum and on his other books on geography and geographic literacy — *If the World Were a Village*, *If America Were a Village*, and *This Child, Every Child* — focusing on what he refers to as “world-mindedness across the curriculum”. For questions about the curriculum, visit David’s website: <http://www.mapping.com>

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Maps & Grids included

Introduction

A Letter from David J. Smith

Dear Teacher,

The curriculum that you are now examining was an integral part of my classroom teaching for about 15 years. Since I began making it available to others, it has been used successfully all over the world — in elementary and high school classrooms as well as in home schools. In talking with other teachers about their experiences with the material, I have learned a great many important lessons and ideas, and I want to share some of those with you.

First, and most important, this is not designed to be a “Do it this way, follow these steps exactly, and you will be successful; and if you don’t you will surely fail” kind of curriculum. It is meant, rather, to be a little bit like a menu in a restaurant. Choose what you want, use it as you wish, add to it, change it, or combine it with other items and make a meal that suits your own particular tastes and your students’ needs.

Naturally, you can also do it exactly the way I do it and expect the same results as I have. If you want to follow my specific geography curriculum through a whole school year, then begin by reading the article reprinted from *World Monitor* (in the Resources section of this guide), and plunge in. You can have the same success as a teacher in California who has been using the lessons exactly as presented here — her students are producing maps so remarkable and detailed that her local newspaper did a feature on the curriculum and her results.

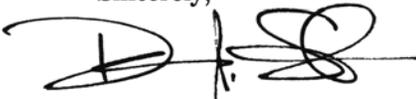
But you may not have the time, the numbers, or the access to material that a full-year course might require. You may need to make some modifications. You can do that, and also be very successful. Frankly, I think that’s the whole point of this material: a thoughtful, imaginative teacher, prepared to have fun and learn and be flexible with his/her students, can set any goal or definition of success. He or she can then use and adapt these lessons in any number of ways and end up successful.

The last exercises in the curriculum, the “memory map” and the steps leading up to it, might seem to suggest to students that the ability to visualize places and their geographic relationships is an



end in itself. Instead, I hope you will help your students see this ability for what it is: an essential tool and a foundation for analyzing and solving real problems, making real-world inferences, and understanding real-world issues and decisions. There is much more to geography than location; however, location is the essential center of the webwork of place, movement, culture, environment, history, and regional economy.

Whatever you decide to do, whichever lessons you use and however you apply them, please experiment and be creative. There is no one right way to teach world geography, and there is no wrong way at all. As long as your students are making order out of chaos and having fun, you are doing it right. I hope this material helps you find your particular way.

Sincerely,

David J. Smith

P.S.: The world is still changing and rearranging itself at an incredibly rapid rate. The place names here are all based on the best information available at press time — but more changes are probably right around the corner. Please keep in mind that you may need to make some adjustments.

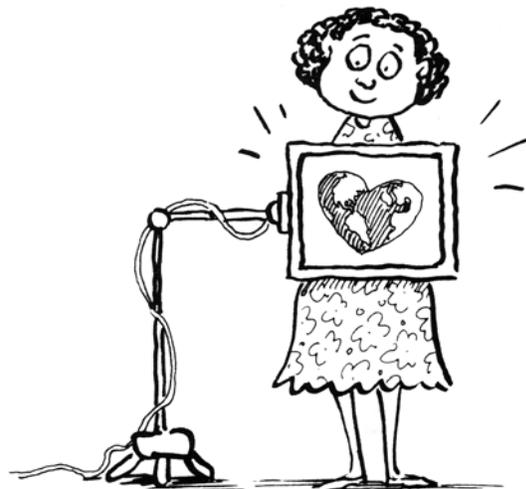
P.P.S.: To this new edition, I have added three supplements that have previously been available separately. Teachers who wish to focus on mapping the U.S., Canada, or Mexico can turn right to these sections and jump right in, but will still need to refer to the contents of the early sections of the guide.



Learning Objectives

By the end of the year students should:

- Be able to identify bodies of land and water, countries, and various physical features throughout the world.
- Be able to deal comfortably with any map, regardless of differences in scale, symbols, projection, etc.
- Be able to decode the information on any map.
- Be able to use atlas indices to find locations and other geographical information.
- Understand latitude and longitude, use it to describe and locate various places and features, and draw it in several projections.
- Be able to describe relationships depicted on maps (e.g., trade routes, distances, coastal vs. inland features, weather, etc.).
- Be able to use a globe to explain seasons, rotation of the Earth, tropics, etc.
- Use correct names for parts of the Earth and parts of a map.
- Produce from memory a map that shows as much as possible of their understanding of the outlines of all continents, plus the world's countries, major cities, larger islands, rivers, and bodies of water.
- Become aware of the relationship of geography to cultures, to global issues, and to themselves.



Content Goals

Here is a list of some of the key geographical concepts and map skills your students will learn with this program.



Location: How to Find Places

- Grids and coordinates
- Latitude and longitude: North, South, East, West
- Relative location in terms of coast, climate, elevation, neighbors, and land use

Symbols

- Pictorial symbols (tree=woods)
- Abstract symbols (colors, etc.) for thematic maps



Distance

- Map scales

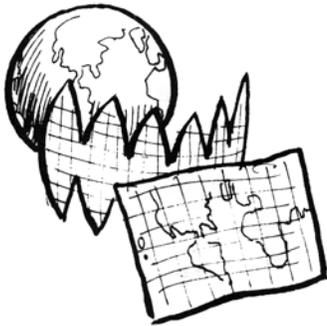
Direction and Direction Aids on Maps

- Orienting a map for use
- Rivers always flow downstream



Map Content

- Lines can mean rivers, boundaries, contours, etc.
- Vocabulary: continent, country, city, etc.



Projections and How They Affect What You See

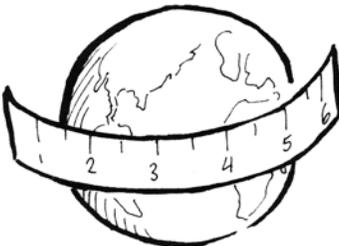
- Shape; area; distance; direction
- Globe as a model of the Earth

Rotation

- Daily — polar axis
- Annual — solar
- Seasonal variation; solstices; equinoxes; tropics

Dimensions of the Earth

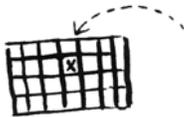
- Land area of Earth = 57,470,000 sq. miles
- Water area of Earth = 139,480,000 sq. miles
- Curvature of surface of Earth = 8.4 inches in 1 mile
- Distance around world at equator = 24,902 miles
- Distance around world pole-to-pole = 24,860 miles
- Distance around world at $89^{\circ} 30'$ = 218 miles



- Miles per degree
 - between degrees of latitude:
 - always 69 miles +/-
 - between degrees of longitude:
 - at equator = 69 miles +/-
 - at 85° = 6 miles
 - at 89° 30' = .61 miles

The Five Themes

In 1985, a joint committee on geographic education of the National Council for Geographic Education and the Association of American Geographers developed five themes which they call the major themes of geographic education. The hope was that educators would use these themes to test their present programs and to develop new ones. Copies of the full report, *K-6 Geography: Themes, Key Ideas, and Learning Opportunities*, may be available in your school or public library, or through various online sources.



1. **Location:** Position on the Earth's Surface

- Relative position (10 miles upstream; west from the dump)
- Position in a grid system (M-13; 33° 35' N & 84° 05' W)
- Reasons why places are located where they are



2. **Place:** Physical and Human Characteristics

- Places have physical characteristics (mountains)
- Places have human characteristics (villages, roads)



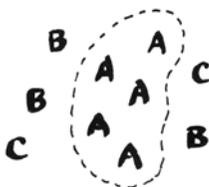
3. **Relationships** within a place: Humans and Environments

- How people depend on the environment (farming, etc.)
- How people adapt to the environment (houses, clothes)
- The impact of people on the environment (ecological issues)



4. **Movement:** Humans Interacting with Each Other on the Earth

- Interdependence (farms feed cities)
- Linkages between places (highways, airways)
- People, ideas, and products (they all move)



5. **Regions:** How Regions Form and Change

- A way to organize information (what IS a region)
- A region has common characteristics (neighborhoods, malls, etc.)
- Regions change (over time, by definition)

How Much Time Will It Take?



One variation you may have to make is in the area of time: you may not have all year. There are teachers who have done this curriculum successfully in a ten-week “mini-unit,” doing one area of the world per week, and eliminating the mechanical drawing of the grid at the end of the unit.

I generally use one or two class periods and one or two homework assignments per week, through the year, to make the program work; but you may not be able to use that many class periods, or you may not be able to assign homework.

If time constraints are a problem, you could try setting your sights differently, perhaps ending the year with a map of the Americas. Alternatively, you could do a memory map at the end of each area of the world, creating and adding to the “final” map all year long.



Creative Variations from the Field

You don’t actually have to use a flat projection at all for the final map. I recently met with some teachers in Vermont who bought themselves a good deal of class time by deciding to make the final maps a cooperative effort involving social studies, art, and math. They had their students create globes, 24 inches in diameter, doing the calculations in math; then building the framework and applying papier-mâché during art class; and finally, in social studies, drawing the lines of latitude and longitude and completing their maps.

One creative approach I heard about came from a group of teachers in Kentucky who had their students draw a single enormous grid on the parking lot; then each student put onto the map only one part of the world. Not everyone had to memorize every part of the world for this map, but everyone was involved. Everyone mastered a great deal of world geography, and important lessons were also taught about cooperative learning and group effort. And, as an added bonus, the entire project became a tool for the whole school to use.

The National Geography Standards

The Stem

The well-educated person views the world spatially. The National Geography Standards, published as *Geography for Life*, describe a geographically informed person as one who sees meaning in the arrangement of phenomena in space and who applies the spatial perspective in life situations.

Seeing the World in Spatial Terms

The geographically informed person...

- knows and understands how to use maps, globes, and other graphic tools and technologies to acquire, process, and report information from a spatial perspective.
- uses mental maps of Earth to put people, places, and environments in their spatial context.
- knows and understands how to analyze the spatial organization of Earth's surface.

Elements: Places and Regions

The geographically informed person...

- knows and understands the physical and human characteristics of place.
- knows and understands that people define regions and that they use them to interpret Earth's changing complexity.
- knows and understands that culture and experience influence people's perception of places and regions.

Physical Systems

The geographically informed person...

- knows and understands the physical processes that shape patterns on Earth's surface.
- knows and understands the characteristics and distribution of ecosystems on Earth's surface.

Human Systems

The geographically informed person...

- knows and understands the characteristics, distribution, and migration of human populations on Earth's surface.
- knows and understands the nature and complexity of Earth's cultural mosaics.
- knows and understands patterns and networks of economic interdependence on Earth's surface.
- knows and understands the processes, patterns, and functions of human settlements.
- knows and understands the forces of cooperation and conflict that shape the divisions of Earth's surface.

Environment and Society

The geographically informed person...

- knows and understands how Earth's physical and human systems are connected and interact.
- knows and understands the consequences of the interaction between human and physical systems.
- knows and understands the changes in the meaning, distribution, and importance of resources.

The Power of Geography

The geographically informed person...

- knows and understands how to apply geography to interpret the past.
- knows and understands how to apply geography to interpret the present and plan for the future.

For additional information on the National Geography Standards, contact:

National Council for Geographic Education

1710 Sixteenth St. NW
Washington, DC 20009-3198
Phone: (202) 360-4237
<http://www.ncge.org>

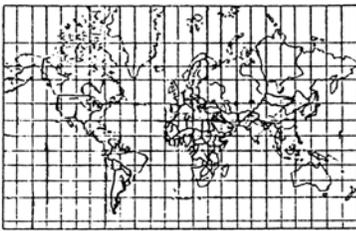
All About Maps

Ordering Maps

Once you have decided which areas of the world you're going to cover, you will need copies of the regional maps for your students to use for practice and mapmaking. Take the maps that come with this program to any copy center and reproduce them for your own classroom use, or order additional maps from FableVision Learning at: <http://www.FableVisionLearning.com>

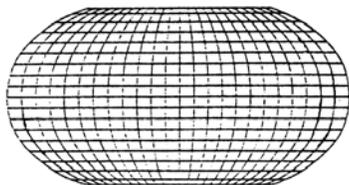
Which Projection Should You Use?

You will also want to decide on a projection to use for your blank grids, your practice grids, and your final “memory maps”. Included with this guide are reproducible samples of three different blank projections: *Mercator*, *Robinson*, and *Equirectangular*.



Mercator

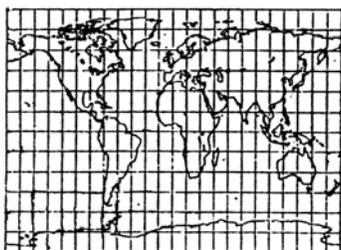
The Mercator, the oldest and most familiar of the projections, has some advantages and some disadvantages. Among the advantages: it is rectilinear, which is very helpful when students have to produce their own large-scale blank grids. Compass directions are all perfectly accurate — northeast on a Mercator grid is northeast in the real world. Finally, it is familiar. Its main disadvantage is that it hopelessly distorts the size of land masses, with the distortion increasing the further you move north or south from the equator. Greenland, Russia, Canada, etc., all appear much bigger than they actually are when viewed on a Mercator grid, relative to countries near the equator. Many teachers I know prefer this grid, despite its disadvantages, because it is familiar and comfortable. If you decide to use it, it would probably be a good idea to make sure that you at least expose your classes to the other grids, and make sure they are familiar with the compromises that the Mercator requires.



Robinson

The Robinson, developed by Arthur Robinson at the University of Wisconsin, was for many years the projection of choice for National Geographic and for Rand McNally. It reduces enormously the distortions of the Mercator. Professor Robinson made several changes. The poles are no longer the same length as the equator, and lines of longitude tend towards a polar meeting place. The central meridian is not 0° , but 15° E, which means that distortion across Europe and Africa is all in the same direction. The standard parallels, the latitudes along which measurements are perfectly correct, have been moved away from the equator, so that distortion moves both towards the equator and out and towards the poles and in.

However, from the point of view of student use, the Robinson has two important disadvantages. It is difficult for a student to replicate, which makes it necessary to remove the mechanical drawing from the end-of-year mapmaking. Also, all the lands near the poles, rather than being distorted, are compacted together and much more difficult to draw and label.



Equirectangular

The third projection, the Equirectangular, was created for me by Arthur Robinson and the University of Wisconsin Cartographic Laboratory. It is the grid I used in my own classes, and represents a compromise between the Mercator and the Robinson. It is rectilinear, so it is easy to reproduce and to draw and label; and every rectangle on the grid has the correct area relative to the other rectangles, which means that country *areas* are not distorted. However, it is still a compromise — country *shapes* are somewhat distended, which is what allows the areas to become equal.

My suggestion: examine them all, try them out yourself or with your students, and see what works for you.

The “Menu of Lessons” Approach

Mapping the World by Heart is not meant to be a “follow these steps exactly or you will fail” kind of curriculum. It is meant to be used more like a restaurant menu. Choose what you want, use it as you wish, add to it, or combine it with other items and make a “meal” that suits your own needs and those of your students.



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A Sample Yearlong Agenda, Using the Menu Approach

Sequence Lesson Time Required Time

Appetizers

Lessons to familiarize your students with map nomenclature and map reading, and to make sure everybody is speaking the same language.



1.	Blank grid to fill in	1 class period	1 day
2.	Grapefruit Lesson	1 class period	1 day
3.	Latitude and Longitude Lesson	1 class period	1 day
4.	Contour Maps	2 classes/2 homeworks	1 week
5.	Thematic Maps & Reports	3 classes/2 homeworks	1 week
6.	Local Geography	2 classes/2 homeworks	1 week

Entrees

The backbone of the location and place segments of the curriculum, seasoned with World Experts and other “seasonings” for relationships, movement, and regions.



7.	Selected World Features Map	2 classes/2 homeworks	1 week
8.	USA Map & Review	4 classes/4 homeworks	2 weeks
9.	Canada Map & Review	4 classes/4 homeworks	2 weeks
10.	Central America Map & Review	4 classes/4 homeworks	2 weeks
11.	South America Map & Review	4 classes/4 homeworks	2 weeks
12.	Review all the Americas	2 classes/2 homeworks	1 week
13.	World Experts	4 classes/8 homeworks	2 weeks
14.	Europe Map & Review	4 classes/4 homeworks	2 weeks
15.	E. Europe/N. Asia Map & Review	4 classes/4 homeworks	2 weeks
16.	Africa Map & Review	4 classes/4 homeworks	2 weeks
17.	Asia Map & Review	4 classes/4 homeworks	2 weeks
18.	Australia & Oceania	4 classes/4 homeworks	2 weeks
19.	World Review & World Tests	4 classes/4 homeworks	2 weeks

Dessert

The final activities, summing up and synthesizing the year’s work, ending with some kind of final, formal product.



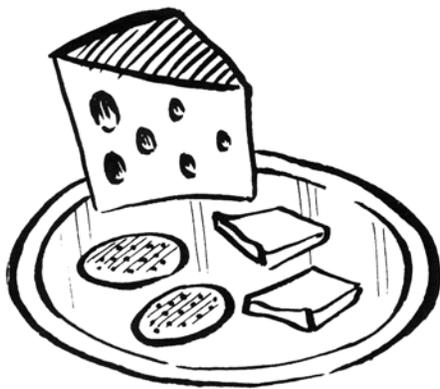
20.	Daily Practice Maps	12 classes/12 homeworks	4 weeks
21.	Final Formal Maps	12-15 class periods	3 weeks



A Menu of Lessons

Appetizers

These lessons have two purposes: to give you a realistic picture of your students' knowledge of geography as the year begins, and to establish a foundation of geographic terminology and understanding upon which the structure of the year's work can be built. The lessons require little preparation time or classroom/homework time, and can be done either as a group at the very beginning of the year, or one by one at any time during the year that the particular skills and knowledge seem appropriate.



Blank Grid Lesson

Overview

Students demonstrate their present knowledge by filling in a blank grid, which is saved and used for comparison at the end of the year.

Objectives

Students should:

- Have a relaxed, fun time coming to grips with how hard it is to actually make a world map that looks like the world.
- Create a document that will be usable for comparison at year's end.

Materials

One blank grid per student; one pencil or dark, erasable pen.

Methods and Discussion

1. Hand out pencils.

What you are about to do will not be graded or evaluated; it will only be used to help us see the progress you make this year, so please do not worry or be alarmed. I am going to hand out blank grids, but please write nothing on them until I give you instructions.

2. Hand out grids.

On these grids, I want you to fill in everything that you remember that you know about the world. There is no right or wrong answer; it's only what you remember you know, today, about world geography. Try to put in and label any places or features you can, such as continents, countries, cities, rivers, oceans, lakes, mountains, islands, etc. Do not look at anyone else's map; there's no point in including stuff that somebody else remembers. Do the best, neatest job you can in the time allowed.

3. Allow as much time as you can. Those who finish early can read, begin homework, etc. 20 to 25 minutes is usually enough for 95% of the class.



4. Discussion as needed. Was it hard? Why? How did it make you feel? Did you learn anything just by doing this exercise? What places were easy to remember, and what places were hard? This is a good time to make the point that places that are real to us are the places that are easiest to remember (such as where we live, where we've traveled, or places we've studied). The geography course this year is going to attempt to make a lot of new places real.

Variations



- Can be done in a few minutes a day, with teacher collecting grids each day.
- Instead of a blank grid, a blank world map can be used — the assignment being to fill in as much as possible in the time allowed.
- Blank world map can be used on a subsequent day as an additional pre-test.

Grapefruit Lesson

Overview

Students learn the need for map projections by attempting to cut the skin off of a grapefruit and making it flat enough to use as a readable map.



Objectives

Students should:

- Understand why flat maps cannot be made without some kind of distortion.
- Be able to state various compromises that mapmakers use.

Materials

One grapefruit per student; one thin, permanent black marker per grapefruit; one serrated plastic knife per grapefruit; sponge and paper towels for clean-up; wall or desk maps with a variety of projections — polar, conic, mercator, etc. — kept out of sight until latter part of lesson.

Methods and Discussion

1. Distribute grapefruits, knives, markers, towels.
2. On each grapefruit students draw a North and South Pole, plus the equator, prime meridian, international date line, and a few real or make-believe countries.
3. With knife, students attempt to remove skin in such a way that the peel is in one piece (or at least in large pieces) and could be used as a map. Allow 10-15 minutes.
4. Examine results, let students describe their particular ordeals, then get out samples of different projections for examination and discussion.
5. Discussion includes some analysis of the kinds of problems students encountered (“I couldn’t get it flat,” “These two places that are supposed to be next to each other ended up far apart,”

and so on), followed by the teacher's presentation of the different projections, and a look at the compromises inherent in each projection — what is gained and what is lost in each one.

6. Students can be invited to eat grapefruits at the end of class.

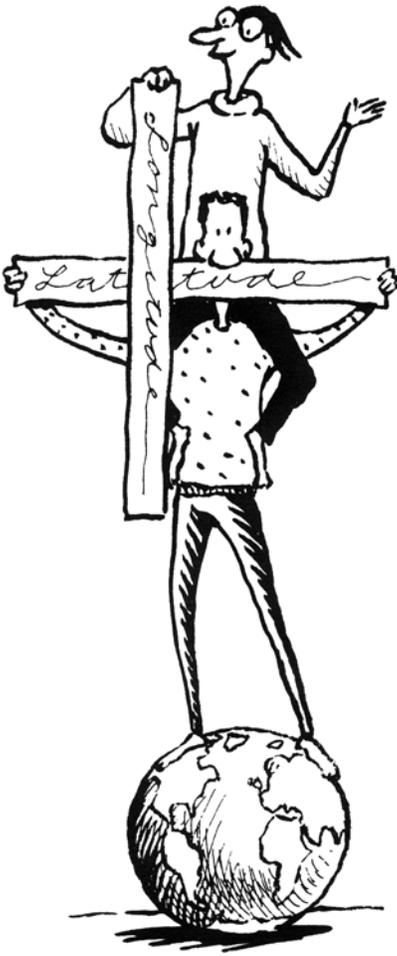
Variations

Exercise can be done in pairs or small groups to save on fruit and to enhance student discussion and group problem-solving skills. If small groups are used, it's always useful to ask a question or two at the end about the problem-solving difficulties that the groups faced and how they were resolved.



- Teacher can do one grapefruit in front of the class, with students helping, offering suggestions, and so on.
- It can be done in reverse. Find a desk map with an equator about the same length as your grapefruit's circumference; then try to fit the map to the grapefruit using scissors and scotch tape.
- Use a balloon. Inflate it and tie it off with a rubber band; then draw a globe on the balloon and add the poles, equator, a few lines of longitude, and the continents. Then deflate the balloon. Make a single cut with scissors from South Pole to North. While trying to make you balloon "map" rectangular, pin it onto the bulletin board with pushpins.

Latitude and Longitude Lesson



Overview

Teacher-centered discussion during which students are presented the concepts of latitude and longitude and practice using these tools with a variety of exercises.

Objectives

Students should:

- Understand and be able to define latitude and longitude.
- Understand units of measurement: degrees, minutes, seconds.
- Be able to state the longitude and latitude of various places by looking at a map.
- Be able to locate places given their latitude and longitude.

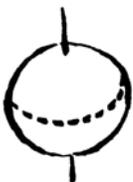
Materials

Gather whatever you have in the way of maps, globes, etc. — each student will need at least one world map. This can be a desk outline map, a map from an atlas, or any kind of world map.

Methods and Discussion

The lecture/discussion can go in a variety of ways, depending on teacher preferences. What follows are ideas for ways to present the material. None of these is etched in stone; feel free to use, adapt, change, or ignore. They are only ideas that have worked. During the discussion, have lots of maps around, use a globe to demonstrate what you're talking about, and encourage questions.

- *If there were only one kind of map in the world, and I wanted to describe a place on it, “that little doohickey over there” or “the city in the corner of square A7” would work fine. However, there are too many different maps. And geographers, explorers, and so on, had to be sure they were talking about the same place, so a consistent system had to be developed.*
- *The first agreement: draw a line around the Earth, halfway between the poles, and call it the equator.*
- *Now, the distance from the equator to either pole is a quarter of a circle. Since a circle has 360 degrees, the distance from the equator*





to a pole is 90 degrees. At each of these degrees, we can draw an imaginary line around the Earth. Near the equator they are long lines, near the poles they are short lines. But they all have two things in common: they go all the way around the Earth, and they are parallel to the equator.

- Using these lines, called lines of latitude, I can tell my location relative to the equator. Each degree represents approximately 69 miles. If I'm at the lowest latitude, 0 degrees, I'm at the equator. If I'm at the highest latitude, 90 degrees, I'm at the pole. But WHICH pole? It's necessary to add N or S so that it's clear whether you are north of the equator moving toward the North Pole, or south of the equator moving toward the South Pole.

Let's try a few locations:

- If I'm at 10° N, how many miles am I from the equator, and in which direction?
- If I'm at 89° N, where am I?
- If I'm at 90° S?
- The problem with LATITUDE alone is that I can tell how far from the equator I am, but I can't tell where I am on that latitude. I could be at 45° N and be in the Atlantic or the Pacific; in Europe, Asia, or North America.
- Something vertical was needed that would intersect lines of latitude and tell me where I am. However, there were no neat poles to start from. So geographers decided on an arbitrary point — the Royal Observatory in Greenwich, England — and decided that a line drawn from North Pole to South Pole through that observatory would be called ZERO DEGREES of LONGITUDE. Longitude lines are also called MERIDIANS; hence the line of ZERO DEGREES is sometimes called the PRIME MERIDIAN. Meridian means "mid-day"; at mid-day in Greenwich, England, the sun is over the prime meridian.
- With that line in place, the rest was easy. The Earth was divided up by 360 evenly spaced lines running from pole to pole. These were called DEGREES OF LONGITUDE.
- If I start at ZERO and go one degree EAST, I am at ONE DEGREE EAST LONGITUDE. If I go 90 degrees to the west, or one fourth of

the way around the world, I am at NINETY DEGREES WEST LONGITUDE.

- So now, to identify my location, I simply have to give a longitude and a latitude. If I am 20 degrees north of the equator, and 20 degrees east of Greenwich, I describe my location as TWENTY DEGREES NORTH LATITUDE, TWENTY DEGREES EAST LONGITUDE, or simply as 20° N, 20° E.

Some interesting things:

1. If I go halfway around the world from the prime meridian, I get to a line identified as 180 degrees of longitude. It is BOTH 180 east AND 180 west. The highest line of longitude, therefore, is 180. (The highest line of latitude is 90.) This line of 180 degrees is also known as the International Date Line; it marks a time zone change and also a date change.
2. For convenience in telling time, the Earth was divided into 24 time zones. Wherever the sun is directly overhead, it is noon; and it is some other time in every other time zone. If it is noon in California, it is 1:00 PM in the Rocky Mountains, 2:00 PM in the central U.S., and 3:00 PM in the eastern U.S. It's also 8:00 PM in London, 10:00 PM in Cairo, 2:00 AM in India, 4:00 AM in Japan and Australia, and 9:00 AM in Hawai'i. However, some convention was needed so that possible confusion about WHICH DAY IT IS would be avoided. This solution was the International Date Line. If I go EAST across this line, the time goes from 7 o'clock to 8 o'clock — the same as with any time zone — but it goes from 7 o'clock Thursday to 8 o'clock Wednesday. In other words, I don't go forward an hour, I go back 23.



Lines of latitude are always the same distance from the equator, and the same distance from every other line of latitude, no matter where you are on the line. Longitude, however, is different: the lines all MEET at the poles, and they are approximately 69 miles apart at the equator. If I am at 10° N, 10° E, and my friend is at 10° N, 11° E, we are about 69 miles apart; if I am at 89° N, 10° E, and my friend is at 89° N, 11° E, we are only a mile or two apart. (This may seem confusing, but study a globe for a few minutes and you'll understand.)

- So, while I can't always use latitude and longitude to tell how far apart two places are, I can always tell exactly where on the Earth something is by identifying its latitude and its longitude.

Let's practice a little.

- What city is at 35° N, 120° W?
- Show me the location of 10° N, 170° W; of 80° S, 170° E.
- Where are we right now, in terms of latitude and longitude?
- It's hard to be precise given only degrees, because they can be pretty far apart. So it's important also to be able to refer to parts of degrees. Degrees are divided up into units called MINUTES; there are 60 minutes in each degree. Five-and-a-half degrees, therefore, is referred to as 5 degrees, 30 minutes. Minutes are divided up into units called SECONDS; there are 60 seconds in a minute. So 5 degrees, 30-and-a-half minutes is referred to as 5 degrees, 30 minutes, 30 seconds.
- Each SECOND of latitude is approximately $1/60$ of a mile from the next second of latitude, so you can get pretty precise. Your house and your friend's house across the street will have exactly the same latitude and longitude in DEGREES and in MINUTES, but will differ by one or two SECONDS. Remember, these minutes and seconds have nothing to do with time; they describe location.
- It's time for a few practice locations. I'll tell you a location, and you find it on the map.
- OK, now let's use the maps we have and try to determine the location of a few cities.
- Finally, just for fun and without looking at any map, I'll tell you the latitude and longitude of a few important places. See if you can work out, in your head, what places I'm locating for you.



