Geography Lesson Plan

Cycle 2: Old World

		textbook	supplemental materials
Week 1	Relief, Latitude & Longitude	pp. 10-13, 16-17, 178-179	
Week 2	Projections		
Week 3	Europe: Physical—Waters		
Week 4	Europe: Physical—Lands		
Week 5	Europe: Major Cities		
Week 6	Europe: Political		

		textbook	supplemental materials
Week 13	Tectonic Plates & Catastophic Plate Tectonic Theory, Part 1	pp. 14-15	Catastophic Plate Tectonic Theory resource
Week 14	Tectonic Plates & Catastophic Plate Tectonic Theory, Part 2	pp. 14-15	Catastophic Plate Tectonic Theory resource
Week 15	Africa: Physical—Waters		
Week 16	Africa: Physical—Lands		
Week 17	Africa: Major Cities		
Week 18	Africa: Political		

		textbook	supplemental materials
Week 25	Middle East		
Week 26	Central Asia		
Week 27	Russia & Siberia		Britannica Online Siberia article
Week 28	East Asia (China)		Chinese Characters & Genesis article
Week 29	Southeast Asia		
Week 30	South Asia (India)		

Theme to return cover, repeatedly, every year: Why are political lines, cities, languages divisions where they are on maps?
Dangers of using maps to artificially divide up the earth.

Geography

Relief, Latitude & Longitude

Cycle 2, Week 1

Key Verse:
The earth *is* the Lord's, and all that therein is; the world and they that dwell therein.
Psalm 24:1

Getting Ready

1. Have children sit around their mothers, so they can look at the pictures in *Exploring the World Through Cartography* with her.

2. Pass out map handouts and colored pencils.

   - Globe, use throughout lesson as helpful
   - Relief World Map – no coloring on this one! Only to look at.
   - Blackline World Map – trace or color, if they want to, during the lesson.

To Start

1. Explain Key Verse.

2. GEOG'RAPHY, noun [Gr. the earth, and to write, to describe.] Properly, a description of the earth or terrestrial globe, particularly of the divisions of its surface, natural and artificial, and of the position of the several countries, kingdoms, states, cities, etc. As a science, geography includes the doctrine or knowledge of the astronomical circles or divisions of the sphere, by which the relative position of places on the globe may be ascertained, and usually treatises of geography contain some account of the inhabitants of the earth, of their government, manners, etc., and an account of the principal animals, plants and minerals. (Noah Webster's 1828)

3. CARTOGRAPHY is the science or art of making maps. (M-W.com) Cartographers are mapmakers.

Relief

1. Read & explain *Cartography* pp. 12-13. Have them look at their relief maps.

2. Before moving on, have them look at their maps again; ask:

- Make sure they really understand what the colors mean (those are *not* the colors of the earth, but a chart to tell you what the elevations/terrains are).
- Who can find some of the highest places on earth?
- Who can find some of the lowest places on the earth?
- Compare with satellite picture on page 20; what do the colors mean in this picture? (They're the actual colors of the earth.)

Latitude & Longitude

1. Read & explain *Cartography* pp. 16-17. *Note:* I would only expect our older students to understand this, but the younger ones will benefit from hearing about it, anyway; it will help them be ready to understand it when they come across latitude and longitude in the years to come. But the olders should really benefit from this.