Playground Maps

1. Pick the desk map that you wish to enlarge on your playground or classroom floor.
2. Divide it into 5 equal sections horizontally, and 5 equal sections vertically. Draw this grid — it's actually 6 lines in each dimension, making a 5 x 5 grid. Lightly number each rectangle in the grid. Photocopy one of these gridded maps for each student. Assign each student one rectangle (or two) to be responsible for.
3. On your floor or playground, divide the horizontal and vertical dimensions into 5 equal sections. Use a chalk line (borrowed from the school custodian or bought for a few dollars at a hardware store) to lay out your 5 x 5 grid on the floor. The final map must have its horizontal and vertical dimensions in the same ratio as the horizontal and vertical dimensions on the desk map (i.e., if the desk map is 6" by 8", the floor map could be 6' by 8', 3' by 4', etc.) This ratio must be the same on both maps if the large map is to look the same as the desk map.
4. Number each rectangle on the floor grid. Give out chalk. Students copy the coastlines and borders in their assigned rectangle from the desk map to the floor map. Gradually, all the chalk lines will meet and begin to look like a huge version of the desk map. Step back and enjoy the process. Many people find that this is a great moment to make a video for later class enjoyment.
5. If you want a permanent map, go over the coastlines and borders in parking lot paint with a very small roller. (These are hardware store items; the paint is about \$20 per gallon, the rollers vary in price. Your school custodian probably has plenty of the paint.) DO NOT GO OVER THE GRID LINES IN PAINT. You want the chalk grid lines to gradually wear away so that all you are left with is the basic map.
6. It is usually best not to label. Use the final map as a huge blank map for a variety of review and fun activities.

Contour Map Lesson



Overview

Students become familiar with the terminology, reading, and interpretation of contour maps. Then they practice making some of their own, working individually as well as in teacher-centered large groups.

Objectives

Students should:

- Be able to describe the meaning of contour lines, contour shading, and other aspects of contour maps.
- Understand how to use a contour map, and demonstrate this understanding by correctly interpreting the slope, size, and shape of features on a map.
- Be able to draw contour maps.

Materials

Multi-page handout; pencils; sample contour maps for the bulletin board, such as U.S. Government Survey maps of your local area, FAA Air Navigation charts, NOAA Ocean Navigation charts, etc. Also useful: a sand table, sandbox, or convenient mound of dirt.

Methods and Discussion

1. Begin by showing students a sand or dirt pile. Ask them to pretend that the dirt is an island, 1000 feet high. Ask a student to draw a line on the island that connects all points 100 feet above sea level; ask another student to do the 200 foot line, etc. Finally, ask students what these lines would look like if viewed from above (concentric circles or irregular shapes), how a steep slope would differ from a flat area (lines would be closer together the steeper the slope), what would happen near rivers and ponds (rivers cross lines, ponds never do), and so on.
2. Back in the classroom, draw a *side view* of an imaginary island and demonstrate how to draw a *contour map* of that island. Remind students that this is imaginary and only for practice. Also point out that since nobody could know what the other side of your imaginary island looks like, no two contour maps of this island will look the same.

3. Similarly, draw a *contour map* of an imaginary island and demonstrate to students how to draw a *side view* of this island.
4. Finally, let students begin work on the exercises, referring to the first pages if they get confused. This can be classroom work for one or two periods, or it could be homework for the next geography class.

Variations



- Students can work in pairs or small groups to construct their own island out of sand or clay. Then they, or other students, can map it. Ask the art studio to work with you on the construction of islands.
- If a parent who knows surveying is available, the school grounds can be surveyed and mapped.

Contour Maps

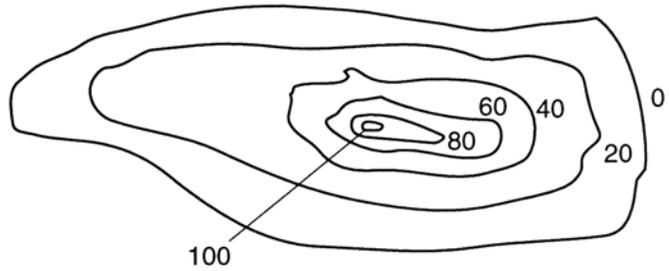
Absolute Rules for Contour Maps



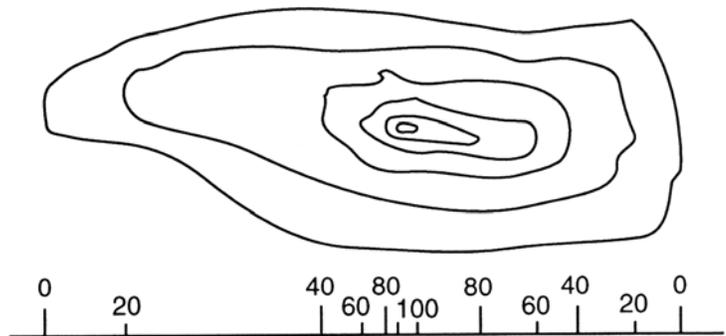
- Contour lines are closed like a circle.
- Every point on a contour line is the same number of feet above sea level.
- Rivers flow downhill (across lines).
- The sea is at sea level (altitude of 0 feet).
- Lakes are flat (they never cross lines).
- Contour lines must be close enough to show contours, but far enough apart to avoid crowding.

Drawing a side view:

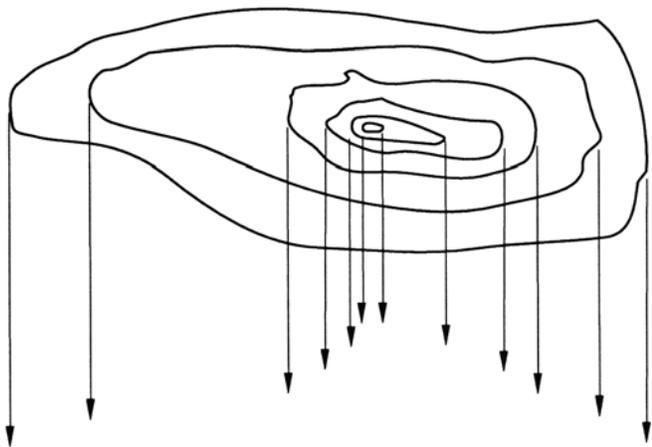
1. Note size and shape. Top of island is above 100 feet, but less than 120 feet.



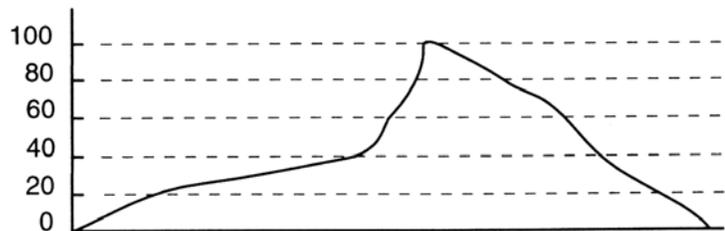
2. Mark the extent of each contour. The island cannot extend beyond these marks at each level.



3. Transfer these points to your drawing.

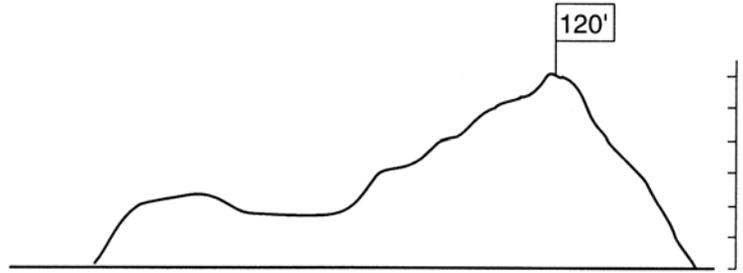


4. Mark levels, put dots where points from above cross levels, and connect the dots.

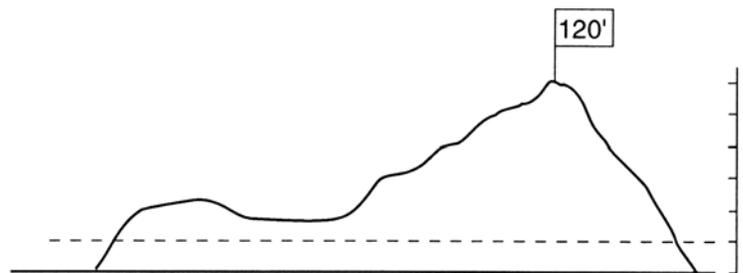


To map this island:

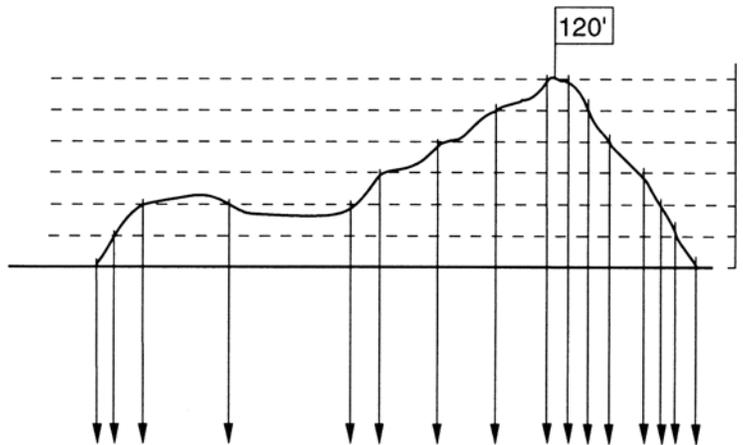
1. Pick a good contour interval. 5 feet is too many lines, 100 feet is too few. 20 feet might be just about right. Mark 20 foot intervals.



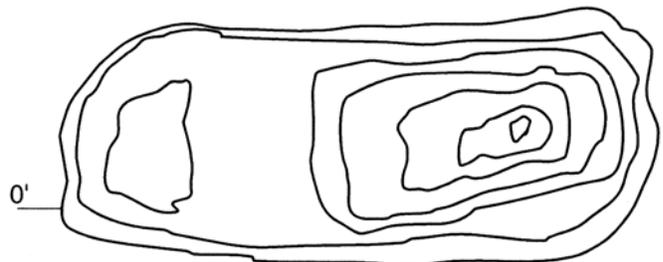
2. Draw horizontal lines across island at each interval.



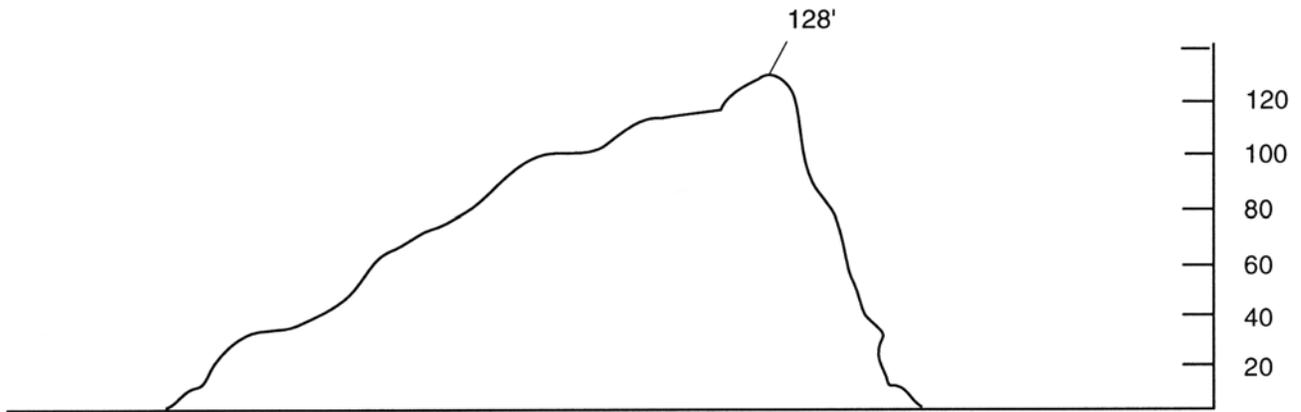
3. Note where island and lines cross. Transfer these points down to your map of the contours.



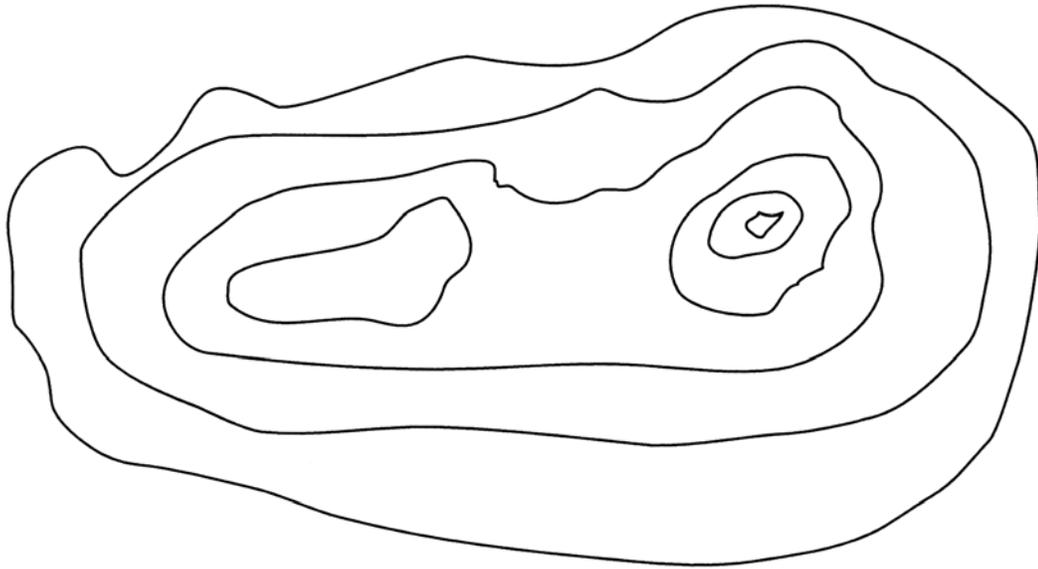
4. Your contour lines must extend as far as these points, and no further.



Draw this island's contours:



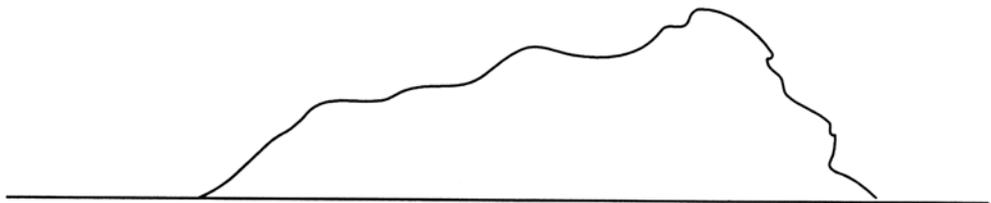
Draw the island whose contours are:



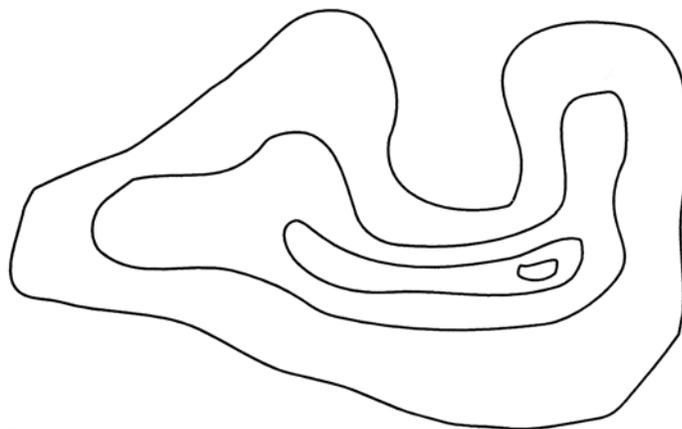
Which map is most useful to you if you want to find a harbor?

Why?

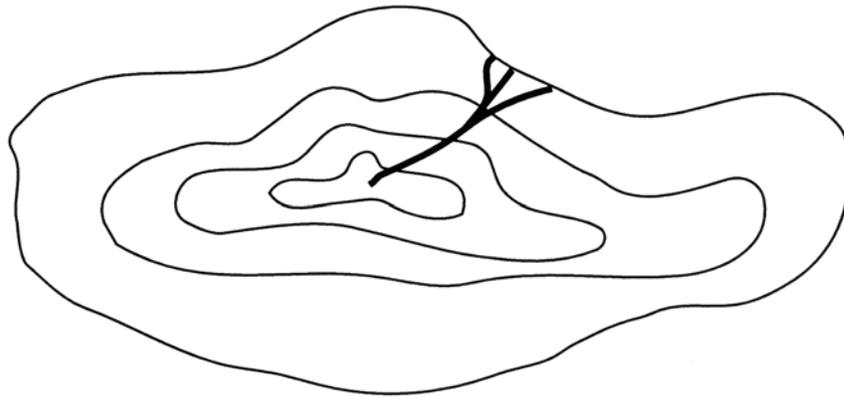
A.



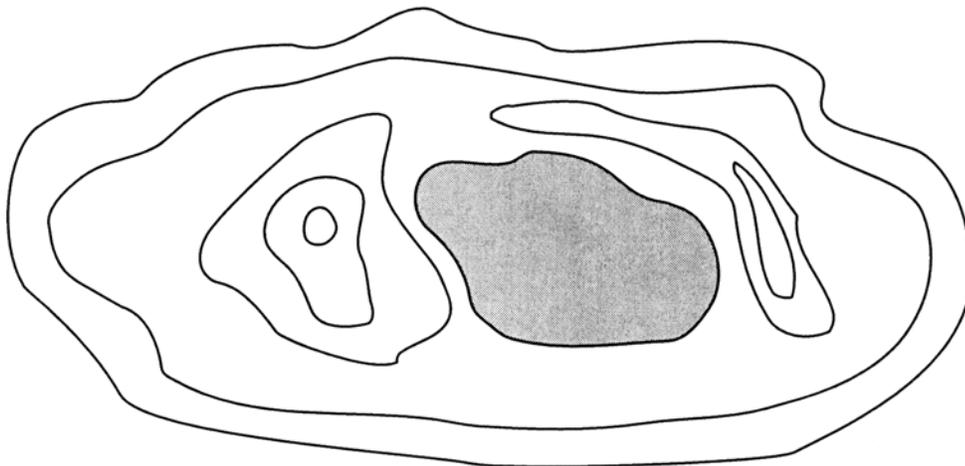
B.



Which way does the river flow? (Make an arrow.)

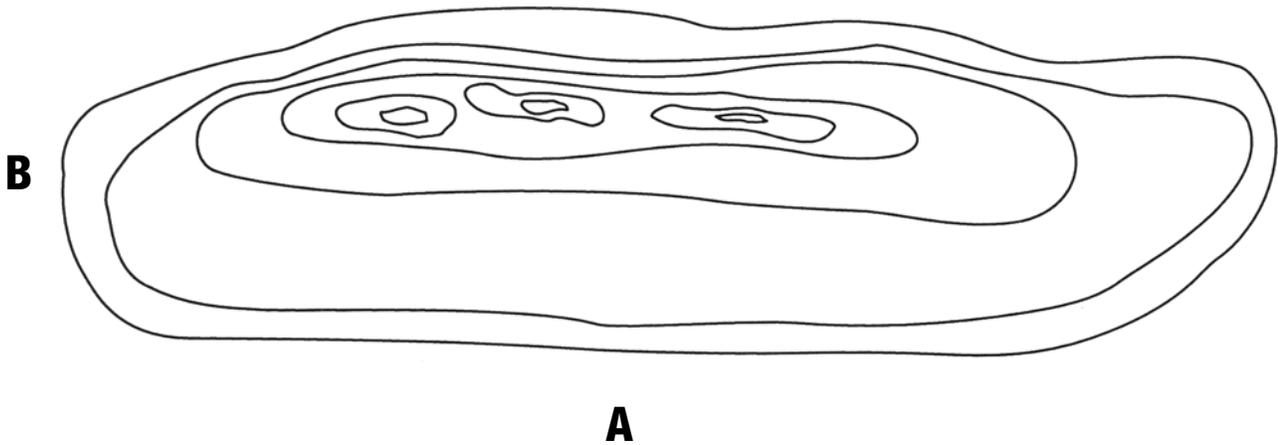


**Do rivers cross contour lines or run between them?
What about lakes? Why?**



If you draw this island's outline as it would appear if you were standing at point A, what important feature will be missing?

If you draw it from point B, what feature will you have to omit?



Make a side view and a contour map of an imaginary island.

Side View:

Contour Map:

Thematic Maps Lesson



Overview

Students practice making thematic maps, using as models maps they find in atlases, newspapers, bulletin boards in the classroom, etc. After they have made the maps, they report to the rest of the class about their map: what it represents, what interesting conclusions they were able to draw, and how their map relates to other maps that have been presented.

Objectives

Students should:

- Understand the kind of information that might be depicted on a thematic map such as birth or death rates, key products or industries, etc.
- Be able to explain the information on the map that they made.

Materials

Desk outline maps for each student; colored pencils; sources of thematic maps. Have students bring maps in for several days as they find them in newspapers or magazines, or use the thematic map sections in classroom atlases.

Methods and Discussion

Before doing this assignment, it's important to spend some time looking at a variety of thematic maps with the class, either in class discussion or in homework assignments with directed questions. Students need to be familiar with the idea of these maps, particularly with their use of symbols and colors.

Allow time — probably one or two class meetings plus one or two homework assignments — for the map to be made correctly.

1. Have students copy the information from their model maps. Alternatively, they can devise a theme of their own based on information they derive from thematic maps, from newspaper stories, or from their own research.
2. Remind students of the importance of a map key to help the viewer understand the meaning of the map.



3. After maps are made, each student should give a 5-minute report to the class about the content of the map, what the student learned while making the map, questions that the student found interesting, etc. At the beginning of the report, students must provide a statement about what information they are trying to convey to the class. It may be valuable in some classes for the teacher to give the first report, to set a standard and style for other reports.
4. Immediately after the report is given, have the student who gave the report administer a 5-question objective test about the report. Have the student grade it to see:
 - if the report taught the things the student thought it would teach; and
 - what questions remain that need to be discussed more fully.
5. Finally, post the maps all around the room for general viewing and discussion.

Variations

- Students can work on these in pairs.
- Students do not actually have to make their own map to get value from the lesson. They can study a map, and then report on the important issues presented in the map. However, I have found that there is great value in the exercise of actually repeating the mapmaker's steps, looking closely at areas of the world, decoding what different aspects of a map mean on a human scale, and more.

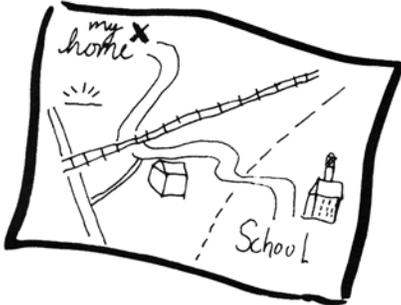
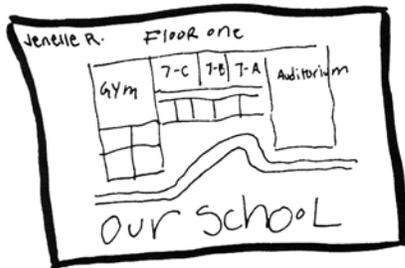
Local Geography



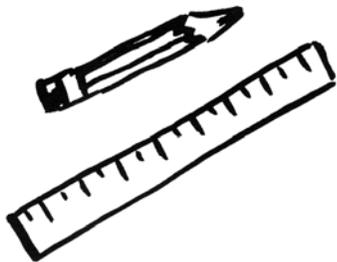
Instead of giving you my particular lessons in local geography, which will probably not be very helpful to you, I will describe some of the theoretical underpinnings of this unit and then list a number of alternatives you may wish to try.

The unit on local geography serves a very basic need — it reinforces for students where “here” is, relative to other important places in *their* world. Additionally, it accomplishes some other tasks — it teaches you a lot about what the students already do and don’t know; it gives you a familiar and therefore not-too-scary first mapmaking experience together; and it allows you to set the year’s high standards and start off with a successful maps experience.

Here are some alternatives for working with your classes around the topic of “local geography”.



- Map your classroom to scale, with a key to identify different types of materials, different areas, or whatever is appropriate.
- Map your school, labeling different rooms, corridors, etc. If there is more than one floor, do the higher floors on tracing paper so that all the sheets can be examined together; this can be done in groups, with each group working on a different floor or area.
- Measure your school’s grounds and calculate its area in acres.
- Build a model of your school building or some other familiar structure.
- Draw your route from home to school. Each student gets the same size paper to do this on, and has to fill the paper. Those who live close have to make the scale quite large, while those who live far away have to make the scale quite small.
- Draw a map of your neighborhood, or the school’s neighborhood, and then compare it to a professionally made map (get one from city hall). Where are the maps similar and where are they different? What does this teach you about how maps are made, and how accurate we can assume maps to be?



A Menu of Lessons

Entrees



This section presents a group of map worksheets. With each one, the procedures are approximately the same.

First, distribute a worksheet and a blank desk outline map to each student. Students then use their atlases, or maps that are posted in the room, to shade and label their blank maps. After all the maps are finished, I have students check each others' maps for accuracy (the first step in review). Then I collect the maps and check them myself.

After the maps have been checked for accuracy, review activities can begin. These include games from the “Seasonings” menu, and tests.

When I give a test on place and location, I usually build it around a blank map. I select several countries and features, mark them with numbers, and ask students to identify the marked locations on a separate worksheet. Another type of test I like to use is a “fill in the blank” type of test — with such questions as “The last country that the Nile flows through is _____,” or “The country immediately south of Rwanda is _____.”

While we are working on a particular area of the world, I cover the bulletin boards with maps, photos, and articles about that part of the world; and I ask students to check newspapers, television, and magazines for articles that pertain to the area.

You'll notice that the first lesson is a master “world features” map. This map is a gentle warm-up activity. Many of the names are already familiar and will appear frequently during the year; and so this map gives me an opportunity to help students with some new mapmaking concepts and techniques, such as key colors, horizontal labeling, and so on.

Selected World Features Map: Checklist

(To be done on your choice of Blackline World Outline Maps)



Mountains & Other Features

Alps	Atlas Mountains	Pyrenees
Andes	Caucasus	Rocky Mountains
Appalachians	Gobi Desert	Sahara Desert
Apennines	Himalayas	Urals



Oceans, Seas, and Gulfs

Adriatic Sea	Caspian Sea	Mediterranean Sea
Arabian Sea	East China Sea	North Sea
Aral Sea	East Siberian Sea	Pacific (N,S) Ocean
Arctic Ocean	Gulf of Aden	Persian Gulf
Atlantic (N,S) Ocean	Gulf of Bothnia	Red Sea
Baffin Bay	Gulf of California	Sea of Japan
Baltic Sea	Gulf of Mexico	Sea of Okhotsk
Barents Sea	Gulf of Oman	South China Sea
Bay of Bengal	Gulf of St. Lawrence	Tasman Sea
Bay of Biscay	Hudson Bay	Tyrrhenian Sea
Bering Sea	Indian Ocean	White Sea
Black Sea	Kara Sea	Yellow Sea
Caribbean Sea	Laptev Sea	



Rivers

Amazon River	Mississippi River	Tigris River
Amur River	Missouri River	Ural River
Brahmaputra River	Nelson River	Uruguay River
Congo River	Niger River	Volga River
Danube River	Nile River	Yangtze River
Euphrates River	Ob River	Yellow River
Ganges River	Orange River	Yenisey River
Indus River	Orinoco River	Yukon River
Lena River	Paraná River	Zambezi River
Mackenzie River	Rio Grande River	
Mekong River	St. Lawrence River	

Mapping the USA: Checklist

See Appendix A
for a much more detailed
"mapping the U.S." experience.



Borders

Shade the borders of the U.S., Canada, and Mexico.

States

Very lightly shade each of the 50 states. If you are careful, you should need no more than four or five colors.

In each state, write in blue pen the correct two-letter abbreviation. Do not use periods with these abbreviations. Do not try to write in the whole name of the state.

AL	Alabama	LA	Louisiana	OH	Ohio
AK	Alaska	ME	Maine	OK	Oklahoma
AZ	Arizona	MD	Maryland	OR	Oregon
AR	Arkansas	MA	Massachusetts	PA	Pennsylvania
CA	California	MI	Michigan	RI	Rhode Island
CO	Colorado	MN	Minnesota	SC	South Carolina
CT	Connecticut	MS	Mississippi	SD	South Dakota
DE	Delaware	MO	Missouri	TN	Tennessee
FL	Florida	MT	Montana	TX	Texas
GA	Georgia	NE	Nebraska	UT	Utah
HI	Hawai'i	NV	Nevada	VT	Vermont
ID	Idaho	NH	New Hampshire	VA	Virginia
IL	Illinois	NJ	New Jersey	WA	Washington
IN	Indiana	NM	New Mexico	WV	West Virginia
IA	Iowa	NY	New York	WI	Wisconsin
KS	Kansas	NC	North Carolina	WY	Wyoming
KY	Kentucky	ND	North Dakota		

Cities

In each state, make a clear dot for the capital city and label it. Use pencil or a different color of pen. If you can do so, keep the lettering within the borders of the state. If there is not enough room, make a straight line to a clear place on the map and write the city's name there.

Don't forget Washington, DC, the national capital.

Rivers

Label the following rivers in a new color.



Alabama River	James River	Roanoke River
Allegheny River	Kennebec River	Sacramento River
Altamaha River	Mississippi River	San Joaquin River
Arkansas River	Missouri River	Santee River
Brazos River	Mohawk River	Savannah River
Cape Fear River	Monongahela River	Snake River
Chattahoochee River	Ohio River	St. Lawrence River
Colorado River	Pecos River	Susquehanna River
Columbia River	Pee Dee River	Tennessee River
Connecticut River	Penobscot River	Tombigbee River
Delaware River	Platte River	Wabash River
Gila River	Potomac River	Yellowstone River
Hudson River	Red River (TX, OK, LA)	Yukon River
Illinois River	Rio Grande River	

Features

Label the following additional features in a new color.

Appalachian Range	Lake Erie	Lake Ontario
Cascades	Lake Huron	Lake Superior
Coastal Range	Lake Michigan	Rocky Mountains
Great Salt Lake	Lake Okeechobee	Sierra Nevada

Mapping Canada: Checklist

*See Appendix B
for a much more detailed
"mapping Canada" experience.*

Borders

Shade the U.S. side of the U.S./Canada border.



Countries and Territories

Label the following countries and territories.

United States

Greenland (Territory of DENMARK) — (Note: Now more correctly called Kalaallit Nunaat; its capital is Nuuk)

St. Pierre and Miquelon (Territory of FRANCE)

Provinces/Territories and Cities

Shade and neatly label each province. Label in a second color the cities listed for each one.

**Ottawa is the Federal Capital of Canada; provincial capitals are capitalized.*

Alberta (EDMONTON, Calgary)

British Columbia (VICTORIA, Vancouver)

Manitoba (WINNIPEG)

New Brunswick (FREDERICTON)

Newfoundland (ST. JOHN'S); Labrador

Nova Scotia (HALIFAX)

Ontario (TORONTO, Ottawa*)

Prince Edward Island or P.E.I. (CHARLOTTETOWN)

Québec (QUÉBEC, Montreal)

Saskatchewan (REGINA, Saskatoon)

Northwest Territories (YELLOWKNIFE)

Yukon (WHITEHORSE)

Nunavut (IQALUIT) — a new territory, effective April 1, 1999, carved out of Canada's central and eastern Arctic. Divide the Northwest Territories into eastern and western portions, and the eastern portion, including Hudson's Bay and Baffin Island, is Nunavut. In the Inuit language of Inuktitut, Nunavut means "Our Land"; this new territory, about 350,000 square miles or 1/5 the area of Canada, has been established as a homeland for Canada's First Peoples.

Bodies of Water

Label these bodies of water in a third color.



Baffin Bay
Bay of Fundy
Beaufort Sea
Davis Strait
Foxe Basin
Frobisher Bay
Great Bear Lake

Great Slave Lake
Gulf of St. Lawrence
Hudson Bay
Hudson Strait
James Bay
Lake Winnipeg

Other Features

Label these features in a new color.

Baffin Island
Churchill River
Fraser River
Mackenzie River
Nelson River
Ottawa River

Rocky Mountains
Sault Ste. Marie (canal and town)
St. Lawrence River
Vancouver Island
Victoria Island

Mapping Central America, Mexico, West Indies: Checklist

See Appendix C
for a much more detailed
"mapping Mexico" experience.



Countries and Cities

Shade contiguous borders of these countries. Then label them in one color. Mark cities with a clear dot, and label the cities in a second color.

- | | |
|------------------------------------|-----------------------------------|
| Antigua (Saint John's) | Honduras (Tegucigalpa) |
| Bahamas (Nassau) | Jamaica (Kingston) |
| Barbados (Bridgetown) | Martinique (Fort-de-France) (Fr.) |
| Belize (Belmopan) | Mexico (Mexico D.F.) |
| Bermuda (Hamilton) (U.K.) | See page 48 for a list of states. |
| Brazil (Brasília) | Netherlands Antilles: |
| Colombia (Bogotá) | Aruba |
| Costa Rica (San Jose) | Curaçao (Willemstad) |
| Cuba (Havana) | Bonaire |
| Dominica (Roseau) | Nicaragua (Managua) |
| El Salvador (San Salvador) | Panama (Panama) |
| Grand Cayman (Georgetown) (U.K.) | Puerto Rico (San Juan) |
| Grenada (Saint George's) | Saint Kitts (Basseterre) |
| Guadeloupe (Basse-Terre) (Fr.) | Saint Lucia (Castries) |
| Guatemala (Guatemala) | Saint Vincent (Kingstown) |
| Guyana (Georgetown) | Trinidad & Tobago (Port of Spain) |
| Hispaniola: | USA |
| Haiti (Port-au-Prince) | Venezuela (Caracas) |
| Dominican Republic (Santo Domingo) | |

Features

Label in a third color.

- | | |
|-------------------|-------------------|
| Atlantic Ocean | Gulf of Mexico |
| Bahía de Campeche | Lago de Nicaragua |
| Caribbean Sea | Pacific Ocean |
| Golfo de Panama | Panama Canal |

Administrative Divisions of Mexico

31 states; 1 federal district*

Aguascalientes
Baja California
Baja California Sur
Campeche
Chiapas
Chihuahua
Coahuila
Colima
Distrito Federal*
Durango
Guanajuato
Guerrero
Hidalgo
Jalisco
México
Michoacán
Morelos
Nayarit
Nuevo Leon
Oaxaca
Puebla
Querétaro
Quintana Roo
San Luis Potosí
Sinaloa
Sonora
Tabasco
Tamaulipas
Tlaxcala
Veracruz
Yucatán
Zacatecas

Mapping South America: Checklist



Countries and Cities

Shade contiguous borders and label in one color.

Mark cities with a clear dot, and label them in a second color.

Argentina (Buenos Aires)
 Bolivia (La Paz and Sucre)
 Brazil (BRASÍLIA, Recife,
 Sao Paulo, Rio de Janeiro)
 Chile (Santiago)
 Colombia (Bogotá)
 Ecuador (Quito)
 Falkland Islands (Stanley)
 French Guiana (Cayenne) (Fr.)

Guyana (Georgetown)
 Panama (Panama)
 Paraguay (Asuncion)
 Peru (Lima)
 Suriname (Paramaribo)
 Trinidad & Tobago (Port of Spain)
 Uruguay (Montevideo)
 Venezuela (CARACAS, Maracaibo)

Rivers and Features

Label clearly in a third color.

Amazon River
 Andes Mountains
 Atlantic Ocean
 Caribbean Sea
 Drake Passage
 Galapagos Islands
 Orinoco River
 Pacific Ocean

Panama Canal
 Paraguay River
 Parana River
 Sao Francisco River
 Strait of Magellan
 Tierra del Fuego
 Uruguay River

Mapping Europe: Checklist



Countries/Independent States and Cities

Shade contiguous borders, then label in one color. (*identifies island territories; use same color as mother country, and label island in COUNTRY color.) Mark cities with a clear dot, and label in a second color.

Albania (Tirana)	Liechtenstein (Vaduz)
Andorra (Andorra la Vella)	Lithuania (Vilnius)
Austria (Vienna)	Luxembourg (Luxembourg)
Belgium (Brussels)	Malta (Valletta)
Bulgaria (Sofia)	Monaco
Cyprus (Nicosia)	Norway (Oslo)
Czech Republic (Prague)	Poland (Warsaw)
Denmark (Copenhagen)	Portugal (Lisbon)
Estonia (Tallinn)	Republic of Ireland (Dublin)
Finland (Helsinki)	Romania (Bucharest)
France (Paris) (* Corsica)	San Marino
Holland (AMSTERDAM, The Hague)	Slovak Republic (Bratislava)
Hungary (Budapest)	Spain (Madrid) (*Balearic Is.)
Germany (Berlin)	Sweden (Stockholm)
Greece (Athens) (* Crete)	Switzerland (Bern)
Iceland (Reykjavik)	Turkey (Ankara)
Italy (Rome) (* Sicily; * Sardinia)	United Kingdom:
Latvia (Riga)	England (London)
	Wales (Cardiff)
	Scotland (Edinburgh)
	N. Ireland (Belfast)



Also (Label those that appear on your map.)

Algeria (Algiers)
 Iran (Tehran)
 Iraq (Baghdad)
 Morocco (Rabat)
 Syria (Damascus)
 Tunisia (Tunis)

The Former Soviet Union

Armenia (Yerevan)
 Azerbaijan (Baku)
 Belarus (pron: Bel-a-roos) (Minsk)
 Georgia (T'bilisi)
 Kazakhstan (Astana)
 Kyrgyz Republic (Bishkek)
 Moldova (Kishinau)
 Russian Federation (MOSCOW, St. Petersburg, Nizhni Novgorod, Irkutsk, Vladivostok)
 Kaliningrad (Konigsberg) — Note: An area of land separate from Russia but part of the Russian Federation.
 Tajikistan (Dushanbe)
 Turkmenistan (Ashgabat)
 Ukraine (KYIV, Odessa)
 Uzbekistan (TASHKENT, Samarkand)

Republics of Former Yugoslavia: All are now independent. Serbia and Montenegro were loosely joined until mid-year 2006; in June, 2006, the union was declared ended.

Bosnia and Herzegovina (Sarajevo)

Croatia (Zagreb)

FYROM (Skopje) — Note: This country is known as FYROM because the U.S. and U.N. recognize this country as The Former Yugoslav Republic of Macedonia to avoid confusion with the province of Greece called Macedonia. People from Skopje may refer to themselves as Macedonian, or as Fyromese.

Kosovo (Pristina) (self-declared independence not universally recognized)

Montenegro (Podgorica)

Serbia (Belgrade)

Slovenia (Ljubljana)

Bodies of Water

Label clearly in a third color.



Adriatic Sea	Caspian Sea	Mediterranean Sea
Aegean Sea	Dardanelles	North Sea
Arctic Ocean	English Channel	Norwegian Sea
Atlantic Ocean	Gulf of Bothnia	Sea of Azov
Balearic Sea	Gulf of Finland	Sea of Marmara
Baltic Sea	Gulf of Riga	Strait of Gibraltar
Bay of Biscay	Ionian Sea	Tyrrhenian Sea
Black Sea	Irish Sea	
Bosphorus	Ligurian Sea	

Rivers

Label in a fourth color.

Danube River	Rhone River
Don River	Seine River
Elbe River	Ural River
Loire River	Volga River
Po River	Wisla River
Rhine River	(called the Vistula River in English)

Mountains

Label in a fifth color.

Alps	Carpathian Alps
Apennines	Pyrenees
Atlas Mountains	Ural Mountains

Mapping Eastern Europe and Northern Asia: Checklist



Countries and Cities

Shade contiguous borders, then label in one color. Mark cities with a clear dot, and label in a different color.

Armenia (Yerevan)
 Azerbaijan (Baku)
 Belarus (pron: Bel-a-roos) (Minsk)
 Bulgaria (Sofia)
 China (Beijing)
 Czech Republic (Prague)
 Estonia (Tallinn)
 Finland (Helsinki)
 Georgia (T'bilisi)
 Hungary (Budapest)
 Japan (Tokyo)
 Kazakhstan (Astana)
 Kyrgyz Republic (Bishkek)
 Latvia (Riga)
 Lithuania (Vilnius)
 Moldova (Kishinau)
 Mongolia (Ulaan Baatar)
 North Korea (Pyongyang)
 Poland (Warsaw)
 Romania (Bucharest)
 Russian Federation (MOSCOW, St. Petersburg, Nizhni Novgorod, Irkutsk, Vladivostok)
 Kaliningrad (Konigsberg)
 Slovak Republic (Bratislava)
 South Korea (Seoul)
 Tajikistan (Dushanbe)
 Turkey (Ankara)
 Turkmenistan (Ashgabat)
 Ukraine (KYIV, Odessa)
 Uzbekistan (TASHKENT, Samarkand)



Bodies of Water

Label in a new color.

- | | |
|-------------------|----------------|
| Aral Sea | Lake Baikal |
| Arctic Ocean | Laptev Sea |
| Barents Sea | Sea of Azov |
| Bering Sea | Sea of Japan |
| Black Sea | Sea of Okhotsk |
| Caspian Sea | White Sea |
| East Siberian Sea | Yellow Sea |
| Kara Sea | |

Rivers

Label in a new color.

- | | |
|---------------|---------------|
| Amur River | Ob River |
| Dnieper River | Ural River |
| Don River | Volga River |
| Lena River | Yenisey River |

Mapping Africa: Checklist

Countries and Cities



Shade contiguous borders. Label countries in one color.
Mark cities with a clear dot and label them in a second color.

- | | |
|--|---|
| Algeria (Algiers) | Mali (Bamako) |
| Angola (Luanda) | Mauritania (Nouakchott) |
| Benin (Porto-Novo) | Morocco (Rabat) |
| Botswana (Gaborone) | Western Sahara (El Aaiun)
(claimed by Morocco) |
| Burkina Faso (Ouagadougou) | Mozambique (Maputo) |
| Burundi (Bujumbura) | Namibia (Windhoek) |
| Cabinda (belongs to Angola) | Niger (Niamey) |
| Cameroon (Yaoundé) | Nigeria (ABUJA, Lagos) |
| Canary Islands (Las Palmas) | Rwanda (Kigali) |
| Cape Verde (Praia) | Sao Tome & Principe (Sao Tome) |
| Central African Republic (Bangui) | Senegal (Dakar) |
| Chad (N'Djamena) | Sierra Leone (Freetown) |
| Comoros Islands (Moroni) | Somalia (Mogadishu) |
| Congo, Republic of (Brazzaville) | South Africa
(Pretoria — administrative capital—
also called Tshwane) |
| Congo, Democratic Republic of (Kinshasa) | (Cape Town — legislative capital) |
| Côte d'Ivoire (Abidjan, YAMOUSSOUKRO) | (Bloemfontein — judicial capital) |
| Djibouti (Djibouti) | Sudan (Khartoum) |
| Egypt (Cairo) | Swaziland
(M'babane — administrative) |
| Equatorial Guinea (Malabo) | (Lobamba — legislative) |
| Eritrea (Asmara) | Tanzania
(Dar es Salaam — administrative) |
| Ethiopia (Addis Ababa) | (Dodoma — legislative) |
| Gabon (Libreville) | Togo (Lomé) |
| The Gambia (Banjul) | Tunisia (Tunis) |
| Ghana (Accra) | Uganda (Kampala) |
| Guinea (Conakry) | Zambia (Lusaka) |
| Guinea-Bissau (Bissau) | Zimbabwe (Harare) |
| Kenya (Nairobi) | |
| Lesotho (Maseru) | |
| Liberia (Monrovia) | |
| Libya (Tripoli) | |
| Madagascar (Antananarivo) | |
| Malawi (Lilongwe) | |

Features

Label in a third color.

Atlantic Ocean

Atlas Mountains

Congo River

Gulf of Aden

Indian Ocean

Lake Chad

Lake Victoria

Mediterranean Sea

Niger River

Nile River

Orange River

Red Sea

Zambezi River

Mapping Asia: Southwest, South, Southeast Checklist



Countries and Cities

Shade contiguous borders. Label countries in one color. Mark cities with a clear dot and label them in a second color.

Afghanistan (Kabul)	Mauritius (Port Louis)
Bahrain (Manama)	Mongolia (Ulaanbaatar)
Bangladesh (Dhaka)	(also spelled Ulan Bator)
Bhutan (Thimphu)	Myanmar (Yangon)
Brunei Darussalam	also called Burma (Rangoon)
(Bandar Seri Begawan)	Nepal (Kathmandu)
Cambodia (Phnom Penh)	North Korea (Pyongyang)
China (BEIJING, Shanghai, Guangzhou)	Oman (Muscat)
Hong Kong (S.A.R.)	Pakistan (ISLAMABAD, Karachi)
Macao (S.A.R.)	Philippines (Manila)
Tibet (Lhasa)	Qatar (Doha)
India (NEW DELHI, Kolkata [formerly	Saudi Arabia (Riyadh)
Calcutta], Mumbai [formerly Bombay])	Seychelles (Victoria)
Iran (Tehran)	Singapore (Singapore)
Iraq (Baghdad)	South Korea (Seoul)
Israel (Jerusalem)	Sri Lanka (Colombo)
Palestine — Note: Current status disputed.	Syria (Damascus)
Japan (Tokyo)	Taiwan (Taipei)
Jordan (Amman)	Thailand (Bangkok)
Kuwait (Kuwait)	Turkey (Ankara)
Laos (Vianchang, alt. sp. Vientiane)	United Arab Emirates (Abu Dhabi)
Lebanon (Beirut)	Vietnam (HANOI, Ho Chi Minh City)
Malaysia (Kuala Lumpur)	Yemen (Sanaa)
Maldives (Male)	

Hong Kong and Macao are now semi-autonomous and exist pursuant to international agreement, maintaining their own governments apart from the People's Republic of China. Approved names are Hong Kong, Hong Kong Special Administrative Region, or Hong Kong (S.A.R.); and Macao, Macao Special Administrative Region, or Macao (S.A.R.).



Seas

Label clearly in a third color.

Arabian Sea	East China Sea	Red Sea
Aral Sea	Gulf of Aden	Sea of Japan
Bay of Bengal	Gulf of Oman	Sea of Okhotsk
Bering Sea	Indian Ocean	South China Sea
Caspian Sea	Persian Gulf	Yellow Sea

Rivers

Label clearly in a fourth color.

Amur River	Indus River	Ural River
Brahmaputra River	Irawaddy River	Volga River
Dnieper River	Lena River	Yangtze River
Don River	Mekong River	Yellow River
Euphrates River	Ob River	Yenisey River
Ganges River	Tigris River	

Features

Label clearly in a fifth color.

Caucasus Mountains
Gobi Desert
Himalaya Mountains
Ural Mountains

Mapping Australia and Pacific Region: Checklist



Countries and Cities

Shade contiguous borders and label countries neatly in one color.

Mark cities with a clear dot and label them in a second color.

American Samoa (Pago Pago) (U.S.)	Palau (Koror)
Australia (Canberra)	Papua New Guinea (Port Moresby)
Timor-Leste (also known as East Timor) (Dili)	Philippines (Manila)
Federated States of Micronesia (PALIKIR, Kolonia)	Samoa (Apia)
Republic of the Fiji Islands (Suva)	Society Islands; Tahiti (Papeete)
Indonesia (Jakarta)	Solomon Islands (Honiara)
Kiribati (Tarawa)	Tonga (Nuku'alofa)
Malaysia (Kuala Lumpur)	Tuvalu (Funafuti)
Nauru (Yaren District — no capital city)	Vanuatu (Port-Vila)
New Caledonia (Noumea) (Fr.; French name Nouvelle-Calédonie)	
New Zealand (WELLINGTON, Christchurch, Auckland)	
(Label North Island and South Island of New Zealand)	

Australian States

Shade the following states in 4 colors and label in country color above. Mark cities with a clear dot and label them in city color.

New South Wales (Sydney)	Tasmania (Hobart)
Northern Territory (Darwin, Alice Springs)	Victoria (Melbourne)
Queensland (Brisbane)	Western Australia (Perth)
South Australia (Adelaide)	

Islands

Label the following islands, which are part of other countries.

Bali (Indonesia)	Guam (USA)
Java (Indonesia)	Hawai'i (U.S. State)
Sumatra (Indonesia)	Bougainville (Papua New Guinea)
Timor (Indonesia)	(ongoing war for independence)
	New Britain (Papua New Guinea)

Bodies of Water

Label the following bodies of water.

Andaman Sea	East China Sea	Philippine Sea
Arafura Sea	Gulf of Thailand	South China Sea
Celebes Sea	Indian Ocean	Sulu Sea
Coral Sea	Java Sea	Timor Sea

World Test #1

Answers on page 108



1. How long does it take the Earth to complete its orbit around the sun?
2. How long does it take the Earth to rotate on its axis?
3. Approximately how far is it around the Earth at the equator (in miles)?
4. How many degrees is it from the equator to the North Pole?
5. The equator is also known as 0 degrees of which: (circle one)
latitude / longitude
6. What is Europe?
7. Name the island nation just southeast of India.
8. Name the 2 countries just north of the Czech Republic.
9. Name the 8 countries that touch Austria.
10. Name the 2 countries that touch Holland.
11. What is another name for Holland?
12. Name the 5 African countries that touch the Mediterranean.
13. Name the 3 small countries that lie east of Venezuela.
14. Name the 2 landlocked countries in South America.
15. Name the 7 Central American countries between Mexico and Colombia.
16. Name 2 major rivers that flow east through China.
17. Name the 8 countries that touch Saudi Arabia.
18. Name the 3 countries that touch Vietnam.
19. Name the 14 landlocked countries in Africa.
20. What sea separates Australia from New Zealand?
21. Name the 15 independent states of the former Soviet Union.
22. Name the 10 provinces and 3 territories of Canada.

World Test #2

Answers on page 109



Use a world map and the spaces below to complete the following instructions:

1. Mark with **P1**, **P2**, and **P3** three countries which have Portuguese as their major official language. List the countries here.

P1

P2

P3

2. Mark with **E1** through **E6** six countries where English is the major language. List the countries here.

E1

E4

E2

E5

E3

E6

3. Label with **I1** through **I4** four countries where Islam is a major religion. List the countries here.

I1

I3

I2

I4

4. Identify with **C1** through **C4** places that are colonies. We will define a “colony” as a place that is the property of another country, and is at least 1000 miles away from its “mother” country. List the colonies here.

C1

C3

C2

C4

5. Label with **D1** through **D4** countries that have large deserts. List their names here.

D1

D3

D2

D4

6. Draw an arrow across the North Pacific to indicate the general direction in which weather moves between North Asia and North America.

7. Draw an arrow across the North Atlantic to indicate the general direction in which weather moves between North America and Northern Europe.



8. Assume that it is now 3:00 PM in Boston, New York, Washington, Atlanta, and Miami. Label with the correct time, in a circle, at least five cities *where it is not 3:00 PM*. List here the cities you labeled, and the time in each.

City 1: _____ TIME: _____
 City 2: _____ TIME: _____
 City 3: _____ TIME: _____
 City 4: _____ TIME: _____
 City 5: _____ TIME: _____

9. Label with the legend **RF1** to **RF4** four countries where there are rain forests. List the countries here.

RF1	RF3
RF2	RF4

10. Label with **L1** to **L4** four countries with high birth rates, high death rates, and low life expectancy. List here the countries you labeled.

L1	L3
L2	L4

11. Label with **H1** to **H4** four countries with low birth rates, low death rates, and high life expectancy. List here the countries you labeled.

H1	H3
H2	H4

12. Put a compass rose on your map indicating north, south, east, west; and the four intermediate directions, NE, SE, SW, and NW.

13. In an unoccupied space, draw an arrow labeled “rotation” to indicate the direction in which the Earth rotates.

14. Write the word **AUTO** and numbers **1** to **4** across four countries which are major manufacturers of automobiles. List here the countries you labeled.

AUTO1	AUTO3
AUTO2	AUTO4

15. Write the word **OIL** and numbers **1** through **4** across four countries which are major exporters of petroleum. List here the four countries you labeled.

OIL1	OIL3
OIL2	OIL4

A Menu of Lessons

Seasonings

These activities are for review and enrichment. The games can be used with each new map, or at any time of the year for review. The mnemonic devices come in most handy at the end of the year, but students will develop their own mnemonics throughout the year; therefore it's a good idea to collect their phrases with each new map. World Experts, a cultural research project, can be used whenever it is needed. I usually have three World's Fairs each year.



The World Experts Lesson



Overview

Students become informed about specific countries over a period of time. They then report to the class orally, and post clippings and other information for class perusal and study. This project can be done more than once during the year.

Objectives

Students should:

- Become more aware of the geography, the cultures, and the issues in a country or area they know little about — that is, make the place real.
- Practice and improve their reading and generalizing skills.
- Help the teacher build a file of country information.
- Become aware of the relationships between geography and culture.

Materials

Students need access to newspapers and magazines from which they can cut or photocopy clippings. *National Geographic*, *Time*, *Newsweek*, travel magazines, etc., are all rich sources.

Methods

1. Photocopy and distribute the 7-page World Experts Project handout (or use what you need from it and create your own World Experts handout).
2. Select countries. Letting students pick their own countries will generally result in better motivation. Try to control the distribution in any way that seems sensible.
3. Countries that we get lots of news about, such as Canada or the Commonwealth of Independent States, can be assigned in smaller pieces: provinces or republics, for example.
4. Allow enough time (two weeks or more) before the first reports. Then, as you get to different areas of the world in your map studies, ask the students who are “experts” on that area to post their clippings and give their reports.



Lesson Tips

- The hardest problem is motivation over the long run. To keep students looking for clippings and information during a period of 6 or 8 weeks can be challenging. It helps if you keep bringing in magazines and newspapers. Ask parents for help in this endeavor. Point out news to specific students, and keep offering encouragement. On a class roster which I post, I keep track of how many clippings a student brings in. That way, if a student gets off to a slow start, or doesn't produce much after the first day or two, I know about it and can help.
- The oral report is important because it's an opportunity to share information about the people and events in real places we don't know too much about. Students need guidelines, rehearsal, and validation.
- The visual material (posted on the bulletin board for a while) has an even longer, more extensive impact. That's because you're going to keep it in your file until next year, so another student can begin with some information already gathered. Emphasize the long life that the material will have. For interest's sake, photos and maps are better than long articles. If a student brings in a long article, I usually ask him or her to post a summary with it or highlight the main points.



Variations

- This can easily and successfully be done in pairs.
- The whole class can become experts about different countries for a week at a time.

World Experts Project: World's Fair

YOUR NAME: _____

YOUR COUNTRY: _____



I. Draw a physical features map.

This may be traced from an atlas or commercial map, or it may be freehand. It should show:

1. Your country as the major feature, in the middle.
2. All the contiguous countries.
3. Enough lines of latitude and longitude to place the map clearly.
4. Important features.
5. Important cities, with the capital in all upper-case letters.

II. Figure out what you want to know.

Make up a list of information you want to get, including at least the following:

1. **Names**
The proper name of your country, in English AND in the national language; other names it may have had, etc.
2. **Government**
Form of government; names of current ruler or head of state, etc.
3. **Population**
Area; population; population density. For each, specify the units you are using.
4. **Cities**
Capital; largest cities, with population.
5. **Money**
Monetary unit; per capita income.
6. **Education**
Languages; literacy rate.
7. **Religion**
What religions; what percentages; role of religion in society.
8. **Produce**
Major agricultural and industrial products.
9. **Trade**
Major exports and imports; major trading partners.
10. **Ethnic Groups**
Populations; current issues.
11. **Other Topics**
Add them as you find new topics during your reading and research.



III. Take notes in a neat and orderly way.

1. For each statement, phrase, or topic you list, use a separate sheet of paper. Put the statement, phrase, or topic at the top of the page.
2. Read as widely as you can about your subject in the time available. Read in encyclopedias, travel books, newspapers, magazines; in books from the school or community library, or from home. Check <http://www.mapping.com> for links to online resources.
3. As you read, you will find information that will fit under one or more of the headings. Write that information under the heading it goes with. (Also write down a source reference for future researchers.)
4. You will surely add new headings as you read, as new ideas, questions, topics, and more come up. Make a new page with each new heading, and add pertinent notes there.
5. Take your notes in short, readable sentences so you'll be sure to understand them later. Don't copy every word.
6. Give each note a new number.
7. Skip a line before each new note.
8. Write your notes neatly, as it will do you no good to take notes that you can't read later on.
9. On a separate sheet of paper, keep track of all necessary information for making a bibliography. Include author, title, and date of publication for every resource.
10. Keep all your pages of notes clipped together. When you have more than one page on a single topic, staple page 2 on top of page 1, add page 3 on top of that, etc., to save wear and tear on the paper.



IV. Prepare an outline from your notes.

When you have finished taking notes, you will have a large amount of disorganized material on your country. An outline is a useful way of getting your material, and yourself, organized. Once you have finished your note-taking, make an outline for yourself which you will use in preparing your “World’s Fair” presentation, and which will be the written report for this project.

Here are the steps you should follow:



1. Begin with the main headings at the top of each page of notes. These will be the main topics in your outline, denoted by Roman numerals.
2. Read through the notes you have taken about each of the main headings, and select the most important words, ideas, and topics. These will be subtopics in your outline, denoted by capital letters.

EXAMPLE (for Japan)

- III. Ethnic Groups
 - A. Ainu
 - B. Koreans
- etc. . . .

3. Now, the items or facts that tell about each of the subtopics are placed under them and denoted by Arabic numerals. These items or facts provide additional information about the subtopics.

EXAMPLE

- III. Ethnic Groups
 - A. Ainu
 1. small population (less than 2%)
 2. live mostly on Hokkaido
 3. subsist on tourism and welfare
- etc. . . .