2. Mention important lines of latitude:

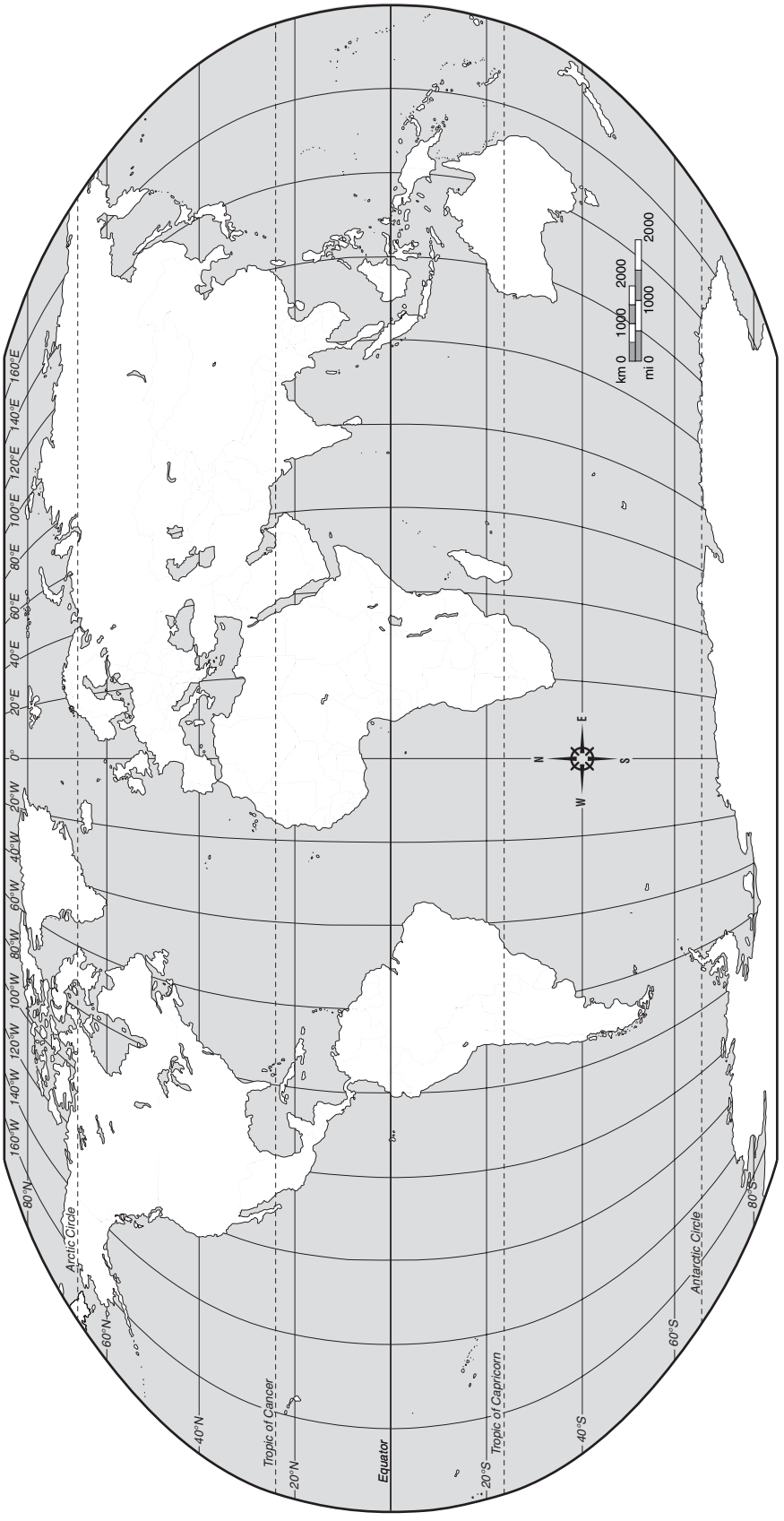
    - Explain how the degree numbers work – equator is 0°, and the numbers ascend to 180° N at the North Pole, and 180° S at the South Pole.
    - Equator
    - Arctic & Antarctic Circles
    - Tropics of Capricorn & Cancer
    - Equator divides the world into Northern and Southern Hemispheres.
    - Hemisphere comes from the Greek and means half of a sphere or globe.

3. Mention important lines of longitude:

    - Explain how the degree numbers work – Prime Meridian is 0°, and the numbers ascend going East and West, til they meet at the other side of the world at 180°.
    - Prime Meridian goes through Greenwich, England.
    - Once the Prime Meridian (0°) crosses the pole, though, it becomes the International Date Line (180°).
    - Prime Meridian divides the world into Eastern and Western Hemisphers.