4. Because this is only an outline for organizational purposes, you do not need to fill in more detail than this because your notes will provide you with plenty of readily available information.

V. Prepare the visual displays.

1. Effective visual material should be prepared on as many important points as possible.
2. Visual material you present needs to be of a size that can easily be viewed from a short distance.
3. Select materials that highlight your points and make them clear to the listener.
4. Important names, places, ideas, dates, etc., can be written out on cards.
5. Include maps that highlight topics of interest, but do try to keep maps relatively simple. It would be good to have at least two maps — one to show your country's physical geography, another to show something else of interest.
6. DO NOT copy graphs or charts directly from books. Make your own.
7. Pictures you use should be carefully mounted or labeled. If you can't find any pictures except in bound books, you may use those pictures as long as they are carefully marked in the book and you have written an annotation to go with the picture.
8. A good way to start is to go through your outline and make a list of all the places where visual material would help.
9. Because a lot of your visual materials will be prepared at home, make sure you have suitable materials at home to work with.





VI. Your World's Fair booth

1. Prepare an oral presentation based on your outline that explains important points about your country, describes the visuals you have prepared, and gives people a real sense about what's important IN your country and ABOUT your country.
2. Prepare a handout with important facts. This must be ready at least two days prior to your report so that I can duplicate it.
3. You may wish to consider including in your presentation any of the following, which will help people understand more about what life might be like in your country. None of these is required.

Music: Record a little on a computer or cassette tape.

Food: Prepare or buy something that people will enjoy sampling. Choose food that will help them learn about your country.

Costume: Make or borrow some sample of ethnic or typical clothing; dress yourself or a doll.

Language: Prepare a little lesson or worksheet with a few elementary phrases in one of the native languages of your country.

TIME LIMIT: _____ minutes

There will be several people reporting and displaying at the same time. Please plan your presentation with this time limit in mind so that everyone will get a chance to see everything.



VII. World's Fair requirements

1. The fair will be from _____ to _____ on _____.
2. You may invite your parents to see the fair if you wish, particularly on the day that you do your report. I will invite other classes. Please tell me about anyone you know is coming.
3. During the hour, you will do your report twice. In the remaining time, you may visit other displays, talk to people who wish to ask questions about your display, and so on. I will prepare a schedule for each hour so that everybody has time to report twice without too much competition.
4. The handout needs to contain certain required factual information that a person needs to know about your country.
 - The name of the country, in English and in any national languages.
 - The form of government and the current heads of state, etc.
 - Facts about ethnic groups, populations, total population, religion, education, etc. — as much as you decide is truly valuable and interesting.
 - Facts about trade and major products of your country.
 - A few general statements about the country. What is it like? What is the quality of life of a person who lives there likely to be? How does the geography of the country affect the life of the people (climate? mountains? bodies of water?)? What I'm after here is that you demonstrate to me that you have learned something of value about your country — about the life of the people, the nature of the land, the climate, etc., and how these things shape and affect the people and their lives.
5. The handout needs to be IN MY HANDS at least two school days before your report.
6. The report. Besides distributing your handout, and briefly explaining it to your audience, you will have time to give your viewer some sense of the culture and life of the country. DO NOT simply explain a few facts — give a real sense of the place.

Show pictures, talk about what you have learned, let people hear about (or taste) the food, hear music, hear some of the language or local customs of the people, etc. This is also a good time to describe current events a little bit, particularly those events that help the viewer understand the country better. You are free to do whatever you think is best here, but the basic underlying rule is that you need to think of yourself as an employee of your country, giving interested people a clear mental picture of what your country is truly like. It needs to be fun and interesting, both for you and for others.

7. Evaluation. You will evaluate your own report and everybody else's. I will also evaluate your work, but I will be taking into consideration your note-taking process, your progress in collecting materials, your outline, your handout, AND your report.



Mnemonics



One of the biggest helps in preparing to create a memory map of the world is to have quick access to a number of memory aids. For the most part, people discover their own during the weeks of preparation and practice mapmaking.

What follows is a list of some mnemonics that you may find useful. I offer them only as samples. As you and your students work on learning the world, you'll surely come up with many of your own.

- 0° , 0° locates the corner of Africa.
- 30° N, 30° E locates the mouth of the Nile.
- Central America:

Either:

Place El Salvador and Costa Rica, and the rest of the countries are alphabetical **B, G, H, N, P**. (Belize, Guatemala, Honduras, Nicaragua, Panama)

OR:

Place the countries in this order: "**B**eware of **H**ot **G**orillas **E**ating **N**itrates **C**asually, **P**op". (Belize, Honduras, Guatemala, El Salvador, Nicaragua, Costa Rica, Panama)

- All of South America is east of Florida.
- **Romania** is "over," **Bulgaria** "under," check the second letter.
- ELALI BUM GARAZ: the nine former republics of the Soviet Union that touch Europe (Estonia, Latvia, Lithuania, Belarus, Ukraine, Moldova, Georgia, Armenia, Azerbaijan).
- All the great rivers of India and South Asia start very near each other. Indus, Ganges, Brahmaputra, Irawaddy, Mekong, Yangtze, and Yellow all begin in the Himalayas.
- The northern border of Russia is a triangle. The Arctic Circle makes the base, from 40° E to 170° W; the peak is at 75° N, 105° E. Put that on your map in light pencil, and you have the basic shape to which to add the inlets and peninsulas.



- “WBKL in East Siberia”: the seas north of Russia, in order from west to east, are White, Barents, Kara, Laptev, and E. Siberian. Note the B-K-L is alphabetical.
- The northernmost point of Queensland, Australia points at the border between Papua New Guinea and Indonesia.
- Niger and Nigeria are in alphabetical order north to south.
- Ecuador is on the equator.
- “A MALE from Tunisia”: Morocco, Algeria, Libya, Egypt, from west to east, plus Tunisia wedged in the middle.
- “That Venezuelan GUY is SUREly FRENCH”: Venezuela, Guyana, Suriname, and French Guiana, from west to east.

Game: Geography Baseball

Preparation

You will need a list of 100 or more questions about the area being studied; students can make these up and hand them in on 3 x 5 cards. You will also need a class roster. This can be divided into two relatively equal teams before class, or done randomly at the beginning of class.



To Begin

On the board, list the members of each team. List one team to the left of the board, the other just to the right of the middle. This is the batting order. Next to each name you will indicate the outcome of the person's "at bat". Teams do not have to sit together; this depends on your judgment and your furniture. You may wish to put a diagram of a baseball field on the board so that you can mark where the players who hit successfully are.

To Play

1. One team is up at a time. The other team listens and remembers questions and answers because they may get the same questions on their turn.
2. Players are up in turn. As you call students' names, they have to tell you whether they are trying for a single, a double, a triple, or a home run. If they want a single, you ask them one question from the list; if they get it wrong, they may be out (see rule 5), but if they get it right, they go to first base.
3. If the student asks for a double, ask two questions. Both answers must be correct for the student to go to second base. If either answer is incorrect, the student may be out. A triple and a home run work similarly. Thus, a successful home run consists of four questions answered correctly; if any of the four is answered incorrectly, the student may be out.

An alternative here is to rate questions according to difficulty. A single might be "name the capital of Utah"; a double might be "what are the two major rivers of Iraq"; a triple might be "name three places outside of Europe where Portuguese is the principal language"; and a home run might be "there are 14 landlocked countries in Africa, name 4 of them".

4. If a "runner" is already on base, any hit by another student forces the runner along, even if it isn't a real force in real baseball. If a

All countries beginning with "A" END in "A" - except TWO What are they?



- student is on second base and first base is empty, a single by the next batter forces the runner to third, etc.
5. If a student answers a question incorrectly, he/she is not out unless a random student chosen from the other team can answer the same question correctly.
 6. Play continues until a team has three outs; then the other team is up. A good alternative is to play until everyone on one team has been up one time, and then switch to the other team, regardless of how many outs may have been made.
 7. An inning is complete after both sides have had their turn. I usually keep a running score on the blackboard, and sometimes save the score over two or three days as play continues. In a class of 24, I can usually get two complete innings in during a 40-minute period.

Possible Problems

- The questions are too hard or too easy. This requires quick adjustment during the game itself. I've even called a delay of the game until the next day.
- One team's score gets way ahead of the other, which can lead to bad feelings, lack of attention to the process, etc. It's imperative that the teams be roughly equal, if it's at all possible to arrange that. If one team gets too far ahead, try adjusting the questions as you go along. You don't HAVE to do them in order. The best possible outcome is a tie score, or a score that's close with a changing lead.

Sample Questions

(Items in parentheses: Vary these according to your area of study.)

- What is the capital of (Nevada)?
- What river separates (Texas and Oklahoma)?
- What states does the (Connecticut) River touch?
- What country is (west) of (Sweden)?
- Name the (two) landlocked countries in (South America).
- Name the (Canadian) (Provinces) between (Québec and Alberta).
- What sea separates (New Zealand and Australia)?
- What (5 states) in the (U.S.) touch the (Pacific Ocean)?
- Name the three former Republics of the USSR that touch the (Baltic Sea).
- What is the principal language of Brazil? Mexico? Australia? (etc.)

Game: Around the World

The Game

An exercise in listening as well as remembering geography; involves all members of the class in review. Not a game in the usual sense of winning or losing, but very much a class interaction that feels like a game.



Preparation

Copy the following two pages and cut them up. Or, copy similar statements of your own choice onto 3 x 5 cards. Each statement begins with an answer, and then asks a question that is in some way related to that answer. Class members have to listen to each question and answer to know when they are required to speak. While 39 questions are printed below, it is an easy matter to add or subtract questions, to make the game as big or small as your needs require. It works best if each participant has at least two cards.

To Play

Teacher saves one card for starting the game. When everyone is ready, teacher reads that card — for example, “I have Berlin. Who has the next country immediately east of my country?” The student with the card that begins with the answer to that question (“I have Poland...”) answers by reading the card, and the play continues. Game ends when all cards have been used and the play has returned to the teacher.

To Make Your Own

The only rule is that the chain of questions and answers you create must eventually lead back to where it began. For example, note that in the game included here, the place named in the **first** card (Paraguay) is also the answer to the question on the **last** card. In that context, anything works. It is fun to set this up as small group work, too. Let students, in small groups, make up similar round-the-world question-and-answer quizzes for their classmates.

Variations

This game is not limited to geography. For example, it works great with math. (“I have 16. Who has my square root?”)

<p>I have Paraguay. Who has a South American country with the same last four letters?</p>	<p>I have Uruguay. Who has the country to my west?</p>	<p>I have Argentina. Who has the country to my west?</p>
<p>I have Chile. Who has an Asian country with the same first 3 letters?</p>	<p>I have China. Who has the Special Administrative District in my southeast corner?</p>	<p>I have Hong Kong. Who has the country to which I formerly belonged?</p>
<p>I have the United Kingdom. Who has a country immediately across the English Channel from me?</p>	<p>I have the Netherlands. Who has the country to my east?</p>	<p>I have Germany. Who has the next directly south?</p>
<p>I have Switzerland. Who has the next country directly south?</p>	<p>I have Italy. Who has my capital?</p>	<p>I have Rome. Who has an Eastern European country that begins with the same 3 letters?</p>
<p>I have Romania. Who has the country to my south?</p>	<p>I have Bulgaria. Who has a North African country that ends with the same 3 letters?</p>	<p>I have Algeria. Who has a four-letter country on my southern border?</p>
<p>I have Mali. Who has the landlocked country to my south?</p>	<p>I have Burkina Faso. Who has the four-letter country south of me?</p>	<p>I have Togo. Who has the country east of me?</p>
<p>I have Benin. Who has a country in Southern Africa that begins with the same letter?</p>	<p>I have Botswana. Who has a country northeast of me that used to be called Rhodesia?</p>	<p>I have Zimbabwe. Who has the country northwest of me that begins with the same letter?</p>

<p>I have Zambia. Who has my main river?</p>	<p>I have the Zambezi. If you follow me to my mouth, what country will you be in?</p>	<p>I have Mozambique. Who has the country on my northern border?</p>
<p>I have Tanzania. Who has the country northeast of me?</p>	<p>I have Kenya. Who has the only country that borders me to the east?</p>	<p>I have Somalia. Who has the country directly across the Gulf of Aden?</p>
<p>I have Yemen. Who has the large country that borders me on my north?</p>	<p>I have Saudi Arabia. Who has the country directly across the Persian Gulf from me?</p>	<p>I have Iran. Who has my capital?</p>
<p>I have Tehran. Who has the next capital city I get to going west?</p>	<p>I have Baghdad. Who has the country of which I am the capital?</p>	<p>I have Iraq. Who has the country north of me?</p>
<p>I have Turkey. Who has a former Republic of the USSR that touches me on my eastern boarder?</p>	<p>I have Georgia. Who has another former Republic of the USSR?</p>	<p>I have Estonia. Who has the country west across the Baltic Sea?</p>
<p>I have Sweden. Who has the formerly divided city south of me across the Baltic Sea?</p>	<p>I have Berlin. Who has the next country immediately east of my country?</p>	<p>I have Poland. Who has the country in South America that begins with the same first letter?</p>



A Menu of Lessons



Dessert

Whatever you decide to do as a summary/synthesis activity goes here. Instructions are included for your students to create memory maps of the world — to “map the world by heart”.

I usually spend about 4 weeks to get students ready to make these maps. I begin by copying blank grids and giving several to each student. We work as a class on the outlines of the continents, starting with the west coast of Africa, near 0° , 0° . We practice a few minutes in class on a new bit of coastline each day. At home, students review countries, capitals, etc., and go over the outlines learned up to that point.

It takes time and practice, but if you plan to start the review about 6 or 7 weeks before school ends, you’ll be ready to start the maps 2 or 3 weeks before closing. The final maps are made over a period of 15 days or so, one period per day.

While making the final maps, the students are allowed to review at home, but no maps, atlases, or other reference materials are allowed in the classroom. I permit conversation while they work (not about maps), but no moving around the room. I usually play some quiet music on a CD or computer.

The “Mapping the World Checklist” that appears at the end of this section is a partial listing of the countries, cities, and features that students may want to include in their final maps. It is meant to serve as a guide; that is, I don’t expect children to include everything that appears on the list. (They will undoubtedly surprise you with the places they *do* put on their maps!)

A note about materials: I have students use drawing board to make their final maps — for example, Bristol board or architect’s board. You can get this at most art supply stores. It comes in sheets that measure 30" x 20", and I have the store cut them down to 27" x 17" size. (I save the 3" wide strips for students to use as straight edges in making their maps.)

Materials for Making Final Maps



You do not have to provide any of the following; however, you will probably find it more useful and convenient if you have your own equipment than if you are always waiting for your turn to use the classroom equipment.

- One or two **hard pencils**: #4 is best, but 2H, 3H, 5H, or even 6H are OK.
- One or two **black razor-point pens**: any pen that makes small, thin, fine lines in black ink.
- **Razor-point pens** in other colors for labeling (suggested: red, blue, green).
- An excellent **eraser** — ArtGum or similar — that leaves no residue.
- A set of **colored pencils**.
- **White-out**.

Steps for Making Final Maps

I. Creating a Mercator Grid (very challenging!)



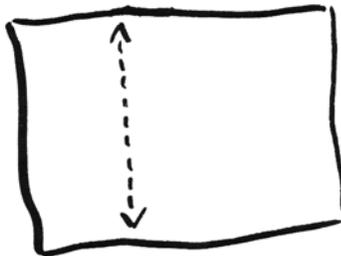
Important Reminders

- Make every line very light until you are sure.
- Mark everything with your name in some clear, noticeable way.

Making the Grid

Start with a piece of paper or board that measures 27" x 17". First you will make a 21" x 13" rectangle that is centered on your board, as follows:

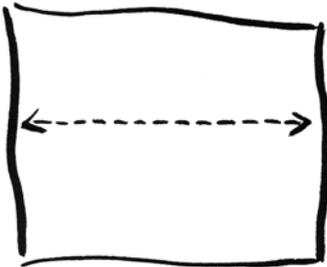
1. Near the bottom of the paper, measure in from the RIGHT 3" and make a mark. Near the top, do the same. Connect the dots. The line should go LIGHTLY from top to bottom.
2. Near the bottom of the paper, measure in from the LEFT 3" and make a mark. Near the top, do the same. Connect the dots. The line should go LIGHTLY from top to bottom.
3. Near the left side, measure up from the bottom 2" and make a mark. Near the right side, do the same. Connect the dots.
4. Near the left side, measure down from the top 2" and make a mark. Near the right side, do the same. Connect the dots.
5. You now have the basic rectangular pattern for the grid. Double check every measurement. Make sure that your rectangle is 21" x 13", and erase any lines outside of the basic rectangle. Measure the diagonals — if they are not the same, something is tilted.
6. When you are completely satisfied, go over your light pencil lines with a black razor-point pen.



The Lines of Longitude (very hard!)

Across the bottom of your rectangle, start at the RIGHT and measure and mark on your bottom grid line units of $\frac{7}{8}$ of an inch. As you measure across you should end up with 24 sections, each exactly $\frac{7}{8}$ of an inch. If the last section isn't exact, don't panic. Just go back and find the error, or ask for help.

Across the top, again start at the RIGHT and measure and mark the same units of $7/8$ ". Again, you should have 24 sections, each exactly $7/8$ ". If not, fix it now. Connect the dots, slowly, carefully, and accurately. The center line is 0° . Each of the furthest sides is 180° , and each line is 15° from its neighbor.



The Lines of Latitude (not quite as hard but difficult)

1. Measure up from the bottom, on both sides, a distance of $1\ 1/2$ ". Mark on both sides.
2. The next line is $1\ 1/8$ " above that line.
3. The next is $15/16$ " up.
4. The next is $13.5/16$ " up (this is a hard one to measure).

Continuing up, the measurements repeat, but backward:

5. $13.5/16$ "
6. $15/16$ "
7. $1\ 1/8$ "
8. $1\ 1/2$ "
9. Finally, measure $2\ 1/2$ " up.

After you have measured these distances on both sides, make sure that the remaining space between the top mark and the top of the grid is the SAME ON BOTH SIDES. If not, find the error and fix it. Then connect the dots. The lowest line on the grid is 60° S, then 45° S, then 30° S, then 15° S, then 0° (the equator); then come 15° N, 30° N, 45° N, 60° N, and 75° N.

The tropics are the same distance north OR south of the equator. That distance is $21.5/16$ " (one and a half sixteenths greater than an inch and a quarter).

The Arctic Circle is $13/16$ " north of 60° N.

Creating an Equirectangular Grid (not so challenging)

To make an equirectangular grid, make the outside of the grid 15 " x 21 ", and use the same lines of longitude. Latitude lines will be evenly spaced, $1\ 1/4$ " apart, giving you 12 sections each of which represents 15° .

Steps for Making Final Maps

II. Making the Map

Once you have laid out the grid and are satisfied (please ask for help several times along the way), you are ready to begin.

Here are the steps. You **MUST** do 1, then 2, then 3 — in that order. After that, you may do what you can in any order you find convenient.



1. In light pencil outline the continents. Include islands you know. Make the lines very light so that corrections are painless.
2. Trace along the outlines you just drew, using black razor-point pen. Errors are more serious here, so be very careful. Correct carefully, using small amounts of white-out.
3. Shade along the water side of these lines using a blue colored pencil; go out from the continent edges no more than 1/8".
4. Mark country borders; shade country borders; label countries.
5. Label oceans, seas, and gulfs.
6. Mark and label rivers, mountains, and other features.
7. Be sure to label the tropics, the Arctic Circle, and some of the lines of latitude and longitude.
8. Include a compass rose.
9. Include a title/key box with the following information:
 - Title
 - Your name
 - Date
 - The words **MERCATOR PROJECTION** (or whichever projection you are using)
 - Any color key your particular shading/labeling needs
10. Decorate as you wish, both on the map face and in the margins (with boats, fish, etc.).

Mapping the World: Sample Checklist

Use this or devise your own.

A partial list of countries, features, and cities. For complete listings see individual checklists.



The Americas

Argentina	Dominican Republic	Mexico
Bahamas	Ecuador	Nicaragua
Belize	El Salvador	Panama
Bolivia	Falkland Islands	Paraguay
Brazil	French Guiana	Peru
Canada*	Guatemala	Suriname
Chile	Guyana	Trinidad & Tobago
Colombia	Haiti	United States
Costa Rica	Honduras	Uruguay
Cuba	Jamaica	Venezuela

*Provinces and Territories of Canada

Alberta	Northwest Territories	Prince Edward Island
British Columbia	Nova Scotia	Québec
Manitoba	Nunavut	Saskatchewan
New Brunswick	Ontario	Yukon
Newfoundland		

Europe

Albania	Greece	Norway
Andorra	Greenland	Poland
Austria	Holland	Portugal
Belgium	Hungary	Romania
Bosnia/Herzegovina	Iceland	San Marino
Bulgaria	Ireland	Serbia
Croatia	Italy	Slovak Rep.
Cyprus	Latvia	Slovenia
Czech Republic	Liechtenstein	Spain
Denmark	Lithuania	Sweden
Estonia	Luxembourg	Switzerland
Finland	Monaco	United Kingdom
France	Macedonia (FYROM)	
Germany	Montenegro	

Former Soviet Union

Armenia	Kazakhstan	Tajikistan
Azerbaijan	Kyrgyz Republic	Turkmenistan
Belarus	Moldova	Ukraine
Georgia	Russia	Uzbekistan

Africa



Algeria	Gabon	Nigeria
Angola	The Gambia	Rwanda
Benin	Ghana	Sao Tome & Principe
Botswana	Guinea	Senegal
Burkina Faso	Guinea-Bissau	Sierra Leone
Burundi	Ivory Coast	Somalia
Cabinda	Kenya	South Africa
Cameroon	Lesotho	Sudan
Canary Islands	Liberia	Swaziland
Central African Republic	Libya	Tanzania
Chad	Madagascar	Togo
Comoros Islands	Malawi	Tunisia
Congo	Mali	Uganda
Congo, Democratic Republic of	Mauritania	Western Sahara
Djibouti	Morocco	Zambia
Egypt	Mozambique	Zimbabwe
Equatorial Guinea	Namibia	
Ethiopia	Niger	

Southwest Asia

Iran	Lebanon	Turkey
Iraq	Oman	United Arab Emirates
Israel	Qatar	Yemen
Jordan	Saudi Arabia	
Kuwait	Syria	



Asia & Oceania

- | | | |
|---------------------------|-----------------|-------------------|
| Afghanistan | India | Pakistan |
| Bangladesh | Japan | Philippines |
| Bhutan | Laos | Singapore |
| Brunei | Malaysia | South Korea |
| Cambodia | Mongolia | Sri Lanka |
| China | Myanmar (Burma) | Taiwan |
| Hong Kong (S.A.R.) | Nepal | Thailand |
| Macao (S.A.R.) | North Korea | Vietnam |
|
 | | |
| Australia* | New Caledonia | Papua New Guinea |
| Fiji | New Hebrides | Samoa |
| Indonesia | New Zealand | Solomon Islands |
|
 | | |
| *Australian States | | |
| New South Wales | South Australia | Victoria |
| Northern Territory | Tasmania | Western Australia |
| Queensland | | |

Geographic Features



Mountains & Other Features

Alps	Atlas Mountains	Pyrenees
Andes	Caucasus	Rocky Mountains
Appalachians	Gobi Desert	Sahara Desert
Apennines	Himalayas	Urals



Oceans, Seas, & Gulfs

Adriatic Sea	Caspian Sea	Mediterranean Sea
Arabian Sea	E. China Sea	North Sea
Aral Sea	E. Siberian Sea	Pacific (N,S) Ocean
Arctic Ocean	Gulf of Aden	Persian Gulf
Atlantic (N,S) Ocean	Gulf of Bothnia	Red Sea
Baffin Bay	Gulf of California	Sea of Japan
Baltic Sea	Gulf of Mexico	Sea of Okhotsk
Barents Sea	Gulf of Oman	So. China Sea
Bay of Bengal	Gulf of St. Lawrence	Tasman Sea
Bay of Biscay	Hudson Bay	Tyrrhenian Sea
Bering Sea	Indian Ocean	White Sea
Black Sea	Kara Sea	Yellow Sea
Caribbean Sea	Laptev Sea	



Rivers

Amazon River	Mississippi River	Tigris River
Amur River	Missouri River	Ural River
Brahmaputra River	Nelson River	Uruguay River
Congo River	Niger River	Volga River
Danube River	Nile River	Yangtze River
Euphrates River	Ob River	Yellow River
Ganges River	Orange River	Yenisey River
Indus River	Orinoco River	Yukon River
Lena River	Parana River	Zambezi River
Mackenzie River	Rio Grande River	
Mekong River	St. Lawrence River	

Some cities of the world

A selection of important cities. You may, of course, include as many more as you wish in your review and on your memory map.



Addis Ababa	Hanoi	Phnom Penh
Ankara	Harare	Port-au-Prince
Athens	Havana	Prague
Baghdad	Islamabad	Pyongyang
Bangkok	Jerusalem	Quito
Beijing	Kabul	Rabat
Belgrade	Kampala	Rangoon
Berlin	Karachi	Rio de Janeiro
Bern	Kathmandu	Rome
Bogotá	Khartoum	Santiago
Bonn	Kinshasa	Seoul
Bucharest	Kuala Lumpur	Sofia
Budapest	Lagos	Stockholm
Buenos Aires	Lisbon	Taipei
Cairo	London	Tehran
Canberra	Madrid	Tirana
Cape Town	Manila	Tokyo
Caracas	Mexico City	Tripoli
Cayenne	Mogadishu	Tunis
Colombo	Monrovia	Viangchan
Copenhagen	Moscow	Vienna
Dacca	Nairobi	Warsaw
Dakar	New Delhi	Washington, DC
Dar es Salaam	Oslo	Wellington
Dublin	Ottawa	
Gaborone	Paris	

Further Study

Resources



Springboards to Further Study



A random list of thoughts to encourage further exploration

This “brainstormed” list may help trigger some ideas about how to nudge your students further into the study of geography. Choose the items that interest you and then do some brainstorming of your own!

- What is geography?
 - etymology
 - samples of maps, from “you are here” to Peters World Map
 - what we use maps for
- How we get maps
 - a globe is the best map, but ...
 - the grapefruit lesson and projections
- What maps tell us
 - types of maps
- Make your own map collection
 - go on a map hunt
- Old maps vs. new maps
 - Terra Australis Incognita = Australia
 - Which way is up?
- What’s wrong with this picture?
 - Deliberate mistakes to fool plagiarists
 - Map with errors (e.g., “find 50 errors in this US map...”)
- Map puzzles
 - Sir Walter Raleigh/Roanoke/Cro Croatoan
 - Captain Kidd’s Treasure
- Where on Earth are you?
 - You’re lost, you have a map — how can you figure out your location?
 - You have a map, but you don’t know what it’s a map OF..
- Rivers flow downhill (and other truths of geography)
 - Making a river
 - East and west (and north and south)
- *E pluribus unum*: regions are made up of parts
 - 50 states, 12 provinces, 12 independent states



- Different ways of looking at the same map: maps have lots of information
 - borders; highways; airports; shopping centers
- Unusual maps
 - photomosaics from space
 - DNA and genetic mapping
- Upside down/right side up: there's no "right" way
 - "upside down" world map
 - identify states, etc., upside down
- Rotation and revolution
 - The Earth rotates; we get day and night
 - The Moon revolves around the Earth; we get months, tides, eclipses
 - The Earth revolves around the Sun; we get seasons, years, length of days
- Making a sundial
- Lost and found
 - Samples of "lost" stories
 - Collect some "getting lost & getting found" stories
 - If you are lost, what are your options?
- Grids
 - Battleship (game using paper grids or graph paper)
 - Math (X, Y) coordinates
 - Latitude & longitude
- Antipodes: dig right through the center of the Earth and where are you?
- Mapmaking do's and don'ts
- Taking care of a map collection
- Geography in daily life
 - Where does your water come from?
 - Where does your weather come from?
- How many colors do I need?
 - 4-color challenge on U.S. map
- Scales & sizes
- Keys & other markings

- Distance
 - How far is it from here to there?
 - How long will it take?
- Making a map you can use
 - Baseball teams (NBA teams, NHL teams, etc.) map
 - Empires map
 - Map colleges I'm interested in
 - Places I've been (places I want to go...)
 - Treasure Map
 - Neighborhood Map
 - Rearranging your room, classroom, or other place
- How features affect life
 - Mountain ranges (life in Himalayas vs. lowlands of Nepal)
 - Deserts (life in Sahara, in Sahel, in Sub-Saharan Africa)
 - Islands (life on Isle of Shoals vs. life in Portsmouth)
- What time is it?
 - Time zones
 - International Date Line
 - What time should I call my friend in Europe? Australia?
- How do places get named?
- Thematic maps
 - Population
 - Religion
 - Language
 - Birth & Death Rates, Literacy, GNP, etc.
- Borders
 - Who makes them
 - Why they are located where they are
- Landlocked countries and other special situations
- Direction
 - The names of the cardinal directions and how to use them
 - Following directions
 - Giving directions





- Mnemonics
 - “**G**eorge **E**aton’s **O**ld **G**randpa **R**ode **A** **P**ale **H**orse **Y**esterday”
 - “That **V**enezuelan **G**uy is **S**urely **F**rench”
 - “WBKL in East Siberia”
- Tongue twisters in different languages
 - Red leather, yellow leather
 - Red lorry, yellow lorry
 - Kvistfritt kvastskaf (Swedish: Knot-free broom-handle)
 - Packe pappas kappsack (Swedish: Pack Pappa’s suitcase)
- Contour maps
 - How to read elevation
 - What does the land look like?
- Erroneous beliefs, past and present
- Decorations on maps, traditional, creative, etc.
- Curvature and the horizon
 - Long swimming or reflecting pools must take this into account or the water level is uneven
- Migration: people, birds, etc.
- Movement: shipping, air travel, roads, etc.

Resources for Geography in the Classroom



The Mapping the World by Heart Website:

Instead of listing dozens of resources here, we list just one: David Smith's *Mapping the World by Heart* website. It is continually updated:

- <http://www.mapping.com>

In the navigation bar on the website, click on "Educators" for educational and geographic links; "World Facts" for country lists and information; and "Mapping the World by Heart" for samples of final maps.

Standard Time



Before 1884, time was “true”. Noon occurred in each town at the exact moment that the sun reached the point directly overhead. Trains — particularly long-distance and transcontinental trains — changed that. In the era before time zones, passengers on coast-to-coast trips might well have had to change their watches dozens of times to correspond with the “correct” time in each of the places they were traveling through. Schedules were similarly scrambled and confusing.

According to the history books, a single event caused the monumental decision to be made that corrected this problem. The event occurred in England in 1880. A judge ruled against a man who arrived two minutes late for a court case involving a land dispute. In his appeal, the man argued that he was on time according to the station clock in his home town, and the case was retried. This case led to a Parliamentary Order requiring the entire country to set its clocks by Greenwich Mean Time.

In 1884, an international conference finally resolved the problem worldwide by decreeing a unified system of standardized time zones, each representing approximately 15 degrees of longitude, with variations for local geography and with each country free to alter or vary its local time to meet local needs. Thus, some large countries, such as China, have only one time zone; and there are many countries whose local time is 30 minutes off of the “correct” standard time zone. Greenwich Mean Time (or “GMT”), the standard time at the Naval Observatory in Greenwich, England, is now called “Coordinated Universal Time,” and is abbreviated “UCT”.

As you cross from one time zone to the next, you normally move your clock one hour: one hour back if you’re going west, one hour forward if you’re going east. The International Date Line represents the agreed-upon point where, instead of going ahead one hour as you cross it from west to east, you go back 23 hours (and forward 23 hours if you are going from east to west). Thus, passengers on the 12-hour flight from Los Angeles to Sydney, leaving late at night on Tuesday, would completely miss Wednesday and arrive Thursday morning. (They make this up going back to LA. Leave Sydney Tuesday morning at noon, and arrive in LA Tuesday morning at 9:00 AM!) For minimum confusion, the best way to think about the Date Line and times around it is to completely ignore it. If you’re in Hong Kong, and you want to know the time and day in New York, it’s easier to subtract 13 hours from your clock than to “add 11 hours, and subtract 24”. From LA to Tokyo, it’s clearer if you remember to add 17 hours than to remember “they’re 7 hours behind us tomorrow”.

U.S. State Department — Independent States in the World (2010)

Countries politically organized into a state with a definite territory, recognized as independent by the U.S.

Total count of states: 194

* Diplomatic relations with the United States

+ Member of United Nations

As you scan this list, remember that the Vatican (Holy See) is not a UN member, but has observer status. Taiwan is a non-member without observer status. Also, the following small island nations are non-members: Cook Islands, Kiribati, Nauru, Niue, Tonga, and Tuvalu.

Short-Form Name	Long-Form Name	Capital
Afghanistan *+	Islamic State of Afghanistan	Kabul
Albania *+	Republic of Albania	Tirana
Algeria *+	People's Democratic Republic of Algeria	Algiers
Andorra *+	Principality of Andorra	Andorra la Vella
Angola *+	Republic of Angola	Luanda
Antigua and Barbuda *+	(no long-form name)	Saint John's
Argentina *+	Argentine Republic	Buenos Aires
Armenia *+	Republic of Armenia	Yerevan
Australia *+	Commonwealth of Australia	Canberra
Austria *+	Republic of Austria	Vienna
Azerbaijan *+	Republic of Azerbaijan	Baku
Bahamas, The *+	Commonwealth of The Bahamas	Nassau
Bahrain *+	Kingdom of Bahrain	Manama
Bangladesh *+	People's Republic of Bangladesh	Dhaka
Barbados *+	(no long-form name)	Bridgetown
Belarus *+	Republic of Belarus	Minsk
Belgium *+	Kingdom of Belgium	Brussels
Belize *+	(no long-form name)	Belmopan
Benin *+	Republic of Benin	Porto-Novo
Bhutan +	Kingdom of Bhutan	Thimphu
Bolivia *+	Plurinational State of Bolivia	La Paz (administrative) Sucre (legislative/judiciary)

Short-Form Name	Long-Form Name	Capital
Bosnia and Herzegovina *+	(no long-form name)	Sarajevo
Botswana *+	Republic of Botswana	Gaborone
Brazil *+	Federative Republic of Brazil	Brasília
Brunei *+	Brunei Darussalam	Bandar Seri Begawan
Bulgaria *+	Republic of Bulgaria	Sofia
Burkina Faso *+	Burkina Faso	Ouagadougou
Burma *+	Union of Burma	Rangoon Nay Pyi Taw (administrative)
Burundi *+	Republic of Burundi	Bujumbura
Cambodia *+	Kingdom of Cambodia	Phnom Penh
Cameroon *+	Republic of Cameroon	Yaoundé
Canada *+	(no long-form name)	Ottawa
Cape Verde *+	Republic of Cape Verde	Praia
Central African Republic *+	Central African Republic	Bangui
Chad *+	Republic of Chad	N'Djamena
Chile *+	Republic of Chile	Santiago
China *+	People's Republic of China	Beijing
Colombia *+	Republic of Colombia	Bogotá
Comoros *+	Union of the Comoros	Moroni
Congo (Brazzaville) *+	Republic of the Congo	Brazzaville
Congo (Kinshasa) *+	Democratic Republic of the Congo	Kinshasa
Costa Rica *+	Republic of Costa Rica	San José
Côte d'Ivoire *+	Republic of Côte d'Ivoire	Yamoussoukro
Croatia *+	Republic of Croatia	Zagreb
Cuba +	Republic of Cuba	Havana
Cyprus *+	Republic of Cyprus	Nicosia
Czech Republic *+	Czech Republic	Prague
Denmark *+	Kingdom of Denmark	Copenhagen
Djibouti *+	Republic of Djibouti	Djibouti
Dominica *+	Commonwealth of Dominica	Roseau
Dominican Republic *+	Dominican Republic	Santo Domingo
Ecuador *+	Republic of Ecuador	Quito
Egypt *+	Arab Republic of Egypt	Cairo
El Salvador *+	Republic of El Salvador	San Salvador
Equatorial Guinea *+	Republic of Equatorial Guinea	Malabo
Eritrea *+	State of Eritrea	Asmara
Estonia *+	Republic of Estonia	Tallinn
Ethiopia *+	Federal Democratic Republic of Ethiopia	Addis Ababa
Fiji *+	Republic of the Fiji Islands	Suva
Finland *+	Republic of Finland	Helsinki

Short-Form Name	Long-Form Name	Capital
France *+	French Republic	Paris
Gabon *+	Gabonese Republic	Libreville
Gambia, The *+	Republic of The Gambia	Banjul
Georgia *+	Georgia	T'bilisi
Germany *+	Federal Republic of Germany	Berlin
Ghana *+	Republic of Ghana	Accra
Greece *+	Hellenic Republic	Athens
Grenada *+	(no long-form name)	Saint George's
Guatemala *+	Republic of Guatemala	Guatemala
Guinea *+	Republic of Guinea	Conakry
Guinea-Bissau *+	Republic of Guinea-Bissau	Bissau
Guyana *+	Co-operative Republic of Guyana	Georgetown
Haiti *+	Republic of Haiti	Port-au-Prince
Holy See *	Holy See	Vatican City
Honduras *+	Republic of Honduras	Tegucigalpa
Hungary *+	Republic of Hungary	Budapest
Iceland *+	Republic of Iceland	Reykjavík
India *+	Republic of India	New Delhi
Indonesia *+	Republic of Indonesia	Jakarta
Iran +	Islamic Republic of Iran	Tehran
Iraq *+	Republic of Iraq	Baghdad
Ireland *+	(no long-form name)	Dublin
Israel *+	State of Israel	Jerusalem
Italy *+	Italian Republic	Rome
Jamaica *+	(no long-form name)	Kingston
Japan *+	(no long-form name)	Tokyo
Jordan *+	Hashemite Kingdom of Jordan	Amman
Kazakhstan *+	Republic of Kazakhstan	Astana
Kenya *+	Republic of Kenya	Nairobi
Kiribati *+	Republic of Kiribati	Tarawa
Korea, North +	Democratic People's Republic of Korea	Pyongyang
Korea, South *+	Republic of Korea	Seoul
Kosovo *	Republic of Kosovo	Pristina
Kuwait *+	State of Kuwait	Kuwait
Kyrgyzstan *+	Kyrgyz Republic	Bishkek
Laos *+	Lao People's Democratic Republic	Vientiane
Latvia *+	Republic of Latvia	Riga
Lebanon *+	Lebanese Republic	Beirut
Lesotho *+	Kingdom of Lesotho	Maseru

Short-Form Name	Long-Form Name	Capital
Liberia *+	Republic of Liberia	Monrovia
Libya *+	Great Socialist People's Libyan Arab Jamahiriya	Tripoli
Liechtenstein *+	Principality of Liechtenstein	Vaduz
Lithuania *+	Republic of Lithuania	Vilnius
Luxembourg *+	Grand Duchy of Luxembourg	Luxembourg
Macedonia (FYROM) *+	The Former Yugoslav Republic of Macedonia	Skopje
Madagascar *+	Republic of Madagascar	Antananarivo
Malawi *+	Republic of Malawi	Lilongwe
Malaysia *+	(no long-form name)	Kuala Lumpur
Maldives *+	Republic of Maldives	Male
Mali *+	Republic of Mali	Bamako
Malta *+	Republic of Malta	Valletta
Marshall Islands *+	Republic of the Marshall Islands	Majuro
Mauritania *+	Islamic Republic of Mauritania	Nouakchott
Mauritius *+	Republic of Mauritius	Port Louis
Mexico *+	United Mexican States	Mexico
Micronesia, Federated States of *+	Federated States of Micronesia	Palikir
Moldova *+	Republic of Moldova	Chisinau
Monaco *+	Principality of Monaco	Monaco
Mongolia *+	(no long-form name)	Ulaanbaatar
Montenegro *+	Montenegro	Podgorica
Morocco *+	Kingdom of Morocco	Rabat
Mozambique *+	Republic of Mozambique	Maputo
Namibia *+	Republic of Namibia	Windhoek
Nauru *+	Republic of Nauru	Yaren District (no capital city)
Nepal *+	Federal Democratic Republic of Nepal	Kathmandu
Netherlands *+	Kingdom of the Netherlands	Amsterdam, The Hague: (seat of government)
New Zealand *+	(no long-form name)	Wellington
Nicaragua *+	Republic of Nicaragua	Managua
Niger *+	Republic of Niger	Niamey
Nigeria *+	Federal Republic of Nigeria	Abuja
Norway *+	Kingdom of Norway	Oslo
Oman *+	Sultanate of Oman	Muscat
Pakistan *+	Islamic Republic of Pakistan	Islamabad
Palau *+	Republic of Palau	Melekeok
Panama *+	Republic of Panama	Panama
Papua New Guinea *+	Independent State of Papua New Guinea	Port Moresby

Short-Form Name	Long-Form Name	Capital
Paraguay *+	Republic of Paraguay	Asunción
Peru *+	Republic of Peru	Lima
Philippines *+	Republic of the Philippines	Manila
Poland *+	Republic of Poland	Warsaw
Portugal *+	Portuguese Republic	Lisbon
Qatar *+	State of Qatar	Doha
Romania *+	(no long-form name)	Bucharest
Russia *+	Russian Federation	Moscow
Rwanda *+	Republic of Rwanda	Kigali
Saint Kitts and Nevis *+	Federation of Saint Kitts and Nevis	Basseterre
Saint Lucia *+	(no long-form name)	Castries
Saint Vincent and the Grenadines *+	(no long-form name)	Kingstown
Samoa *+	Independent State of Samoa	Apia
San Marino *+	Republic of San Marino	San Marino
Sao Tome and Principe *+	Democratic Republic of Sao Tome and Principe	São Tomé
Saudi Arabia *+	Kingdom of Saudi Arabia	Riyadh
Senegal *+	Republic of Senegal	Dakar
Serbia*+	Republic of Serbia	Belgrade
Seychelles *+	Republic of Seychelles	Victoria
Sierra Leone *+	Republic of Sierra Leone	Freetown
Singapore *+	Republic of Singapore	Singapore
Slovakia *+	Slovak Republic	Bratislava
Slovenia *+	Republic of Slovenia	Ljubljana
Solomon Islands *+	(no long-form name)	Honiara
Somalia *+	(no long-form name)	Mogadishu
South Africa *+	Republic of South Africa	Pretoria (administrative) Cape Town (legislative) Bloemfontein (judicial)
Spain *+	Kingdom of Spain	Madrid
Sri Lanka *+	Democratic Socialist Republic of Sri Lanka	Colombo Sri Jayewardenepura Kotte (legislative)
Sudan *+	Republic of the Sudan	Khartoum
Suriname *+	Republic of Suriname	Paramaribo
Swaziland *+	Kingdom of Swaziland	Mbabane (administrative) Lobamba (legislative)
Sweden *+	Kingdom of Sweden	Stockholm
Switzerland *+	Swiss Confederation	Bern

Short-Form Name	Long-Form Name	Capital
Syria *+	Syrian Arab Republic	Damascus
Tajikistan *+	Republic of Tajikistan	Dushanbe
Tanzania *+	United Republic of Tanzania	Dar es Salaam Dodoma (legislative)
Thailand *+	Kingdom of Thailand	Bangkok
Timor-Leste *+	Democratic Republic of Timor-Leste	Dili
Togo *+	Togolese Republic	Lomé
Tonga *+	Kingdom of Tonga	Nuku'alofa
Trinidad and Tobago *+	Republic of Trinidad and Tobago	Port-of-Spain
Tunisia *+	Tunisian Republic	Tunis
Turkey *+	Republic of Turkey	Ankara
Turkmenistan *+	(no long-form name)	Ashgabat
Tuvalu *+	(no long-form name)	Funafuti
Uganda *+	Republic of Uganda	Kampala
Ukraine *+	(no long-form name)	Kyiv
United Arab Emirates *+	United Arab Emirates	Abu Dhabi
United Kingdom *+	United Kingdom of Great Britain and Northern Ireland	London
United States +	United States of America	Washington, DC
Uruguay *+	Oriental Republic of Uruguay	Montevideo
Uzbekistan *+	Republic of Uzbekistan	Tashkent
Vanuatu *+	Republic of Vanuatu	Port-Vila
Venezuela *+	Bolivarian Republic of Venezuela	Caracas
Vietnam *+	Socialist Republic of Vietnam	Hanoi
Yemen *+	Republic of Yemen	Sanaa
Zambia *+	Republic of Zambia	Lusaka
Zimbabwe *+	Republic of Zimbabwe	Harare

Exception:

Taiwan	(no long-form name)	Taipei
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Recognized by the U.S. as part of People's Republic of China

Embassies in Washington, DC

Embassies are a great resource for maps, country and cultural information, and more. Visit this website for contact information for embassies in Washington, DC:

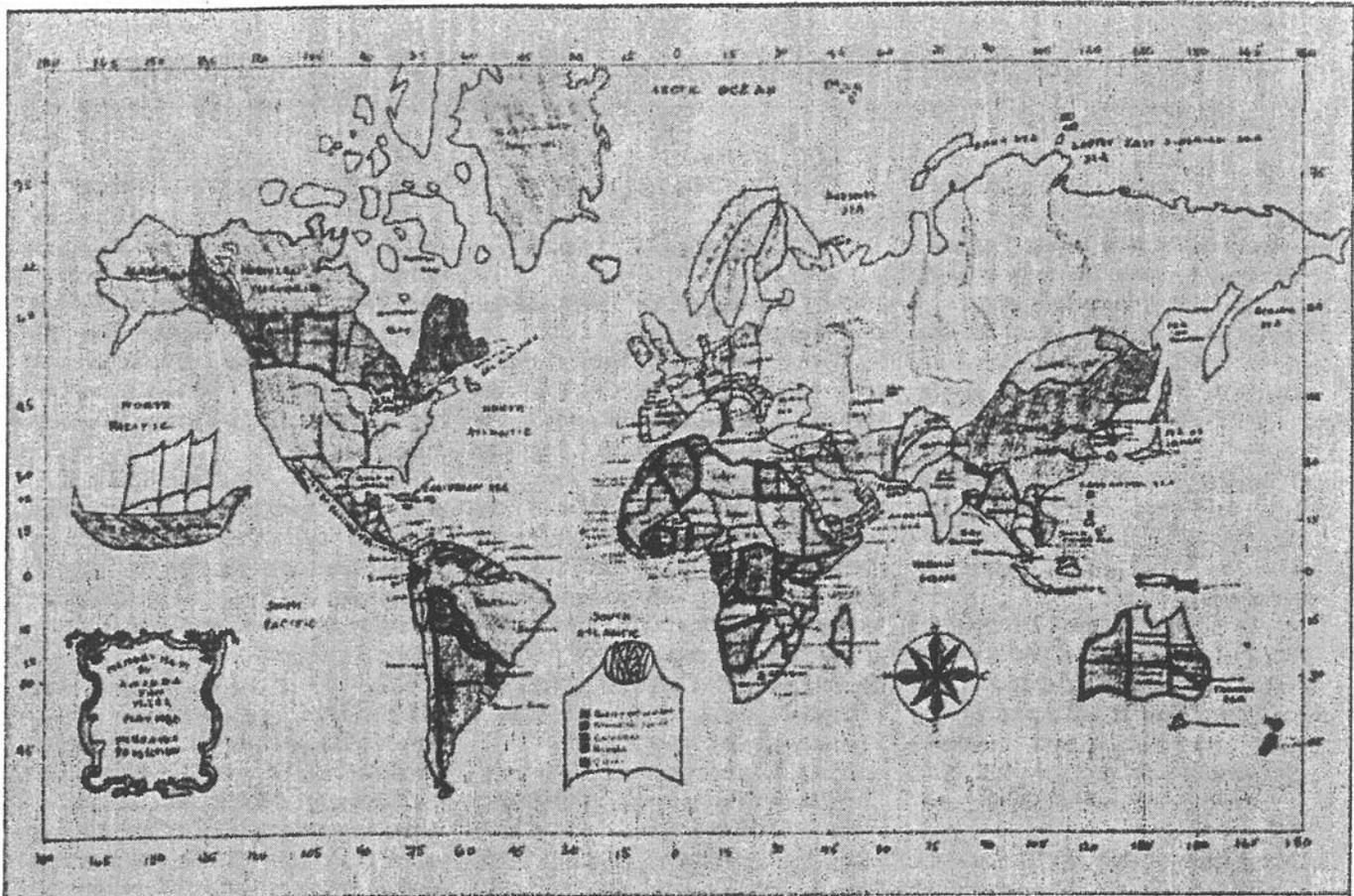
<http://www.embassy.org/embassies>

Top Languages

There are nearly 6,000 languages in the world today. However, if you can say “hello”, “goodbye”, and “thank you” in just these 13 languages, you can be polite to about 70 percent of the world’s population.

Language	Hello	Goodbye	Thank you
Chinese	Ni Hao	Zai jian	Xie xie
English	Hello	Goodbye	Thank you
Hindi	Namaste	Namaste	Djan-ja-vaad
Spanish	Hola	Adios	Gracias
Arabic	Salaam Aleykum (or Ahlan)	Ma’asalaama	Shukran
Bengali	Namashkar	Khoda Hafez	Djan-ja-bad
Portuguese	Bom Dia (or Hola)	Adeus (or Ciao)	Obrigado (male speaker) Obrigada (female speaker)
Russian	Privyets (or Zdravooitye)	Doh Svedonya	Spah-see-bah
Bahasa*	Hai	Pur-mee-see	Treema Kahsee
French	Bonjour	Au revoir	Merci
Japanese	Konnichi-wa	Sayonara	Arigato
German	Guten Tag	Auf Wiedersehen	Danke
Urdu	Salaam Aleykum	Khuda Hafiz	Shukriya

*Bahassa is the name of the family of languages spoken in Indonesia, Malaysia, and Brunei. Taken together as a single family, Bahassa would be number 4 on the list. The phrases here are from *Bahassa Indonesia*.



didn't have time, at least my students would have the facts and names as they moved into high school.

What has evolved is an interesting balance that seems to meet my major goals: Students should be able, at the end of the year, to construct a large Mercator projection map of the world entirely from memory. They should be able to place on that map the names and borders of the countries they've studied during the year (approximately 150), with major cities, mountain ranges, rivers, and bodies of water also labeled. And they should be able to demonstrate some knowledge, on their final maps, or on maps constructed earlier in the year, of major thematic issues.

As early in the year as possible, usually the first day, I hand out blank sheets of paper and say, "Draw a map that shows me everything that you can remember that you know about the world." I explain that nobody is expected to get anything right, and that the only purpose is that at the end of the year they will be able to compare this map with their "memory map" and see how far they've come.

We then begin a systematic study of world geography. The basic pace is one continent or large country every two weeks or so. We begin with the United States, then Canada, Central America, South America, the Caribbean, Western Europe, Eastern Europe, the Soviet Union, Africa, the Middle East, India, the Far East, Southeast Asia, Oceania, the Pacific Basin.

What we do in each two-week block is fairly consistent. Using desk outline maps, students

shade and label according to a key I give them, then quiz each other through questions they devise and through a variety of question-and-answer games we play as a class. Finally they review the map for a test on borders, names, and features. We also construct maps that just show major bodies of water, major river systems, and major geographical features. The bulletin boards are decorated with material specific to the area being studied.

When we finish our basic survey of the main areas, we begin a systematic review, and we add a variety of thematic concepts. Students make thematic maps and report on them, they devise questions based on thematic concepts which other students have to answer using an atlas or the student-made thematic maps, and they have weekly quizzes from me. The quizzes include both fundamental review toward the memory map and review of thematic topics:

"On the map, label Portugal and Brazil, then explain something important which they share. On the map, label as many countries as you can where English is a major language. Label countries where Islam is a major religion. Identify places that are still colonies of other countries. Label only countries that have large deserts."

The last month before they make the memory maps, I prepare hundreds of practice Mercator grids, and students are required both to practice some piece of knowledge every night, and to demonstrate to me, every day, something new that they have learned.

At first, this is just continental outlines—Africa south of the Equator, West Africa, North Africa, all

THE WORLD ACCORDING TO AMANDA AND ALEXA:
Amanda Van Vleck's memory map at the end of seventh grade (above) contrasts with what she drew at the beginning (opposite page). Alexa S. Knight's final map (overleaf) adds animals to a Mercator projection.

Students work independently, without reference to each other's maps or to any other resource.

of Africa—and students learn shortcuts surprisingly quickly. They learn that the mouth of the Nile is just northeast of 30 degrees north, 30 degrees east; they learn that 0 degrees, 0 degrees is an excellent reference point for the African coast; they learn that 15 degrees east is a marker for the southern tip of Sweden, the “toe” of Italy, the middle of the Libyan coast, and the mouth of the Orange River, and that 75 degrees west gives Delaware Bay, the eastern tip of Cuba, and the western limit of the Chilean coast. Gradually, it comes together.

It would be natural to wonder through all of this about students whose visual memory and discrimination are weak. I have found that the work is surprisingly accessible to every student, that the small units and the daily repetition provide attainable short-term goals.

About halfway through this section, I do have to do quite a lot of encouragement, and provide lots of positive feedback and reinforcement for the entire class. Once over the “halfway” hump, with most of the material memorized and in daily use, the students can glide into June, enjoying what they’ve

LEARNING

learned and helping each other master more and more.

During the last two weeks of school, the entire process culminates in a monumental and memorable project: the memory map of the world. I begin by removing all atlases, maps, and other geographic reference material from the room, and distributing 20-inch by 30-inch sheets of “high tech” board, a smooth-surfaced, easily erasable architect’s drafting material. We spend a day getting the grid down squarely—and I do help with this process, giving the dimensions, distances from the edge of the map, spaces between lines.

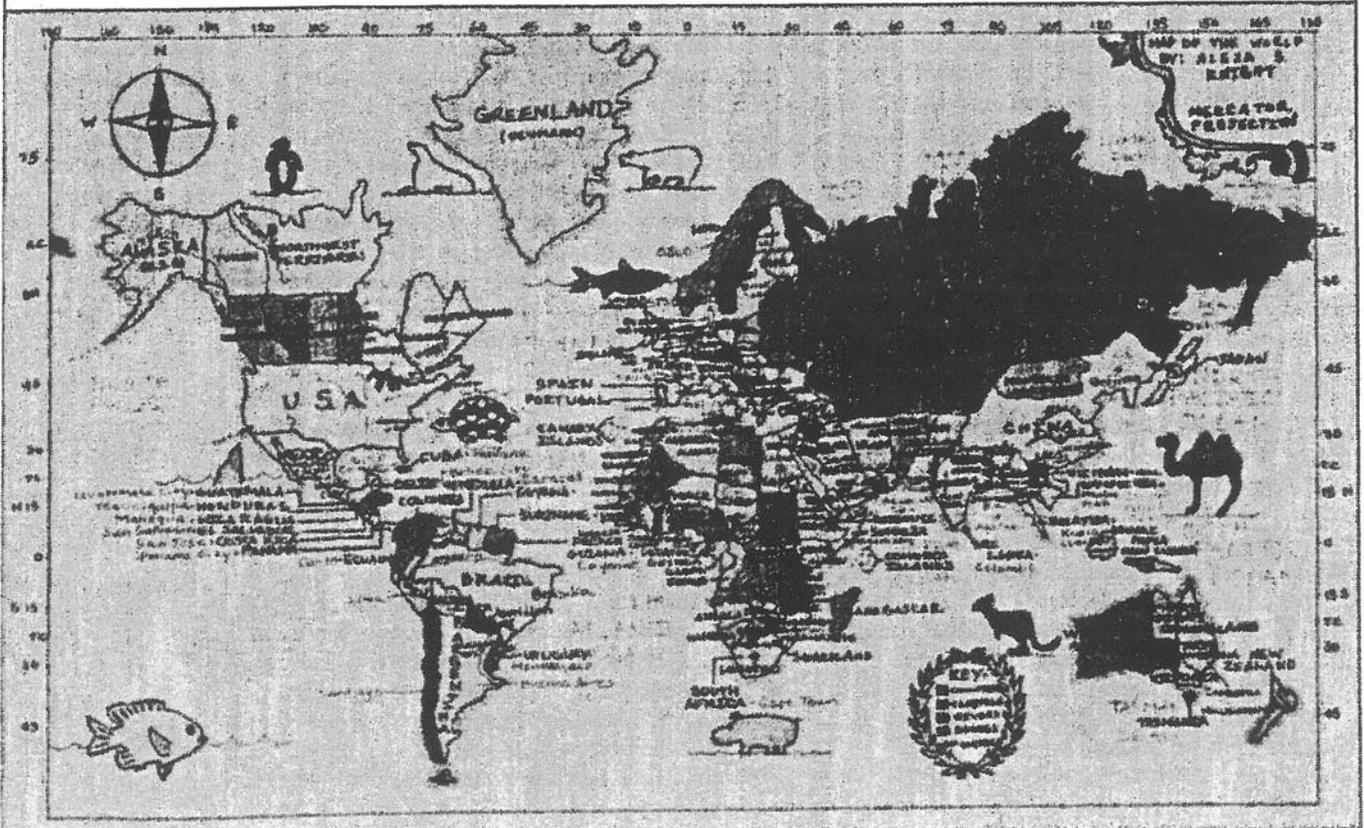
Then students are on their own. They work independently, at their own desks, without reference to each other’s maps or to any other resource. They begin by putting down the continental outlines in light pencil. When they are satisfied with them, they use a fine-point black pen to make the outlines permanent. Next they add what they can—country borders and names, cities, rivers and their names, mountain

ranges, the names of bodies of water.

At home, at night, students are allowed to review, but not at all in school. The last day is spent in decorating: Every map must have a title box and a compass rose. Beyond that students may add any other decorative item they wish—flags, ships, sea serpents, mammals in appropriate locations.

On the last day of school, the final maps are posted for student and parental inspection. Next to each is posted the corresponding first-day-of-school base-line map, and the difference between the two always evokes astonishment and pride.

What the students have accomplished, then, is mastery of a body of knowledge which they considered impossible nine months earlier. They have acquired a foundation on which to place any geographical references they come to in their reading and learning, and on which to build as they progress through school and beyond. They have produced a useful, colorful, often quite beautiful work of art that amazes friends and family. It is a daunting exercise to contemplate, with enormous, life-long rewards.



Answer Key for World Test #1

1. 365.25 days (actually 365 days, 6 hours, 9 minutes, and 9.5 seconds).
2. 24 hours (actually 23 hours, 56 minutes, 4.091 seconds).
3. 24,901.55 miles around the equator.
4. 90 degrees.
5. latitude.
6. A continent; or, more precisely, the westernmost part of the large continent called Eurasia, beginning at the Ural Mountains.
7. Sri Lanka (cap. Colombo).
8. Germany & Poland.
9. Liechtenstein, Switzerland, Italy, Slovenia, Hungary, Slovak Republic, Czech Republic, and Germany.
10. Germany & Belgium.
11. The Netherlands.
12. Morocco, Algeria, Tunisia, Libya, Egypt.
13. Guyana, Suriname, French Guiana.
14. Bolivia & Paraguay.
15. Belize, Honduras, Guatemala, El Salvador, Nicaragua, Costa Rica, Panama.
16. Yellow (or Huang Ho) & Yangtze.
17. Yemen, Oman, UAE, Qatar, Kuwait, Iraq, Jordan, Egypt.
18. Cambodia, Laos, China.
19. Mali, Niger, Chad, Burkina Faso, Central African Republic, Uganda, Rwanda, Burundi, Zambia, Zimbabwe, Botswana, Lesotho, Swaziland. In addition, Ethiopia is now landlocked because its former province of Eritrea is now an independent nation.
20. Tasman Sea.
21. Belarus, Ukraine, Moldova, Georgia, Armenia, Azerbaijan, Kazakhstan, Uzbekistan, Turkmenistan, Kyrgyzstan, Tajikistan, Russia, Estonia, Latvia, and Lithuania.
22. The provinces are: Newfoundland, Prince Edward Island, Nova Scotia, New Brunswick, Québec, Ontario, Manitoba, Saskatchewan, Alberta, British Columbia. The three territories are: Yukon, Northwest Territories, and Nunavut.

Answer Key for World Test #2

1. Countries where Portuguese is a major language: Angola, Brazil, Cape Verde, Guinea Bissau, Mozambique, Portugal, Macao, Sao Tome & Principe.
2. Countries where English is a major language, one per continent: North America: USA, Canada; South America: Trinidad & Tobago, Falkland Islands, Guyana; Europe: U.K.; Africa: South Africa, Kenya, other former British colonies; Asia: India, Hong Kong, Philippines; Oceania: Australia, New Zealand.
3. There are at least 50 countries where Islam is a major religion: Among the biggest are Algeria, Bangladesh, Brunei, Egypt, Ethiopia, Indonesia, Iran, Iraq, Kuwait, Lebanon, Libya, Malaysia, Morocco, Niger, Nigeria, Pakistan, Sudan, Syria, Turkey.
4. Places that are colonies: Greenland (Denmark); French Guiana, Guadeloupe, Martinique, and other French overseas departments and territories; Curacao, Aruba, Bonaire, St. Maarten (Netherlands); Falkland Islands, Tristan da Cunha, Pitcairn Island, and several other dependencies (United Kingdom); Guam, American Samoa, Northern Marianas (U.S.).
5. Countries with a desert, one per continent: North America: USA (Painted Desert, Arizona); South America: Chile (Atacama); Africa: South Africa (Kalahari); Asia: Mongolia (Gobi); Australia: Australia (Great Australian); Europe: no deserts in Europe.
6. West to east.
7. West to east.
8. There are endless possible answers. Here are some samples: In Los Angeles it is 12:00 noon; Denver=1:00 p.m.; Chicago=2:00 p.m.; Caracas=4:00 p.m.; Rio de Janeiro=5:00 p.m.; London=8:00 p.m.; Rome=9:00 p.m.; Athens=10:00 p.m.; Moscow=11:00 p.m.; Bangkok=3:00 a.m. next day; Hong Kong=4:00 a.m. next day; Tokyo=5:00 a.m. next day; Sydney=6:00 a.m. next day.
9. Rain forests: Brazil; Honduras, Nicaragua, Costa Rica, Panama; Nigeria, Cameroon, C.A.R., Congo (Kinshasa), Congo (Brazzaville); Madagascar; India, Bangladesh, Myanmar, Thailand, Vietnam; Malaysia; Indonesia; Philippines.
10. High birth rates, high death rates, and low life expectancy: Afghanistan, Sierra Leone, Ethiopia, Guinea, Somalia, Niger, Angola, Mali, C.A.R., Chad, Senegal, Benin, Malawi, Mozambique, Mauritania, Burkina Faso.
11. Low birth rates, low death rates, and high life expectancy: Japan, Sweden, Netherlands, Canada, Switzerland, Norway, Spain, Denmark, Greece, U.S.A., France, Italy, U.K., Australia.

12. Infinite possible “right” answers.
13. West to east.
14. Major automobile manufacturers: France, Germany, Italy, Japan, Korea, Sweden, U.K., USA.
15. Petroleum producers, by continent: Africa: Algeria, Nigeria, Libya; Asia: Indonesia, Saudi Arabia, Iraq, Kuwait, Qatar, U.A.E., China; South America: Venezuela, Argentina, Brazil; North America: Canada, Mexico, USA; Europe: U.K., Norway, Russia; Oceania: Australia.

Appendix A

Mapping the U.S. by Heart



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Introduction

This appendix was designed to enrich and extend the “United States” section of *Mapping the World by Heart* to help teachers who wish to have their students map the U.S. “by heart”. It was created by David J. Smith and by Jim Dowd, a fourth-grade teacher in St. Louis whose students have mapped the U.S. by heart for many years.



Possibly, you’ve decided that *Mapping the World by Heart* is too hard, and mapping the U.S. would be less rigorous; well, you’re right AND wrong. It is somewhat easier to get a class ready to map the U.S., with its 50 political divisions (rather than 185+), but it really isn’t any easier to draw. When you add in labeling of states — plus cities, features, decorating, and the other steps necessary to complete the map — you’ll find it is still a major project requiring serious focus, preparation, and attention.

There are some schools where the U.S. is mapped in one grade, and the world a year or two later. Teachers in these schools acknowledge that they spend the same amount of time on their programs; and that U.S. states, because they are bigger on the final map, require more careful drawing, labeling, and coloring.

If you’re new to the *Mapping the World by Heart* idea, you might find it less daunting to try the program with just the U.S. the first year and then move on to the world (or get a teacher in the next grade interested).

In any case, as with *Mapping the World by Heart*, if you decide to try “Mapping the U.S. by Heart,” do it exactly the way your teacherly judgement dictates — there is no right or wrong way to do this. It is a question of finding what fits best with your teaching style and your students’ abilities. Are they ready for a complex and detailed mapping experience? Would they be better served by focusing on the states and their names, without adding hundreds of cities and features? Do you want to focus on a particular region (e.g., The 13 Colonies, The Pacific Basin)?

Any of these approaches will serve you well; the decision is yours. Whatever you do, you will find tools to help you in these pages, and your students will benefit immensely.

Questions on “Mapping the U.S. by Heart”? Feel free to email: questionbox@mapping.com

Planning the Year

Here's a broad outline to help you fit "Mapping the U.S. by Heart" into your school year. Adjust these guidelines to fit your time constraints and the particular content you have chosen.

A. Do the first six lessons from *Mapping the World by Heart* (the "Appetizer" section). Although these are world-oriented, they will help your students understand how maps work, how to read and draw maps, what latitude and longitude are, and more. Here are those six lessons; if you've already done them for *Mapping the World by Heart*, there's no need to do them again.



1. Blank Grid Lesson (substitute blank U.S. grid for the world grid if you wish)
2. Grapefruit Lesson (a must for understanding projections)
3. Latitude and Longitude Lesson (again, substitute U.S. locations as you wish)
4. Contour Maps (with young students, use a sand table to build and map hills)
5. Thematic Maps (use U.S. maps and U.S. themes where possible)
6. Local Geography

B. Fill in regions on blank outline maps, one region at a time. (Note that your students can easily work through one of these regions in a week. If you allow two weeks per region, you can cover the U.S. in a year at a very relaxed pace.)

Master Checklist of U.S. Locations and Features

Checklist 1: Washington, Oregon, Idaho

Checklist 2: Montana, Wyoming

Checklist 3: Nevada, California

Checklist 4: Four Corners – Utah, Colorado, Arizona, New Mexico

Checklist 5: North Dakota, South Dakota, Nebraska, Kansas, Oklahoma

Checklist 6: Texas

Checklist 7: MIMAL – Minnesota, Iowa, Missouri, Arkansas, Louisiana

Checklist 8: MAGS – Mississippi, Alabama, Georgia, South Carolina

Checklist 9: Florida, Tennessee, North Carolina

Checklist 10: Wisconsin, Illinois, Michigan, Indiana, Ohio

Checklist 11: Kentucky, West Virginia, Virginia, Washington, DC

Checklist 12: Pennsylvania, New York, New Jersey, Maryland, Delaware

Checklist 13: Maine, New Hampshire, Vermont

Checklist 14: Massachusetts, Rhode Island, Connecticut

Checklist 15: Hawai'i, Alaska

C. Follow the steps for the "final activities" and the final formal map that you will find at the end of *Mapping the World by Heart*; substitute U.S. maps and grids.

Tips for Teachers



In teaching how to draw each region, the amount of teacher involvement will vary from grade level to grade level, as well as from region to region within one grade. Different teachers will find different ways to interact with their classes about the material, how to draw the regions, and so on. There is a page of mnemonics in this guide; your students may find it useful, but also encourage them to develop their own strategies and to share them with you and their classmates.

Probably the most important time in the “getting ready to make the final map” period is what David refers to as “coping questions” — students can ask for help about particular locations or borders or shapes that they find hard, and other students can share their discoveries of how to map those items.

For your students who have fine-motor issues or difficulties with spatial relationships, a little extra handholding may be needed as they get ready to map. This can also be true of your “perfectionists”. In our experience, you may find one or two students a year who may need some kind of special adaptation of the program — the ability to have a list of the states in front of them, for example. We encourage you to be very strict about this and not give in to the temptation of “helping” anybody, unless there is really no other choice and it is clear that NOT helping will prevent the student from completing, and enjoying, the project. Our best and most satisfying results have often come from our students who have mastered in May what they thought in September would be totally impossible.

Mnemonics

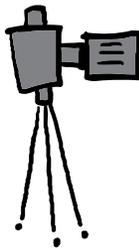
Some U.S. Map Mnemonics (Drawing Hints and Memory Aids) from Students:

Have your students create and share their own.

- Idaho has a smokestack.
- Montana's western border is a face.
- Montana and Wyoming share a common eastern border.
- Nevada's eastern border is twice as long as the western border.
- Nevada's western border is on 120° W longitude.
- ND, SD, NE, KS, and OK are in a column.
- Kansas and Nebraska's common border is at 40° N latitude.
- Oklahoma looks like a cooking pan or pot.
- The middle of the Oklahoma pot leaks and drips down to the southernmost point in Texas.
- "MIMAL the Elf" (see page A19) has a big belly and skinny legs.
- Missouri has a lower section in the southeast called the "Boot Heel".
- Missouri borders 8 states.
- Mississippi and Alabama look like the profile of two heads back to back.
- Georgia looks like Missouri with the "boot heel" cut off.
- Northern border of MS, AL, and GA, and the southern border of TN, is 35° N latitude.
- The Florida Keys cut through 25° N latitude.
- Tennessee borders 8 states — tied with Missouri for bordering the most states.
- Kentucky and Virginia look like two whales (or waves) following each other.
- Kentucky borders 7 states.
- MIMAL's "eyes" shoot a laser beam, which forms the northern border of Illinois.
- Wisconsin looks like a right-handed clenched fist.
- Michigan looks like a left-handed mitten.
- Don't forget Michigan's upper peninsula!
- West Virginia looks like a goldfish swimming southwest OR a chicken walking east.
- Pennsylvania looks like a house with a short chimney in the northwest.
- New Jersey looks like a peanut.
- New York looks like a sideways bell.
- Cape Cod in Massachusetts looks like someone flexing their biceps muscle.
- Vermont is a V.
- Maine looks like the tail fin of a plane.
- Maine is the only state in the continental U.S. that borders only one other state.
- Northern borders of New York/Vermont and Wyoming are the same — 45° N latitude.
- The northern tip of Maine is actually SOUTH of Canada's border with WA, ID, MT, and ND.



Some Things for Which States are Known



The size and scale of a memory map of the U.S. has one distinct advantage over a world map: on a U.S. map the space is large enough, and the border roomy enough, for lots of interesting decoration. Students often use state flags, birds, or other themes to decorate the margin. Here is a list of some themes students like to use; your students will undoubtedly think of others.

- “official” flag, seal, fruit, bird, insect, muffin, song, animal
- monuments and museums
- state and national parks
- high points
- products
- weather
- temperatures
- music
- forts
- historic sites and events, trails, etc.
- minerals
- tourist attractions
- sports
- sports teams
- Native American dwellings, sites, etc.
- “biggest” or “tallest” (etc.)
- state slogan
- events and festivals

Mapping the U.S. by Heart Checklists



General Considerations

None of these checklists is intended to be a complete list of important cities and features for any state.

Several cities are shown for each state; the capital is always shown, and other cities are shown as much for geography as for importance. There may be bigger or more important cities. Each teacher and mapmaker is encouraged to locate and label any cities that are relevant to their understanding of the state's cultures, history, population, trade, etc.

Similarly, you'll find several features shown for each state. These always include the highest point (marked **HP**), plus some major rivers, some large or important lakes, and various other features. Again, people are encouraged to delete these features and/or insert their own choices for these lists.

There is some duplication from one state to its neighbors when there is shared contact with a river, bay, or other feature. It's only necessary to label each item one time.

For each group of states, pointers are given when possible to aid in the creation of a memory map. You will probably devise mnemonics of your own; if you do, please email them to mnemonics@mapping.com for inclusion in the next edition of this curriculum.

Master Checklist of U.S. Locations and Features



States and Capitals

Alabama	(AL)	Montgomery*	Montana	(MT)	Helena*
Alaska	(AK)	Juneau*	Nebraska	(NE)	Lincoln*
Arizona	(AZ)	Phoenix*	Nevada	(NV)	Carson City*
Arkansas	(AR)	Little Rock*	New Hampshire	(NH)	Concord*
California	(CA)	Sacramento*	New Jersey	(NJ)	Trenton*
Colorado	(CO)	Denver*	New Mexico	(NM)	Santa Fe*
Connecticut	(CT)	Hartford*	New York	(NY)	Albany*
Delaware	(DE)	Dover*	North Carolina	(NC)	Raleigh*
Florida	(FL)	Tallahassee*	North Dakota	(ND)	Bismarck*
Georgia	(GA)	Atlanta*	Ohio	(OH)	Columbus*
Hawai'i	(HI)	Honolulu*	Oklahoma	(OK)	Oklahoma City*
Idaho	(ID)	Boise*	Oregon	(OR)	Salem*
Illinois	(IL)	Springfield*	Pennsylvania	(PA)	Harrisburg*
Indiana	(IN)	Indianapolis*	Rhode Island	(RI)	Providence*
Iowa	(IA)	Des Moines*	South Carolina	(SC)	Columbia*
Kansas	(KS)	Topeka*	South Dakota	(SD)	Pierre*
Kentucky	(KY)	Frankfort*	Tennessee	(TN)	Nashville*
Louisiana	(LA)	Baton Rouge*	Texas	(TX)	Austin*
Maine	(ME)	Augusta*	Utah	(UT)	Salt Lake City*
Maryland	(MD)	Annapolis*	Vermont	(VT)	Montpelier*
Massachusetts	(MA)	Boston*	Virginia	(VA)	Richmond*
Michigan	(MI)	Lansing*	Washington	(WA)	Olympia*
Minnesota	(MN)	St. Paul*	West Virginia	(WV)	Charleston*
Mississippi	(MS)	Jackson*	Wisconsin	(WI)	Madison*
Missouri	(MO)	Jefferson City*	Wyoming	(WY)	Cheyenne*

National Capital: Washington, DC



Mountains

Adirondack Mountains	Mount Mansfield	Mount Whitney
Allegheny Mountains	Mount McKinley	Rocky Mountains
Catskill Mountains	Mount Rainier	Sierra Nevada
Mauna Kea	Mount Shasta	Teton Mountains
Mount Baker	Mount St. Helens	
Mount Katahdin	Mount Washington	

Rivers

Alabama River	Kennebec River	Salmon River
Allegheny River	Merrimack River	San Joaquin River
Arkansas River	Mississippi River	Santee River
Brazos River	Missouri River	Savannah River
Canadian River	Mohawk River	Schuylkill River
Cape Fear River	Monongahela River	Snake River
Colorado River	Ohio River	St. Croix River
Columbia River	Pecos River	St. John's River
Connecticut River	Pee Dee River	St. Mary's River
Delaware River	Penobscot River	Susquehanna River
Guadalupe River	Platte River	Tennessee River
Hudson River	Potomac River	Tombigbee River
Illinois River	Red River	Yellowstone River
Kanawha River	Rio Grande	Yukon River
Kansas River	Sabine River	

Lakes

Great Salt Lake	Lake Michigan	Lake Superior
Lake Champlain	Lake Okeechobee	Lake Tahoe
Lake Erie	Lake Ontario	Lake Winnepesaukee
Lake Huron	Lake Pontchartrain	Moosehead Lake
Lake Mead	Lake St. Clair	

Bodies of Water

Albemarle Sound	Chesapeake Bay	Mobile Bay
Beaufort Sea	Delaware Bay	Narragansett Bay
Bering Sea	Long Island Sound	Puget Sound

Other Features

Cape Cod	Grand Canyon	The Aleutian Islands
Continental Divide	Grand Coulee Dam	The Florida Keys
Death Valley	Sault Ste. Marie	

Checklist 1:

Washington, Oregon, and Idaho



Your first line for drawing the U.S. by heart will be from the northwest corner of Washington all the way to the “arrowhead” of Minnesota.

Below that line, on the west, draw Washington, and Oregon right below it. They are about the same size. Then, to the east of these two states, draw Idaho — Idaho and Oregon have a common southern border, and Idaho and Washington have a common northern border. Where Montana meets Idaho, lots of people see a face.

Washington (WA)

Cities

Bellingham
Olympia *
Seattle
Spokane
Tacoma
Walla Walla
Yakima

State Features

HP: Mount Rainier
Mount St. Helens, Mount Baker
Olympic Mountains, Coastal Range, Cascade Range
Olympic Peninsula
Columbia River
Grand Coulee Dam, Lake Chelan, Lake Roosevelt
Puget Sound

Oregon (OR)

Cities

Astoria
Bend
Corvallis
Eugene
Klamath Falls
Medford
Portland
Salem *

State Features

HP: Mount Hood
Mount Jefferson, The Three Sisters
Columbia River
Coastal Range, Cascade Range
Willamette River
Crater Lake

Idaho (ID)

Cities

Boise *
Coeur d’Alene
Lewiston
Idaho Falls
Pocatello

State Features

HP: Borah Peak
Castle Peak, Mount Greylock, Gospel Peak
Snake River, Salmon River
National Forests: Coeur d’Alene, Clearwater,
Nez Perce, Payette, Salmon, Boise

Checklist 2: Montana and Wyoming



Montana and Idaho have a northern border in common. The eastern border of Montana/Wyoming is a single straight line. Wyoming is a rectangle, and its southwest corner cuts into the northeast corner of Utah and keeps that state from being rectangular.

Montana (MT)

Cities

Billings
Bozeman
Butte
Great Falls
Helena *
Kalispell
Missoula

State Features

HP: Granite Peak
Flathead Lake, Fort Peck Lake
Yellowstone River
Missouri River
Rocky Mountains
Continental Divide

Wyoming (WY)

Cities

Casper
Cheyenne *
Cody
Gillette
Laramie
Rock Springs
Sheridan
Thermopolis

State Features

HP: Gannett Peak
Rocky Mountains, Teton Mountains
Continental Divide
Yellowstone National Park
Medicine Bow National Forest
Flaming Gorge
North Platte River

Checklist 3: Nevada and California



Northern border of both these states is the straight-line southern border of Oregon/Idaho.

The eastern border of Nevada starts in the middle of Idaho's southern border.

Upper half of Nevada is a rectangle; halfway down, the western border goes to a 45-degree angle and meets the eastern border near Las Vegas.

From there south, a slightly straight line marks the southeastern border where California meets Arizona.

Draw Nevada first, then California next to it.

Nevada (NV)

Cities

Carson City *
Elko
Ely
Las Vegas
Reno
Tonopah
Winnemucca

State Features

HP: Boundary Peak
Wheeler Peak
Pyramid Lake, Lake Tahoe, Lake Mead
Colorado River, Humboldt River
Toiyabe Mountain Range
Amargosa Desert, Smoke Creek Desert
Toiyabe National Forest

California (CA)

Cities

Bakersfield
Fresno
Los Angeles
Monterey
Redding
Sacramento *
San Diego
San Francisco
Santa Barbara

State Features

HP: Mount Whitney
Mount Shasta
Sacramento River, San Joaquin River
Death Valley
Yosemite National Park
Sequoia National Park & Forest
Sierra Nevada, Coast Range
Lake Tahoe, Salton Sea

Checklist 4: Utah, Colorado, Arizona, and New Mexico



The four corners states meet at a single point. Halfway down the Nevada/California eastern border, draw a straight line to the east, ending where the northern border line ends. The northern border line ends at Minnesota; the southern one ends at Missouri. Then draw a vertical line. The top of the line is on the southern border of Wyoming, about 1/3 of the way from the southwest corner; the bottom of the line is a little bit south of the lowest point in California. The mnemonic “story” is that you walk the southern border of California, “slide” down to the middle of Arizona’s southern border, walk straight east to New Mexico, and then take two steps up to Texas.

Utah (UT)

Cities

Logan
Moab
Ogden
Provo
Salt Lake City *
St. George

State Features

HP: Kings Peak
Uinta Mountains
National Parks: Zion, Arches, Canyonlands
Colorado River
Glen Canyon
Great Salt Lake, Lake Powell

Colorado (CO)

Cities

Boulder
Colorado Springs
Denver *
Fort Collins
Grand Junction
Pueblo

State Features

HP: Mount Elbert
Rocky, San Juan, Sangre de Cristo Mountains
Continental Divide
South Platte River
National Parks: Rocky Mountain, Mesa Verde
Dinosaur National Monument (partly in Utah)



Arizona (AZ)

Cities

Flagstaff
Kingman
Phoenix *
Tucson
Yuma

State Features

HP: Humphrey's Peak
Hopi, Navajo Indian Reservations
Petrified Forest National Park
Colorado River
Grand Canyon/Grand Canyon National Park

New Mexico (NM)

Cities

Alamogordo
Albuquerque
Carlsbad
Gallup
Las Cruces
Santa Fe *

State Features

HP: Wheeler Peak
Continental Divide, Sangre de Cristo Range
Carlsbad Caverns National Park
Rio Grande, Pecos River, Canadian River

Checklist 5: North Dakota, South Dakota, Nebraska, Kansas, Oklahoma



Halfway down the eastern border of Wyoming, draw the southern border of South Dakota. Above this line, North Dakota and South Dakota are about the same size; below, Nebraska and Kansas are about the same size. These states are fairly rectangular — Nebraska juts out westward, and so does Oklahoma. Oklahoma is south of the line you drew from Nevada to what will be Missouri. The eastern border of these states is pretty vertical until you get to Nebraska; it then slopes southeastward following the Missouri River, before turning vertical again.

North Dakota (ND)

Cities	State Features
Bismarck *	HP: White Butte
Dickinson	Red River (eastern border)
Fargo	Missouri River
Grand Forks	Theodore Roosevelt National Park
Minot	Lake Sakakawea, Lake Oahe

South Dakota (SD)

Cities	State Features
Aberdeen	HP: Harney Peak
Mitchell	Lake Oahe
Pierre *	Missouri River
Rapid City	Black Hills National Forest
Sioux Falls	Badlands National Park; Wind Cave National Park

Nebraska (NE)

(“panhandle” jutting out westward)

Cities	State Features
Grand Island	HP: Panorama Point (most SW corner)
Lincoln *	North Platte River, South Platte River, Platte River
North Platte	Missouri River
Omaha	



Kansas (KS)

Cities

Dodge City
 Kansas City
 Leavenworth
 Topeka *
 Wichita

State Features

HP: Mount Sunflower
 (Colorado border, 1/3 way south)
 Kansas River, Missouri River, Arkansas River
 Geographic Center of the Conterminous United States
 (along Nebraska border northwest of Salina)

Oklahoma (OK)

(also has a “panhandle”, but much thinner than NE)

Cities

Bartlesville
 Tulsa
 Lawton
 Oklahoma City *

State Features

HP: Black Mesa (NW corner, on Texas border)
 Arkansas River, Canadian River, Red River
 Robert S. Kerr Lake, Eufala Lake, Lake Texoma

Checklist 6:

Texas



Texas's "panhandle" goes northward and meets Oklahoma's.

Texas is the hardest state to draw so that it looks and feels correct; the more you practice, the more you'll feel comfortable with it.

The eastern border of North Dakota, extended all the way down, marks the center of the main part of Oklahoma and the southernmost tip of Texas.

At the back of the second "step" of New Mexico, the Texas border extends southwest following the Rio Grande. It then bends northeast at Big Bend National Park, and bends back southwest right afterwards.

Texas (TX)

Cities

Abilene
 Amarillo
 Austin *
 Beaumont
 Brownsville
 Corpus Christi
 Dallas
 El Paso
 Fort Worth
 Houston/Galveston
 Laredo
 Lubbock
 San Antonio
 Texarkana
 Waco

State Features

HP: Guadalupe Peak
 (on New Mexico border near El Paso)
 National Parks: Guadalupe Mountains, Big Bend
 Reservoirs: Toledo Bend, Sam Rayburn
 Canadian River, Red River, Rio Grande, Trinity River,
 Brazos River, Sabine River (eastern border),
 Pecos River, Guadalupe River

Checklist 7:

MIMAL: Minnesota, Iowa, Missouri, Arkansas, Louisiana



You may find it helpful to think of “MIMAL the Elf”. Minnesota is the hat; Iowa the head; Missouri the shirt, with protruding belly; Arkansas the pants; and Louisiana the boots. Draw Missouri FIRST. It touches a little bit of Nebraska, all of Kansas, and a little bit of Oklahoma.

Minnesota (MN)

Cities

Duluth
 Minneapolis
 St. Paul *
 Rochester
 Bemidji
 International Falls

State Features

HP: Eagle Mountain
 (in the “arrowhead” along Lake Superior)
 The Northwest Angle (north central projection into Canada)
 Mississippi River, St. Croix River
 Lake of the Woods, Lake Superior
 Upper & Lower Red Lake

Iowa (IA)

Cities

Burlington
 Cedar Rapids
 Council Bluffs
 Des Moines *
 Sioux City

State Features

HP: Hawkeye Point (in NW corner of state)
 Mississippi River, Missouri River, Des Moines River

Missouri (MO)

Cities

Cape Girardeau
 Kansas City
 St. Joseph
 St. Louis
 Jefferson City *
 Joplin

State Features

HP: Taum Sauk Mountain (SE corner)
 Mississippi River, Missouri River
 The Ozarks
 Lake of the Ozarks



Arkansas (AR)

Cities

Fort Smith
Little Rock *
Texarkana
Jonesboro

State Features

HP: Magazine Mountain
(NW of Little Rock, on the Arkansas River)
Arkansas River, Mississippi River
Lake Ouachita
The Ozarks

Louisiana (LA)

Cities

New Orleans
Baton Rouge *
Shreveport
Lake Charles

State Features

HP: Driskill Mountain
(NW corner, near Shreveport)
Lake Pontchartrain, Toledo Bend Reservoir
Sabine River, Mississippi River (Mississippi Delta)
The Bayous

Checklist 8:

MAGS: Mississippi, Alabama, Georgia, South Carolina



Mississippi and Alabama are mirror images (the notch in Mississippi adjoins Louisiana, the notch in Alabama adjoins Florida). Georgia looks like Missouri without the “boot heel”. South Carolina is small.

Mississippi (MS)

Cities

Biloxi
Jackson *
Tupelo
Meridian
Hattiesburg
Natchez

State Features

HP: Woodall Mountain
(NE corner by Tennessee River)
Mississippi River, Tennessee River, Tombigbee River
Ten-Tom Waterway (joins Tennessee and Tombigbee)
The Natchez Trace

Alabama (AL)

Cities

Huntsville
Birmingham
Montgomery *
Mobile
Dothan
Tuscaloosa

State Features

HP: Cheaha Mountain
(E of Birmingham, near Georgia)
Tennessee River, Tombigbee River, Alabama River,
Chattahoochee River
Mobile Bay

Georgia (GA)

Cities

Atlanta *
Augusta
Columbus
Macon
Savannah
Valdosta

State Features

HP: Brasstown Bald
(north-central GA, near TN/NC border)
Savannah River, Chattahoochee River,
Altamaha River, St. Mary's River
Okefenokee Swamp

South Carolina (SC)

Cities

Greenville
Columbia *
Charleston
Beaufort
Myrtle Beach

Features

HP: Sassafras Mountain (NW corner of state)
Savannah River, Pee Dee River, Santee River
Ashley and Cooper Rivers, Catawba River
Lake Marion
“The Grand Strand”

Checklist 9: Florida, Tennessee, and North Carolina



Florida (FL)

(goes as far south as Texas — 25 degrees north)

Cities

Pensacola
Tallahassee *
Jacksonville
Orlando
Tampa
Miami
Key West

State Features

HP: Britton Hill (NW corner on Alabama border)
St. Mary's River, St. John's River
Lake Okeechobee
The Florida Keys
The Everglades
Cape Canaveral

Tennessee (TN)

(actually borders 8 states)

Cities

Memphis
Nashville *
Knoxville
Johnson City
Chattanooga

State Features

HP: Clingman's Dome (middle of NC border)
Great Smoky Mountains (and National Park)
Mississippi River, Cumberland River, Tennessee River

North Carolina (NC)

Cities

Asheville
Charlotte
Winston-Salem
Raleigh *
Wilmington
Cape Hatteras

State Features

HP: Mount Mitchell (near Asheville)
Great Smoky Mountains (and National Park)
Pee Dee River, Cape Fear River, Catawba River,
Neuse River
Albemarle Sound, Pamlico Sound
The Outer Banks

Checklist 10:

Wisconsin, Illinois, Michigan, Indiana, and Ohio



Along the Great Lakes. Lakes Superior, Michigan, and Huron meet at Sault Ste. Marie and are somewhat similar in size and shape (for the sake of memory-mapping). Erie and Ontario have similar shapes — Erie to the south and west, Ontario to the north and east.

Wisconsin (WI)

Cities

Eau Claire
Green Bay
La Crosse
Madison *
Milwaukee

State Features

HP: Timms Hill (north-central Wisconsin)
Lake Superior, Lake Michigan, Lake Winnebago
Wisconsin River, Mississippi River
Green Bay
Apostle Islands (National Lakeshore)

Michigan (MI)

Cities

Detroit
Kalamazoo
Lansing *
Muskegon
Saginaw
Sault Ste. Marie

State Features

HP: Mount Arvon (NW part of the Upper Peninsula)
Lake Superior, Lake Michigan, Lake Huron,
Lake Erie, St. Clair
Straits of Mackinac
Saginaw Bay, Whitefish Bay
Muskegon River, Detroit River, St. Clair River
Sleeping Bear Dunes National Lakeshore

Illinois (IL)

Cities

Chicago
Moline
Peoria
Springfield *

State Features

HP: Charles Mound (NW corner of state)
Lake Michigan
Wabash River, Ohio River, Illinois River,
Mississippi River, Des Plaines River, Chicago River



Indiana (IN)

Cities

Fort Wayne
Gary
Indianapolis *
Evansville
Terre Haute

State Features

HP: Hoosier Hill Point
(E of Indianapolis on Ohio border)
Lake Michigan
Ohio River, Wabash River, Kankakee River

Ohio (OH)

Cities

Cincinnati
Columbus *
Cleveland
Dayton
Akron

State Features

HP: Campbell Hill (100 mi. NW of Columbus)
Lake Erie
Maumee River, Ohio River, Cuyahoga River,
Muskingum River, Scioto River, Miami River

Checklist 11:

Kentucky, West Virginia, Virginia, Washington, DC



Kentucky and Virginia share a common southern border; students sometimes see two whales, with the smaller (baby) whale following the larger (parent) whale. West Virginia sits between and points off in several directions.

Kentucky (KY)

Cities

Ashland
Bowling Green
Frankfort *
Lexington
Louisville
Paducah

State Features

HP: Black Mountain (SE edge, middle of VA border)
Cumberland River, Tennessee River, Ohio River
Lake Cumberland, Kentucky Lake

West Virginia (WV)

Cities

Beckley
Charleston *
Huntington
Morgantown
Parkersburg
Wheeling

State Features

HP: Spruce Knob (east-central WV, on VA border)
Ohio River, Monongahela River, Kanawha River,
Potomac River
Allegheny Mountains, Shenandoah Mountains

Virginia (VA)

Cities

Alexandria
Charlottesville
Norfolk
Richmond *
Roanoke
Winchester

State Features

HP: Mount Rogers (SW Virginia, near TN/NC borders)
Potomac River, Rappahannock River, York River,
James River, Roanoke River
Great Dismal Swamp
Allegheny Mountains, Shenandoah Mountains
Chesapeake Bay

Washington, DC

Checklist 12:

Pennsylvania, New York, New Jersey, Maryland, Delaware



New York (NY)

(shaped a little like a bell; Hudson River, the clapper, is straight north/south)

Cities

Albany *
 Binghamton
 Buffalo
 New York City
 Rochester
 Syracuse

State Features

HP: Mount Marcy (200 miles N of Albany)
 Lake Erie, Lake Ontario, Lake Champlain,
 Oneida Lake, The Finger Lakes
 Niagara Falls, Erie Canal
 Niagara River, Mohawk River, Hudson River,
 Susquehanna River
 Adirondack Mountains, Catskill Mountains

Pennsylvania (PA)

(a house with a chimney)

Cities

Allentown
 Erie
 Harrisburg *
 Philadelphia
 Pittsburgh
 Scranton

State Features

HP: Mount Davis (SE of Pittsburgh on MD border)
 Lake Erie
 Ohio River, Allegheny River, Monongahela River,
 Susquehanna River, Delaware River, Schuylkill River
 Tuscarora Mountains

New Jersey (NJ)

(shaped a little bit like a peanut)

Cities

Atlantic City
 Camden
 Cape May
 New Brunswick
 Newark
 Trenton *

State Features

HP: High Point (very northernmost point of state)
 Lake Hopatcong
 Delaware River, Raritan River, Maurice River
 Raritan Bay, Barnegat Bay, Delaware Bay
 Sandy Hook
 Kittatinny Mountains



Maryland (MD)

Cities

Aberdeen
 Annapolis *
 Baltimore
 Cumberland
 Frederick
 Salisbury

State Features

HP: Backbone Mountain
 (western edge of state, south corner)
 Potomac River, Patuxent River, Nanticoke River,
 Pocomoke River
 Chesapeake Bay, Chincoteague Bay
 Chesapeake & Delaware Canal
 Assateague Island

Delaware (DE)

Cities

Dover *
 Georgetown
 Lewes
 Newark
 Wilmington

State Features

HP: Ebright Azimuth
 (north of Wilmington, on PA border)
 Delaware River, Brandywine Creek
 Delaware Bay
 Chesapeake & Delaware Canal

Checklist 13:

Maine, New Hampshire, Vermont



Maine (ME)

(the tail of the U.S. “airplane”)

Cities

Augusta *
Bangor
Bar Harbor
Eastport
Portland
Presque Isle

State Features

HP: Mount Katahdin
Piscataqua River, Kennebec River, Penobscot River,
St. Croix River
Moosehead Lake, Sebago Lake
Casco Bay, Penobscot Bay

New Hampshire (NH)

(a finger pointing north)

Cities

Berlin
Concord *
Keene
Lebanon
Littleton
Manchester
Portsmouth

State Features

HP: Mount Washington
Connecticut River, Merrimack River, Piscataqua River,
Androscoggin River
Lake Winnepesaukee
White Mountains

Vermont (VT)

(shaped like a “V”)

Cities

Brattleboro
Burlington
Montpelier *
Newport
Rutland
St. Johnsbury
White River Junction

State Features

HP: Mount Mansfield
Connecticut River, White River, Winooski River
Lake Champlain
Green Mountains

Checklist 14:

Massachusetts, Rhode Island, Connecticut



Massachusetts (MA)

(Cape Cod is Massachusetts flexing its muscle)

Cities

Boston *
 Gloucester
 New Bedford
 Pittsfield
 Plymouth
 Springfield
 Worcester

State Features

HP: Mount Greylock
 Connecticut River, Merrimack River, Charles River
 Quabbin Reservoir
 Cape Cod, Cape Ann
 Buzzards Bay, Cape Cod Bay
 Berkshire Hills

Rhode Island (RI)

(nearly square)

Cities

Block Island
 Little Compton
 Newport
 Providence *
 Warwick
 Woonsocket

State Features

HP: Jerimoth Hill (W of Providence on CT border)
 Pawtuxet River, Providence River, Sakonnet River
 Narragansett Bay
 Block Island Sound

Connecticut (CT)

(rectangular)

Cities

Bridgeport
 Danbury
 Hartford *
 New Haven
 New London
 Putnam
 Torrington
 Waterbury

State Features

HP: Mount Frissell (extreme NW corner)
 Housatonic River, Connecticut River, Thames River,
 Pawcatuck River
 Candlewood Lake
 Long Island Sound

Checklist 15:

Hawai'i and Alaska



Hawai'i (HI)

Cities

Hilo
 Honolulu *
 Kahului
 Kailua Kona
 Kaunakakai
 Lahaina
 Lihue

State Features

HP: Mauna Kea
 Mauna Loa, Haleakala, Diamond Head
 Niihau, Kauai, Oahu, Molokai, Lanai,
 Kahoolawe, Maui, Hawai'i
 Pearl Harbor
 Hawai'i Volcanoes National Park,
 Haleakala National Park

Alaska (AK)

Cities

Anchorage
 Barrow
 Fairbanks
 Juneau *
 Ketchikan
 Nome
 Sitka
 Unalaska

State Features

HP: Mount McKinley (highest point in U.S.)
 National Parks: Gates of the Arctic, Kobuk Valley,
 Denali, Wrangell, Glacier Bay, Katmai
 Yukon River
 The Aleutian Islands
 Gulf of Alaska, Norton Sound, Beaufort Sea,
 Bering Strait, Bering Sea, Bristol Bay

Extension Activities

Activity One:

Whiteboard Mapping Game

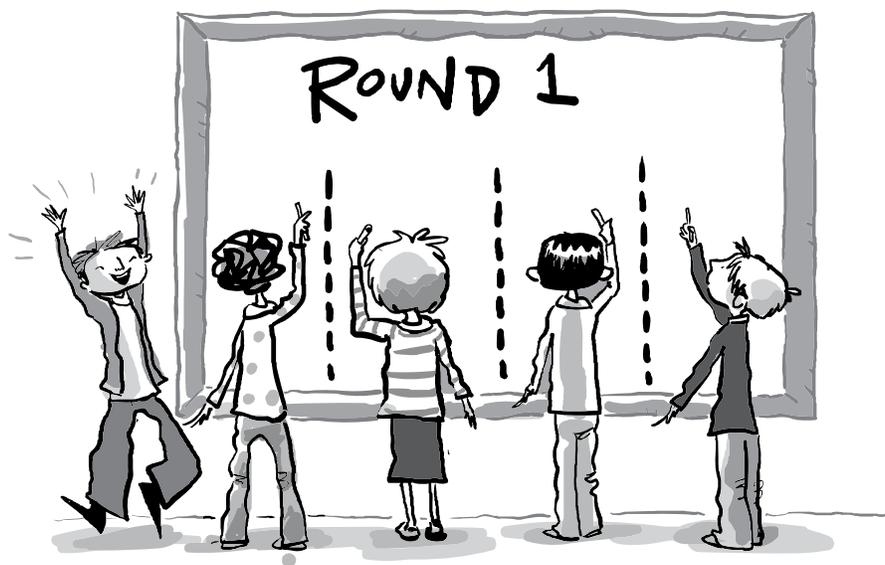
Entire class is involved or watching

10-15 minutes minimum, up to a full period

The class is divided into small groups or teams of 3 to 6 students. The whiteboard is then divided into equal sections and each group is assigned one section of the whiteboard. One student from each group goes to the board at the same time. The teacher then calls out a state or a group of states; the students draw those states. The first student to finish scores a point for his or her group (assuming the state is somewhat recognizable). One point may also be awarded for “most accurate” or “most beautiful” drawing of the state. Use a one-minute time limit for each drawing round.

After that round, the second student from each group comes to the board for the next turn.

Variations include instructing the students to add something different to the drawings of their states. “Draw Pennsylvania with a Hershey Bar inside of it.” “Please draw Abraham Lincoln standing on Illinois.” “Draw the four corners states with our principal touching all four states.”



Activity Two:

Spring Fever Mapping

20 minutes (or more) needed

Sidewalk chalk on a sunny spring day is a great way to break the monotony of indoor mapping practice. Escort your class to the sidewalk or playground, hand out a piece of sidewalk chalk to each student, and ask them to practice drawing the states that they have learned. This is a great activity that sparks schoolwide interest (and amazement) in memory mapping, and shows other teachers and parents what the students have been learning.

Note: See the “Playground Maps” section of *Mapping the World by Heart*. Instructions there can easily be used to make a large permanent playground map of the U.S.

Other Activities:

Be sure to see activities in the *Mapping the World by Heart* curriculum; these can be adapted to “Mapping the U.S. by Heart”.



Appendix B

Mapping Canada by Heart



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Introduction

This appendix was designed to enrich and extend the “Canada” section of *Mapping the World by Heart* to help teachers who wish to have their students map Canada “by heart”. It was created by David J. Smith with the help of several British Columbia teachers and homeschoolers.

The introductory section is nearly the same as that for “Mapping the U.S. by Heart”; if you’ve already read that section, or mapped the U.S., you may want to move right along to the mnemonics and checklists.

Possibly, you’ve decided that *Mapping the World by Heart* is too hard, and mapping Canada would be less rigorous; well, you’re right AND wrong. It is somewhat easier to get a class ready to map Canada, with its small number of political divisions, but it really isn’t any easier to draw. When you add in labeling of provinces — plus cities, features, decorating, and the other steps necessary to complete the map — you’ll find it is still a major project requiring serious focus, preparation, and attention.

There are some schools where Canada is mapped in one grade, and the world a year or two later. Teachers in these schools acknowledge that they spend the same amount of time on their programs; and that Canadian provinces, because they are bigger on the final map, require more careful drawing, labeling, and coloring.

If you’re new to the *Mapping the World by Heart* idea, you might find it less daunting to try the program with just Canada the first year and then move on to the world (or get a teacher in the next grade interested).

In any case, as with *Mapping the World by Heart*, if you decide to try “Mapping Canada by Heart,” do it exactly the way your teacherly judgement dictates — there is no right or wrong way to do this. It is a question of finding what fits best with your teaching style and your students’ abilities. Are they ready for a complex and detailed mapping experience? Would they be better served by focusing on the provinces and capitals, without adding hundreds of cities and features? Do you want to focus on a particular region (e.g., The North, Atlantic Canada)?

Any of these approaches will serve you well; the decision is yours. Whatever you do, you will find tools to help you in these pages, and your students will benefit immensely.

Questions on “Mapping Canada by Heart”? Feel free to email:
questionbox@mapping.com



Planning the Year

Here's a broad outline to help you fit "Mapping Canada by Heart" into your school year. Adjust these guidelines to fit your time constraints and the particular content you have chosen.

A. Do the first six lessons from *Mapping the World by Heart* (the "Appetizer" section). Although these are world-oriented, they will help your students understand how maps work, how to read and draw maps, what latitude and longitude are, and more. Here are those six lessons; if you've already done them for *Mapping the World by Heart*, there's no need to do them again.



1. Blank Grid Lesson (substitute blank Canada grid for the world grid)
2. Grapefruit Lesson (a must for understanding projections)
3. Latitude and Longitude lesson (again, substitute Canada locations as you wish)
4. Contour Maps (with young students, use a sand table to build and map hills)
5. Thematic Maps (use Canada maps and Canadian themes where possible)
6. Local Geography

B. Fill in regions on blank outline maps, one region at a time. (Note that your students can easily work through one of these regions in a week. If you allow three or four weeks per region, you can cover the year and all of Canada at a very relaxed pace.)

Master Checklist of Canadian Locations and Features

Checklist 1: Atlantic Canada (New Brunswick, Newfoundland, Nova Scotia, Prince Edward Island)

Checklist 2: The North (Northwest Territories, Nunavut, Yukon)

Checklist 3: The East (Ontario, Québec)

Checklist 4: The Plains (Manitoba, Saskatchewan)

Checklist 5: The West (Alberta, British Columbia)

C. Follow the steps for the "final activities" and the final formal map that you will find at the end of *Mapping the World by Heart*; substitute Canada maps and grids.

Tips for Teachers



In teaching how to draw each region, the amount of teacher involvement will vary from grade level to grade level, as well as from region to region within one grade. Different teachers will find different ways to interact with their classes about the material, how to draw the regions, and so forth. There is a short list of mnemonics in this guide; your students may find it useful, but encourage them to develop their own strategies and to share them with you and their classmates.

Probably the most important time in the “getting ready to make the final map” period is what David refers to as “coping questions” — students can ask for help about particular locations or borders or shapes that they find hard, and other students can share their discoveries of how to map those items.

For your students who have fine-motor issues or difficulties with spatial relationships, a little extra handholding may be needed as they get ready to map. This can also be true of your “perfectionists”. In our experience, you may find one or two students a year who may need some kind of special adaptation of the program — the ability to have a list of the provinces in front of them, for example. We encourage you to be very strict about this and not give in to the temptation of “helping” anybody, unless there is really no other choice and it is clear that NOT helping will prevent the student from completing, and enjoying, the project. Our best and most satisfying results have often come from our “resource room” students, those who have mastered in May what they thought in September would be totally impossible.

Mnemonics



Some Canada Map Mnemonics (Drawing Hints and Memory Aids) from Students:

Have your students create and share their own.

- British Columbia (BC) looks like a boot kicking Alberta.
- The “loop” to help you pull up the BC “boot” is over the panhandle of Alaska.
- The only province that touches the Great Lakes is Ontario.
- The southern border of BC, Alberta, Saskatchewan, and Manitoba is parallel to the northern border; and the distance between is 21 degrees of latitude.
- Saskatchewan is fairly rectangular; so is Alberta, except for a notch in the southwest for BC’s “toe”.
- Several provinces have two or more significant parts:
 - Newfoundland (Newfoundland Island plus Labrador)
 - Nova Scotia (Mainland plus Cape Breton Island)
 - Northwest Territories and Nunavut (Mainland plus Arctic Islands)
- Borders that run north/south are mostly long and straight, except when they follow mountains.
- Newfoundland Island looks like a fist, with the “pointer” finger pointing northeast.
- Québec is on both sides of the St. Lawrence River.
- Nunavut includes all islands within the bays and straits of northern Canada and Hudson Bay.
 - Exception: The western half of Victoria Island is included in the Northwest Territories.

Some Things for Which Provinces are Known



The size and scale of a memory map of Canada has one distinct advantage over a world map: on a Canada map the space is large enough, and the border roomy enough, for lots of interesting decoration. Students often use provincial flags, birds, or other themes to decorate the margin. Here is a list of some themes students like to use; your students will undoubtedly think of others.

- “official” flag, seal, fruit, bird, insect, muffin, song, animal
- monuments and museums
- provincial and national parks
- high points
- products
- weather
- temperatures
- music
- forts
- historic sites and events, trails, etc.
- minerals
- tourist attractions
- sports
- sports teams
- indigenous peoples — dwellings, sites, etc.
- “biggest” or “tallest” (etc.)
- provincial slogans
- events and festivals

Mapping Canada by Heart Checklists

General Considerations

None of these checklists is intended to be comprehensive.



Several cities are shown for each province; the capital is always shown, and other cities are shown as much for geography as for importance. There may be bigger or more important cities. Each teacher and mapmaker is encouraged to locate and label any cities that are relevant to their understanding of the province's cultures, history, population, trade, etc.

Similarly, you'll find several features shown for each province. These always include the highest point (marked **HP**), plus some major rivers, large or important lakes, and various other features. Again, you are encouraged to delete these features and/or insert your own choices for these lists.

There is some duplication from one province to its neighbors, when there is shared contact with a river, bay, or other feature. It's only necessary to label each item one time.

You and your students will probably devise mnemonics of your own as you work through these checklists and maps. If you do, please email them to mnemonics@mapping.com for inclusion in the next edition of this curriculum.

Master Checklist of Canadian Locations and Features



Provinces and Capitals

New Brunswick	Fredericton *
Newfoundland	St. John's *
Nova Scotia	Halifax *
Prince Edward Island	Charlottetown *
Northwest Territories	Yellowknife *
Nunavut	Iqaluit *
Yukon	Whitehorse *
Ontario	Toronto *
National Capital	Ottawa *
Québec	Québec *
Manitoba	Winnipeg *
Saskatchewan	Regina *
Alberta	Edmonton *
British Columbia	Victoria *

Canada's Neighbors

Greenland/Kalaallit Nunaat — Denmark
 St. Pierre et Miquelon — France
 United States (two borders, south & west)

Mountains



Newfoundland

HP: Mount Caubvick*	Mount Eliot	Blow Me Down Mountain
Cirque Mountain	Mount Tetragona	Bishop's Mitre
Mount Cladonia	Quartzite Mountain	Gros Morne

Nova Scotia

HP: Cape Breton Highlands Franey Mountain

Prince Edward Island

HP: 142 ft.

New Brunswick

Mount Carleton HP

Québec

HP: Mont D'Iberville*	Mont Richardson	Mont Tremblant
Mont Jacques-Cartier	Mont Megantic	Mont Royal
Mont Gosford		

Ontario

HP: Ishpatina Ridge Ogidaki Mountain

Manitoba

Baldy Mountain

Saskatchewan

HP: Cypress Hills Wood Mountain

Alberta

HP: Mount Columbia	Mount Forbes	Snow Dome
North Twin	South Twin	Mount Lyell
Mount Alberta	Mount Temple	Hungabee Mountain
Mount Assiniboine	Mount Brazeau	Mount Athabasca

*Mount Caubvick and Mont D'Iberville are two names for the same mountain.



British Columbia

HP: Fairweather Mountain	Mount Root	Asperity Mountain
Mount Quincy Adams	Mount Tiedemann	Mount Clemenceau
Mount Waddington	Combatant Mountain	Mount Assiniboine
Mount Robson	Mount Columbia	

Yukon Territory

Mount Logan	Mount MacAuley	Mount Kennedy
Mount St. Elias	Mount Slaggard	Avalanche Peak
Mount Lucania	Mount Hubbard	Mount Strickland
King Peak	Mount Walsh	Mount Newton
Mount Steele	Mount Alverstone	Mount Cook
Mount Wood	McArthur Peak	Mount Craig
Mount Vancouver	Mount Augusta	

Northwest Territories/Nunavut

Mount Odin (Baffin Island)	Devon Island Ice Cap
Mount Sir James MacBrien	Cap Mountain
HP in NU: Barbeau Peak	Mount Clark
HP in NT: Unnamed peak at 62° N, 128° W	
Outlook Peak (Axel Heiberg Island)	

Major Rivers



Rivers into the Pacific

Yukon River	Slocan River	Thompson River
Stewart River	Okanagan River	Skeena River
Columbia River	Fraser River	Stikine River

Rivers into the Arctic

Mackenzie River	Smoky River	Athabasca River
Peace River	Finlay River	

Rivers into Hudson Bay

Nelson River	Assiniboine River	Churchill River
Bow River	Winnipeg River	

Rivers to the Gulf of Mexico

Milk River	Battle River	Lodge Creek
Frenchman River		

Rivers into the Atlantic

St. Lawrence River	Mississagi River	Madawaska River
Nipigon River	Saugeen River	Petawawa River
Magpie River	Thames River	Saguenay River
Spanish River	Ottawa River	Rivière Richelieu
French River	Rivière Gatineau	

Major Lakes



Newfoundland

Smallwood Reservoir	Ashuanipi Lake	Lac Joseph
Lake Melville	Grand Lake	

Nova Scotia

Bras d'Or Lake

Québec

Lac Mistassini	Lac à l'Eau Claire	Lac Saint-Jean
Réservoir Gouin	Lac Bienville	

Ontario

Lake Superior	Lake Erie	Lake of the Woods
Lake Huron and Georgian Bay	Lake Ontario	Lac Seul
	Lake Nipigon	Lake St. Clair

Manitoba

Lake Winnipeg	Lake Manitoba	Cedar Lake
Lake Winnipegosis	Southern Indian Lake	

Saskatchewan

Lake Athabasca	Wollaston Lake	Lac La Ronge
Reindeer Lake	Cree Lake	Peter Pond

British Columbia

Williston Lake	Babine Lake	Ootsa Lake
Atlin Lake	Kootenay Lake	

Yukon Territory

Kluane Lake

Northwest Territories/Nunavut

Great Bear Lake	Nettilling Lake	Amadjuak Lake
Great Slave Lake	Dubawnt Lake	Nueltin Lake

Other Features



Oceans, Seas, and Bays

Beaufort Sea	Gulf of Boothia	James Bay
Arctic Ocean	Foxe Basin	Ungava Bay
Amundsen Gulf	Baffin Bay	Labrador Sea
Coronation Gulf	Davis Strait	Gulf of St. Lawrence
Dease Strait	Foxe Channel	Bay of Fundy
Queen Maud Gulf	Hudson Bay	Atlantic Ocean
Victoria Strait	Hudson Strait	

Large Sea Islands

Baffin Island	King William Island	King Island
Ellesmere Island	Melbourne Island	Saltspring Island
Devon Island	Southampton Island	Island of Newfoundland
Axel Heiberg Island	Resolution Island	Anticosti Island
Melville Island	Vancouver Island	Prince Edward Island
Bathurst Island	Graham Island	Cape Breton Island
Victoria Island	Moresby Island	Boularderie Island
Banks Island	Princess Royal Island	Île Lamèque
Prince of Wales Island	Pitt Island	Grand Manan Island
Somerset Island	Banks Island	

Checklist 1: Atlantic Canada



New Brunswick

Cities

Chatham
Edmundston
Fredericton *
Moncton
St. John

Province Features

HP: Mount Carleton
Île Lamèque, Grand Manan Island
National Parks: Fundy, Kouchibouguac

Newfoundland

Cities

Deer Lake
Gander
Goose Bay
St. John's *
Wabush
Nain
Churchill Falls

Province Features

HP: Mount Caubvick (Mont D'Iberville)
Labrador
South Aulatsivik Island
Smallwood Reservoir, Lake Melville
National Parks: Terra Nova, Gros Morne

Nova Scotia

Cities

Amherst
Bridgewater
Digby
Halifax *
New Glasgow
Sydney
Truro
Yarmouth

Province Features

HP: Cape Breton Highlands
Cape Breton Island
Bras d'Or Lake
National Parks: Cape Breton Highlands, Kejimikujik

Prince Edward Island

Cities

Charlottetown *
Summerside

Province Features

HP: 46°20' N, 63°25' W
Prince Edward Island National Park

Checklist 2: The North



Northwest Territories

Cities

Yellowknife *
Inuvik

Province Features

HP: Unnamed, at 62° N, 128° W, near source of Mackenzie River

Banks Island, Victoria Island

Great Bear Lake, Great Slave Lake, Nettilling Lake, Dubawnt Lake, Amadjuak Lake

Mackenzie River

National Parks: Wood Buffalo, Nahanni, Aulavik, Tukturnogait

Nunavut

Cities

Alert
Resolute
Gjoa Haven
Baker Lake
Iqaluit *

Province Features

HP: Barbeau Peak

North Magnetic Pole

Islands of the North

(Northwest Territories and Nunavut)

Ellesmere Island, Victoria Island, Baffin Island, Devon Island, Axel Heiberg Island, Melville Island, Bathurst Island, Banks Island, Somerset Island, Prince of Wales Island, Southampton Island

National Parks: Auyuittuq, Ellesmere Island

Yukon

Cities

Burwash Landing
Carmacks
Dawson
Faro
Mayo
Old Crow
Ross River
Snag
Teslin
Whitehorse *

Province Features

HP: Mount Logan (Highest point in Canada)

Mount St. Elias, Mount Lucania, King Peak, Mount Steele

National Parks: Kluane, Ivvavik, Vuntut

Checklist 3: The East



Ontario

Cities

Kingston
 London
 Niagara Falls
 North Bay
 Ottawa **
 Sandy Lake
 Sault Ste. Marie
 Thunder Bay
 Toronto *
 Windsor

Province Features

HP: Ishpatina Ridge
 Georgian Bay, Lake of the Woods
 Lake Nipigon, Lac Seul, Lake St. Clair
 Lakes Superior, Huron, Erie, Ontario
 National Parks: St. Lawrence Islands, Point Pelee,
 Georgian Bay Islands, Pukaskwa,
 Bruce Peninsula, Fathom Five

** national capital

Québec

Cities

Chicoutimi
 Îles de la Madeleine
 Kuujuaq
 Mont-Laurier
 Montreal
 Québec *
 Saint-Jovite
 Sept-Îles
 Sherbrooke
 Trois-Rivières

Province Features

HP: Mont D'Iberville (Mount Caubvick)
 La Grande Rivière
 Lac Mistassini, Lac à l'Eau Clair, Lake Bienville
 Réservoir Gouin
 Mont Jacques-Cartier, Mont Tremblant
 National Parks: Forillon, La Mauricie,
 Saguenay-St. Lawrence

Checklist 4: The Plains



Manitoba

Cities

Brandon
 Churchill
 Dauphin
 Island Lake
 Portage la Prairie
 Steinbach
 Thompson
 Winnipeg *

Province Features

HP: Baldy Mountain
 Lake Manitoba, Southern Indian Lake,
 Lake Winnipeg, Lake Winnipegosis
 National Parks: Riding Mountain, Wapusk

Saskatchewan

Cities

Moose Jaw
 Prince Albert
 Regina *
 Saskatoon

Province Features

HP: Cypress Hills
 Wollaston Lake, Lac La Ronge,
 Lake Athabasca, Reindeer Lake, Cree Lake
 National Parks: Prince Albert, Grasslands

Checklist 5: The West



Alberta

Cities

Banff
 Calgary
 Edmonton *
 Fort McMurray
 Grande Prairie
 High Level
 Jasper
 Medicine Hat
 Peace River
 Red Deer
 Slave Lake

Province Features

HP: Mount Columbia
 Lake Claire, Lesser Slave Lake
 Mount Assiniboine, Mount Alberta, North Twin
 National Parks: Banff, Waterton Lakes, Jasper,
 Elk Island

British Columbia

Cities

Castlegar
 Comox
 Dawson Creek
 Fort Nelson
 Kamloops
 Kelowna
 Nanaimo
 Prince George
 Prince Rupert
 Vancouver
 Victoria *

Province Features

HP: Fairweather Mountain (on Alaska border)
 Mount Robson, Mount Columbia,
 Mount Clemenceau, Mount Quincy Adams,
 Mount Goodsir, Mount Waddington
 Fraser River
 Vancouver Island, Graham Island, Moresby Island,
 Princess Royal Island, Banks Island, Pitt Island
 Williston Lake, Atlin Lake
 National Parks: Yoho, Glacier, Mount Revelstoke,
 Kootenay, Pacific Rim, Gwaii Haanas

Extension Activities

Activity One:

Whiteboard Mapping Game

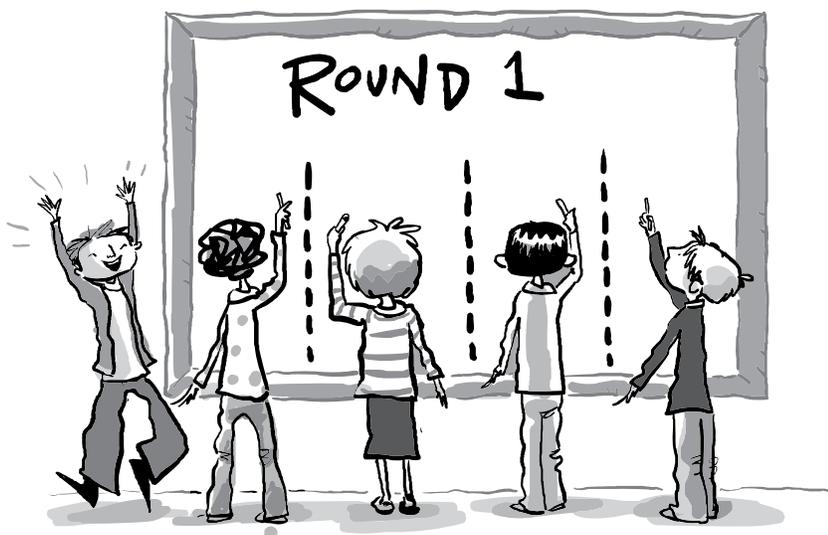
Entire class is involved or watching

10-15 minutes minimum, up to a full period

The class is divided into small groups or teams of 3 to 6 students. The whiteboard is then divided into equal sections and each group is assigned one section of the whiteboard. One student from each group goes to the board at the same time. The teacher then calls out a province or a group of provinces; the students draw those provinces. The first student to finish scores a point for his or her group (assuming the province is somewhat recognizable). One point may also be awarded for “most accurate” or “most beautiful” drawing of the province. Use a one-minute time limit for each drawing round.

After that round, the second student from each group comes to the board for the next turn.

Variations include instructing the students to add something different to the drawings of their provinces. “Draw Newfoundland with a cod in it.” “Draw Québec with Champlain exploring it.” “Draw the prairie provinces with our principal touching all of them.”



Activity Two:

Spring Fever Mapping

20 minutes (or more) needed

Sidewalk chalk on a sunny spring day is a great way to break the monotony of indoor mapping practice. Escort your class to the sidewalk or playground, hand out a piece of sidewalk chalk to each student, and ask them to practice drawing the provinces that they have learned. This is a great activity that sparks schoolwide interest (and amazement) in memory mapping, and shows other teachers and parents what the students have been learning.

Note: See the “Playground Maps” section of *Mapping the World by Heart*. Instructions there can easily be used to make a large permanent playground map of Canada.

Other Activities:

Be sure to see activities in the *Mapping the World by Heart* curriculum; these can be adapted to “Mapping Canada by Heart”.



Introduction

This appendix was designed to enrich and extend the “Mexico” section of *Mapping the World by Heart* to help teachers who wish to have their students map Mexico “by heart”. It was created by David J. Smith with the help of Lean Sweeney, a former student who mapped the world “by heart” and lived for many years in Mexico.

The introductory section is nearly the same as that for “Mapping the U.S. by Heart” and “Mapping Canada by Heart”; if you’ve already read those sections, or mapped the U.S. or Canada, you may want to move right along to the mnemonics and checklists.

Possibly, you’ve decided that *Mapping the World by Heart* is too hard, and mapping Mexico would be less rigorous; well, you’re right AND wrong. It is somewhat easier to get a class ready to map Mexico, with its small number of political divisions, but it really isn’t any easier to draw. When you add in labeling of states — plus cities, features, decorating, and the other steps necessary to complete the map — you’ll find it is still a major project requiring serious focus, preparation, and attention.

There are some schools where the U.S., Canada, or Mexico is mapped in one grade, and the world a year or two later. Teachers in these schools acknowledge that they spend the same amount of time on their programs; and that Mexican states, because they are bigger on the final map, require more careful drawing, labeling, and coloring.

If you’re new to the *Mapping the World by Heart* idea, you might find it less daunting to try the program with just Mexico the first year and then move on to the world (or get a teacher in the next grade interested).

In any case, as with *Mapping the World by Heart*, if you decide to try “Mapping Mexico by Heart,” do it exactly the way your teacherly judgement dictates — there is no right or wrong way to do this. It is a question of finding what fits best with your teaching style and your students’ abilities. Are they ready for a complex and detailed mapping experience? Would they be better served by focusing on the states and capitals, without adding a host of cities and features? Do you want to focus on a particular region (e.g., Central Mexico, The Southwest)?

Any of these approaches will serve you well; the decision is yours. Whatever you do, you will find tools to help you in these pages, and your students will benefit immensely.

Questions on “Mapping Mexico by Heart”? Feel free to email:
questionbox@mapping.com



Planning the Year

Here's a broad outline to help you fit *Mapping Mexico by Heart* into your school year. Adjust these guidelines to fit your time constraints and the particular content you have chosen.

A. Do the first six lessons from *Mapping the World by Heart* (the “Appetizer” section). Although these are world-oriented, they will help your students understand how maps work, how to read and draw maps, what latitude and longitude are, and more. Here are those six lessons; if you've already done them for *Mapping the World by Heart*, there's no need to do them again.

1. Blank Grid Lesson (substitute blank Mexico grid for the world grid)
2. Grapefruit Lesson (a must for understanding projections)
3. Latitude and Longitude Lesson (again, substitute Mexico locations as you wish)
4. Contour Maps (with young students, use a sand table to build and map hills)
5. Thematic Maps (use Mexico maps and Mexican themes where possible)
6. Local Geography



B. Fill in regions on blank outline maps, one region at a time. (Note that your students can easily work through one of these regions in a week. If you allow three or four weeks per region, you can cover the year and all of Mexico at a very relaxed pace.)

Master Checklist of Mexican Locations and Features

Checklist 1: The States Around the Sea of Cortez (Baja California, Baja California Sur, Sinaloa, Sonora)

Checklist 2: The U.S. Border (Chihuahua, Coahuila, Nuevo León, Tamaulipas)

Checklist 3: North Central Mexico (Aguascalientes, Durango, Guanajuato, Hidalgo, Querétaro, San Luis Potosí, Zacatecas)

Checklist 4: The Southwest (Jalisco, Nayarit, Colima, Michoacán, Guerrero)

Checklist 5: Central Mexico (Tlaxcala, Morelos, Puebla, Distrito Federal, México, Veracruz)

Checklist 6: The Southeast (Oaxaca, Tabasco, Chiapas, Campeche, Yucatán, Quintana Roo)

C. Follow the steps for the “final activities” and the final formal map that you will find at the end of *Mapping the World by Heart*; substitute Mexico maps and grids.

Tips for Teachers



In teaching how to draw each region, the amount of teacher involvement will vary from grade level to grade level, as well as from region to region within one grade. Different teachers will find different ways to interact with their classes about the material, how to draw the regions, and so on. There is a short list of mnemonics in this guide; your students may find it useful, but encourage them to develop their own strategies and to share them with you and their classmates.

Probably the most important time in the “getting ready to make the final map” period is what David refers to as “coping questions” — students can ask for help about particular locations or borders or shapes that they find hard, and other students can share their discoveries of how to map those items.

For your students who have fine-motor issues or difficulties with spatial relationships, a little extra handholding may be needed as they get ready to map. This can also be true of your “perfectionists”. In our experience, you may find one or two students a year who may need some kind of special adaptation of the program — the ability to have a list of the states in front of them, for example. We encourage you to be very strict about this, and not give in to the temptation of “helping” anybody, unless there is really no other choice and it is clear that NOT helping will prevent the student from completing, and enjoying, the project. Our best and most satisfying results have often come from our “resource room” students, those who have mastered in May what they thought in September would be totally impossible.

Mnemonics

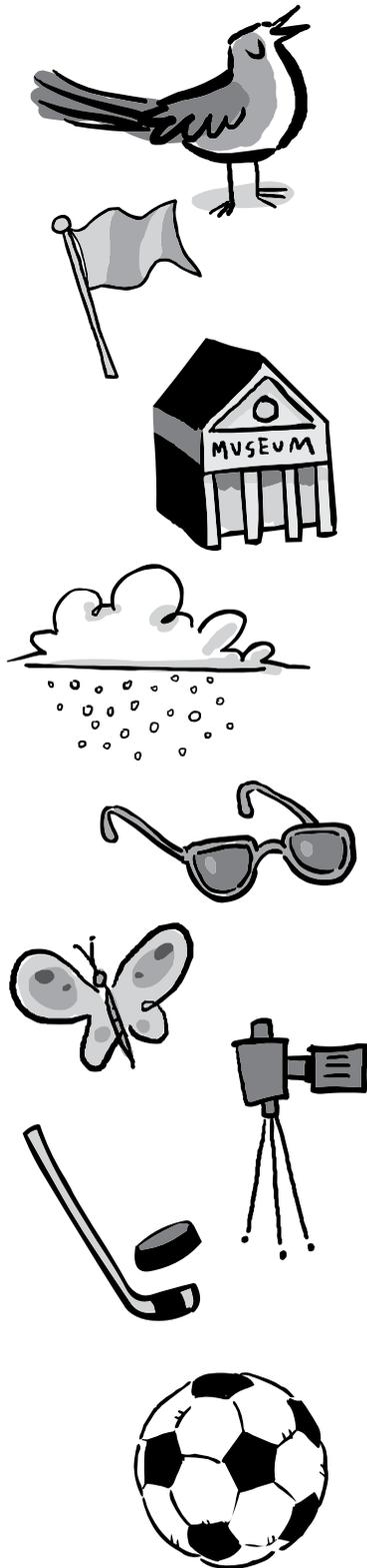


Some Mexican Map Mnemonics (Drawing Hints and Memory Aids) from Students:

Have your students create and share their own.

- Mexico looks like a drinking cup, with Baja as the handle.
- México Distrito Federal is surrounded on three sides by México State.
- The Yucatán Peninsula has a “Y” in the middle that divides three states.
- The Baja Peninsula extends south to about the same latitude as the northern edge of the Yucatán.
- Coahuila and Chihuahua form two bumps, about the same size, projecting into the U.S.
- The narrowest part of Mexico, the Isthmus of Tehuantepec, is formed by Oaxaca and Veracruz, with Tabasco in the northeast.
- The Gulf of Mexico forms the Letter “G”.
- Guanajuato, Querétaro, and Hidalgo on the north form a “sandwich” with Guerrero on the south; the filling is the Distrito Federal, México State, and Morelos.

Some Things for Which Mexican States are Known



The size and scale of a memory map of Mexico has one distinct advantage over a world map: on a Mexico map the space is large enough, and the border roomy enough, for lots of interesting decoration. Students often use state flags, birds, or other themes to decorate the margin. Here is a list of some themes students like to use; your students will undoubtedly think of others. Not every state has every one of these, but with some careful research, students will find some interesting themes for mapping and decorating.

- “official” flag, seal, fruit, bird, insect, food, song, animal
- monuments and museums
- national parks, state parks
- high points
- products
- weather
- temperatures
- music
- forts
- historic sites and events, trails, etc.
- minerals
- tourist attractions
- sports
- sports teams
- indigenous peoples — dwellings, sites, etc.
- “biggest” or “tallest” (etc.)
- slogans
- events and festivals

Mapping Mexico by Heart Checklists

General Considerations



None of these checklists is intended to be comprehensive.

Several cities are shown for each state; the capital is always shown, and other cities are shown as much for geography as for importance. There may be bigger or more important cities. Each teacher and mapmaker is encouraged to locate and label any cities that are relevant to their understanding of the state's cultures, history, population, trade, etc.

Similarly, you'll find several features shown for each state. These include the highest points in Mexico (marked **HP**), plus some rivers, lakes, and various other features. Again, you are encouraged to delete these features and/or insert your own choices for these lists.

There is some duplication from one state to its neighbors when there is shared contact with a river, bay, or other feature. It's only necessary to label each item one time.

You and your students will probably devise mnemonics of your own as you work through these checklists and maps. If you do, please email them to mnemonics@mapping.com for inclusion in the next edition of this curriculum.

Master Checklist of Mexican Locations and Features



States and Capitals

Aguascalientes	Aguascalientes *
Baja California	Mexicali *
Baja California Sur	La Paz *
Campeche	Campeche *
Chiapas	Tuxtla Gutiérrez *
Chihuahua	Chihuahua *
Coahuila	Saltillo *
Colima	Colima *
Distrito Federal [D.F.] (the location of Mexico City – like Washington, DC)	
Durango	Durango *
Guanajuato	Guanajuato *
Guerrero	Chilpancingo *
Hidalgo	Pachuca *
Jalisco	Guadalajara *
México	Toluca *
Michoacán	Morelia *
Morelos	Cuernavaca *
Nayarit	Tepic *
Nuevo León	Monterrey *
Oaxaca	Oaxaca *
Puebla	Puebla *
Querétaro	Santiago de Querétaro *
Quintana Roo	Chetumal *
San Luis Potosí	San Luis Potosí *
Sinaloa	Culiacán *
Sonora	Hermosillo *
Tabasco	Villahermosa *
Tamaulipas	Ciudad Victoria *
Tlaxcala	Tlaxcala *
Veracruz	Jalapa *
Yucatán	Mérida *
Zacatecas	Zacatecas *

Mexico's Neighbors

- United States (California, Arizona, New Mexico, Texas)
- Guatemala
- Belize

Mountains

Pico del Águila (México)	Nevado de Colima (Colima)
El Coahuilón (Coahuila)	Nevado de Toluca (México)
Cofre de Perote (Veracruz)	Pico de Orizaba (HP in Mexico) (Veracruz)
Peña Nevada (Colima)	Paso de Cortés (pass between Popocatepetl and Iztaccíhuatl) (Puebla/México)
Iztaccíhuatl (México/Puebla)	Peninsular Ranges (Baja Peninsula)
Sierra Juárez (Baja California)	Popocatepetl (México/Puebla)
Sierra Madre Occidental (Western Range)	Cerro Potosí (Nuevo León)
Sierra Madre Oriental (Eastern Range)	Sierra de la Laguna (Baja California Sur)
Sierra Madre del Sur (Southern Range)	Sierra de los Tuxtlas (Veracruz)
Matlalcueitl (also La Malinche) (Tlaxcala)	Sierra de la Giganta (Baja California Sur)
Sierra Negra (Peak) (Puebla)	Cerro de la Silla (Nuevo León)
Sierra Negra (Range) (Puebla)	

Selected Rivers

Rivers into the Pacific

Colorado River (Baja/Sonora Border — Sea of Cortez, Mar de Cortés)
Balsas River (through Puebla and Guerrero)
Culiacán River (Tamazula River and Humaya River meet in Culiacán)
Río Fuerte (Sinaloa)
Río Nuevo (Baja California into the U.S.)
Río Grande de Santiago (from Lake Chapala into the Pacific Ocean)
Tijuana River (flows from Baja California into the U.S. near San Diego)
Usumacinta River (border between Chiapas and Guatemala)
Yaqui River (Sonora; flows into Sea of Cortez)

Rivers to Gulf of Mexico and the Atlantic

Río Bravo del Norte – known as the Río Grande in the U.S. (U.S./Mexico border)
Río Conchos (flows into the Río Grande in Chihuahua)
Río Hondo (México/Belize border)
Río Papaloapan (Veracruz into Gulf of Mexico)
Río Pánuco (Veracruz)

Other Rivers

Río Grijalva (Chiapas/Tabasco)

Río Coatzacoalcos (Veracruz)

Río Candelaria (Campeche)

Río Tecolutla (Veracruz)

Río Tonalá (Tabasco/Veracruz)

Río Tuxpan (Veracruz)

Río San Pedro Mezquital (Nayarit)

Río Verde (San Luis Potosí)

Río Jamapa (Veracruz)

Río Antigua (Veracruz)

Río Ameca (Jalisco)

Río Suchiate (Chiapas/Guatemala)

Río Sinaloa (Sinaloa)

Río Nautla (Veracruz)

Selected Lakes

Lago Catemaco (Veracruz)

Lago Chapala (border between Jalisco and Michoacán)

Lago de Cuitzeo (Michoacán)

Lago Ouiachic (fed and drained by the Yaqui River)

Lago de Pátzcuaro (Michoacán)

Oceans, Seas, and Bays

Atlantic Ocean

Pacific Ocean

Caribbean Sea

Gulf of California (Sea of Cortez)

Gulf of Mexico

Bahía de Campeche (Campeche)

Golfo de Tehuantepec (Chiapas)

Bahía Sebastián Vizcaíno (Baja California)

Bahía de Banderas (Jalisco)

Islands

Isla Ángel de la Guarda (east of Baja California)

Cancún (Yucatán)

Cedros (west of Baja California)

Cozumel (near Cancún)

Espíritu Santo (Sea of Cortez)

Guadalupe Island (west of Baja California)

Magdalena Island (west of Baja California)

Isla Santa Margarita (south of Isla Magdalena)

Islas Marías (island group 100 KM west of Nayarit)

Islas San Benito (3 small islands 40 miles west of Baja California)

Isla del Cármen (Gulf of Mexico, off Campeche)

Isla Mujeres (NE of Yucatán)

Natividad (near Isla Cedros)

Revillagigedo (island group south of Baja California Sur)

Tiburón (Sea of Cortez, off Sonora)

Checklist 1: The States Around the Sea of Cortez (Gulf of California)



Baja California

Cities

Mexicali *
Tijuana
Playas de Rosarito

State Features

Río Colorado
Isla Cedros
Isla Espíritu Santo
Isla Guadalupe
Isla Magdalena
Islas San Benitos
Isla Natividad
Isla Santa Margarita

Sierra de San Pedro Mártir
Isla Ángel de la Guarda
Sierra Juárez
New River/Río Nuevo
Tijuana River

Baja California Sur

Cities

La Paz *
San José del Cabo
Cabo San Lucas

State Features

Sierra de la Giganta
Sierra la Laguna
Islas Revillagigedo

Sinaloa

Cities

Culiacán *
Mazatlán
Los Mochis

State Features

Río Sinaloa
Río Culiacán
Río Tamazula
Río Humaya
Miguel Hidalgo
Río Fuerte

Sonora

Cities

Hermosillo *
Ciudad Obregón
Alamos
Guaymas

State Features

Isla Tiburón
Río Colorado
Río Magdalena
Río Moctezuma
Río Yaqui
Lago Quiachic

Checklist 2: The U.S. Border



Chihuahua

Cities

Chihuahua *
 Ciudad Juárez
 Hidalgo del Parral
 Cuauhtémoc

State Features

Sierra Madre Occidental
 Barranca del Cobre (Copper Canyon)
 Río Bravo del Norte
 Río Conchos
 North Central Plateau

Coahuila

Cities

Saltillo *
 Torreón
 Piedras Negras
 Monclova

State Features

Sierra de la Encantada
 Sierra de Tlahualillo
 Río Bravo International Park
 Los Novillos National Park
 Presa de La Amistad
 El Coahuilón
 Río Salado
 Sierra del Huacha

Nuevo León

Cities

Monterrey *
 Cerralvo

State Features

Cerro Potosí
 Cerro de la Silla
 Cerro Desmoronado

Tamaulipas

Cities

Ciudad Victoria *
 Tampico
 Ciudad Madero
 Matamoros
 Reynosa

State Features

Laguna Madre
 Río San Fernando
 Río Tamesi

Checklist 3: North Central Mexico



Aguascalientes

Cities

Aguascalientes *
 Jesús María

State Features

Rincón de Romos

Durango

Cities

Durango *
 Gómez Palacio

State Features

Río Nazas Cerro Chorreras
 Río El Presidio Valle de Guadiana
 Río San Pedro
 Sierra San Juan de Minas

Guanajuato

Cities

Guanajuato *
 León
 San Miguel de Allende

Cities

Dolores Hidalgo
 Irapuato

State Features

Sierra de Guanajuato
 Río Santa María

Hidalgo

Cities

Pachuca *

State Features

Tula Ruins

Querétaro

Cities

Santiago de Querétaro *
 San Juan del Río
 Tequisquiapan

State Features

Río Santa María

San Luis Potosí

Cities

San Luis Potosí *
 Valles
 Matehuala

State Features

Río Santa María
 Río Verde

Zacatecas

Cities

Zacatecas *
 Fresnillo

State Features

(Mount) Yerbabuena
 La Quemada Ruins

Checklist 4: The Southwest



Jalisco

Cities

Guadalajara *
Puerto Vallarta
Tequila

State Features

Río Grande de Santiago
Río Ameca
Lago Chapala
Valle de Bravo

Nayarit

Cities

Tepic *
San Blas

State Features

Río San Pedro Mezquital
Río Huaynamota
Islas Marías
Río Grande de Santiago

Colima

Cities

Colima *
Manzanillo

State Features

Nevado de Colima
Peña Nevada

Michoacán

Cities

Morelia *
Uruapan
Pátzcuaro
Lázaro Cárdenas

State Features

Lago Chapala
Lago de Cuitzeo
Presa del Infiernillo
Paricutín Volcano
Tzintzuntzan Ruins
Lago Pátzcuaro

Guerrero

Cities

Chilpancingo (de los Bravo) *
Acapulco
Taxco
Ixtapa
Zihuatanejo

State Features

Sierra Madre del Sur
Río Balsas

Checklist 5: Central Mexico



Distrito Federal

Cities

México (Federal Capital)

State Features

Cuicuilco Ruins
Tenochtitlán Ruins

México

Cities

Toluca *
Texcoco
Tepetzotlán

State Features

Lagunas de Zempoala National Park
Iztaccíhuatl
Popocatepetl
Nevado de Toluca
Paso de Cortés
Valle de Bravo
Teotihuacán Ruins
Pico del Águila

Tlaxcala

Cities

Tlaxcala *
Apizaco

State Features

Cacaxtla Ruins
Matlalcueitl (also called La Malinche)

Morelos

Cities

Cuernavaca *
Cautla
Tepoztlán

State Features

Cacahuamilpa Cave
Tepozteco Ruins
Xochicalco Ruins



Puebla

Cities

Puebla *
Tehuacán
Cholula

State Features

Río Balsas
Cholula Ruins
Paso de Cortés
Pico de Orizaba (HP in Mexico)
Popocatepetl (2nd highest point in Mexico)
Iztaccíhuatl (3rd highest point in Mexico)
Sierra Negra (4th highest point, and also a small range of mountains)

Veracruz

Cities

Jalapa *
Veracruz
Córdoba
Tuxpan
San Andrés Tuxtla
Papantla
Poza Rica
Coatzacoalcos

State Features

Pico de Orizaba (HP in Mexico)
Río Papaloapan
Río Pánuco
Río Coatzacoalcos
Río Tecolutla
Río Tonalá
Río Tuxpan
Río Jamapa
Río Antigua
Río Nautla
Río Lana
Cofre de Perote
El Tajín Ruins
Sierra de los Tuxtlas
Lago Catemaco

Checklist 6: The Southeast



Oaxaca

Cities

Oaxaca *
 Huatulco
 Puerto Escondido
 Tehuantepec
 Coatzacoalcos

State Features

Lagunas de Chacahua National Park
 Río Lana
 Río Verde
 Lago Miguel Alemán
 Monte Albán Ruins
 Mitla Ruins
 Sierra Madre del Sur

Tabasco

Cities

Villahermosa *
 Teapa

State Features

Río Tonalá
 La Venta Ruins
 Comalcalco Ruins
 Río San Pedro

Chiapas

Cities

Tuxtla Gutiérrez *
 San Cristóbal de las Casas
 Tapachula
 Comitán

State Features

Río Usumacinta
 Río Grijalva
 Río Suchiate
 Bonampak Ruins
 Yaxchilán Ruins
 Palenque Ruins
 Presa de la Angostura
 Presa Nezahualcóyotl



Campeche

Cities

Campeche *
Escárcega
Ciudad del Carmen

State Features

Río Candelaria
Edzná Ruins
Calakmul Ruins
Becán Ruins
Laguna de Términos

Yucatán

Cities

Mérida *
Izamal
Progreso
Sisal
Valladolid

State Features

Chichén Itzá Ruins
Uxmal Ruins
Dzibilchaltún Ruins

Quintana Roo

Cities

Chetumal *
Cancún
Cozumel
Playa del Carmen

State Features

Río Hondo
Tulum Ruins
Cobá Ruins
Kohunlich Ruins

Extension Activities

Activity One:

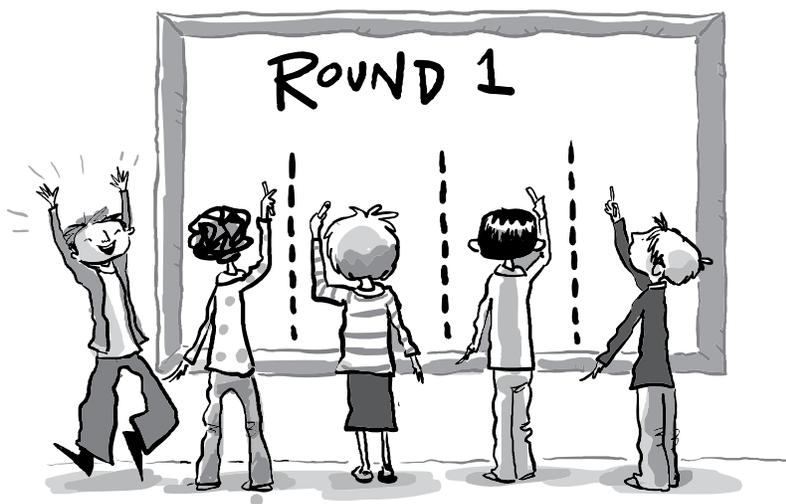
Whiteboard Mapping Game

*Entire class is involved or watching
10-15 minutes minimum, up to a full period*

The class is divided into small groups or teams of 3 to 6 students. The whiteboard is then divided into equal sections, and each group is assigned one section of the whiteboard. One student from each group goes to the board at the same time. The teacher then calls out a state or a group of states; the students draw those states. The first student to finish scores a point for his or her group (assuming the state is somewhat recognizable). One point may also be awarded for “most accurate” or “most beautiful” drawing of the state. Use a one-minute time limit for each drawing round.

After that round, the second student from each group comes to the board for the next turn.

Variations include instructing the students to add something different to the drawings of their states. “Draw Yucatán with a fish in it.” “Draw Distrito Federal with Spanish and Aztecs meeting.” “Draw the Gulf of Cortez states with our school principal touching all of them.”



Activity Two:

Spring Fever Mapping

20 minutes (or more) needed

Sidewalk chalk on a sunny spring day is a great way to break the monotony of indoor mapping practice. Escort your class to the sidewalk or playground, hand out a piece of sidewalk chalk to each student, and ask them to practice drawing the states that they have learned. This is a great activity that sparks schoolwide interest (and amazement) in memory mapping, and shows other teachers and parents what the students have been learning.

Note: See the “Playground Maps” section of *Mapping the World by Heart*. Instructions there can easily be used to make a large permanent playground map of Mexico.

Other Activities:

Be sure to see activities in the *Mapping the World by Heart* curriculum; these can be adapted to “Mapping Mexico by Heart”.



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