Name _____ Date _____

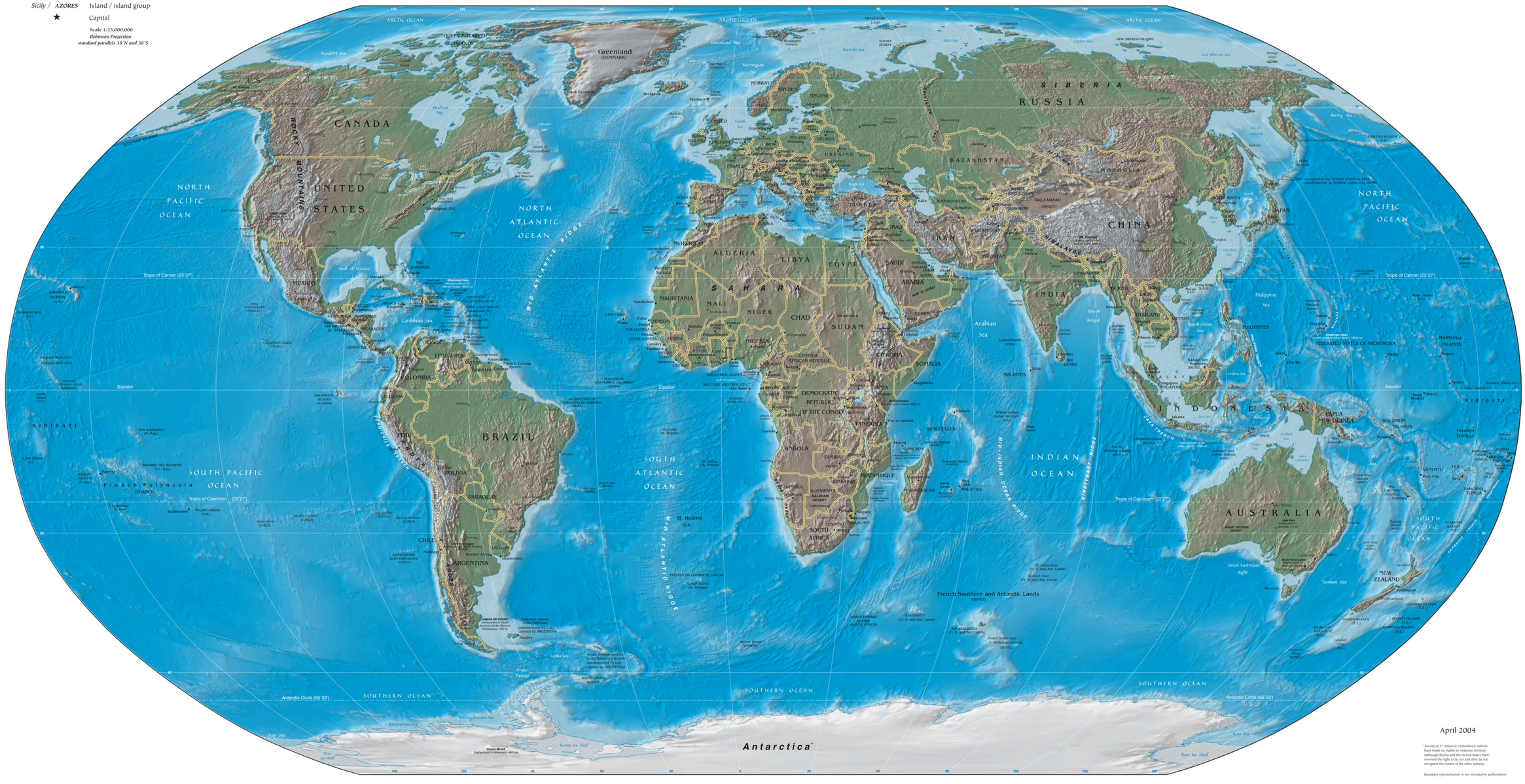
World Continents



Physical Map of the World, April 2004

AUSTRALIA	Independent state
Bermuda	Dependency or area of special sovereignty
Sicily / *AZORES*	Island / island group
★	Capital

Scale 1:35,000,000
Robinson Projection
standard parallels 38°N and 38°S



April 2004

*Twenty of 27 Antarctic consultative nations have made no claims to Antarctic territory (although Russia and the United States have reserved the right to do so) and they do not recognize the claims of the other nations.

Boundary representation is not necessarily authoritative.

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GEOGRAPHY

PROJECTIONS

Cycle 2, Week 2

Key Verse:

The earth *is* the Lord's, and all that therein is; the world and they that dwell therein.
Psalm 24:1

Getting Ready

1. Have children sit around their mothers, so they can look at the pictures in *Exploring the World Through Cartography* with her.

2. Pass out map handouts and colored pencils.

    - Globe, use throughout lesson as helpful
    - Relief World Map – no coloring on this one! Only to look at.
    - Blackline World Map – trace or color, if they want to, during the lesson.

To Start

1. Explain Key Verse.

2. GEOG'RAPHY, noun [Gr. the earth, and to write, to describe.] Properly, a description of the earth or terrestrial globe, particularly of the divisions of its surface, natural and artificial, and of the position of the several countries, kingdoms, states, cities, etc. As a science, geography includes the doctrine or knowledge of the astronomical circles or divisions of the sphere, by which the relative position of places on the globe may be ascertained, and usually treatises of geography contain some account of the inhabitants of the earth, of their government, manners, etc., and an account of the principal animals, plants and minerals. (Noah Webster's 1828)

3. CARTOGRAPHY is the science or art of making maps. (M-W.com) Cartographers are mapmakers.

Briefly Review Relief Maps and Latitude & Longitude, from last week

Geography

Different Kinds of Maps

1. Turn to page 178, and compare this world map with the children's relief world maps. Ask:

    - What's the first thing you notice about the map on p. 178? (For me, it's the lines of latitude and longitude; others might notice the political boundaries; others might even notice that ridiculously big Antarctica!)
    - What's the most noticeable thing about your relief map? (For me, it's the relief colors.)
    - The world is so much greater than can possibly fit onto a map, so mapmakers (cartographers) choose which things they want most to emphasize in their different maps. Whichever aspect of our world cartographers focus on getting absolutely correct, they will have to sacrifice accuracy of other aspects of our world. This does not make one type of map necessarily *better* than another; they show *different* things! In this class, we will intentionally use lots of different types of maps.
    - Now also look at the globe and notice which things are more accurate. But that's a lot harder to carry around or put in a book, isn't it?

Projections

1. Read & explain *Cartography* pp. 10-11. *Note:* Again, the older students are going to understand this a lot better than the younger ones, but they should all at least understand the basic premise, that the world is round and paper isn't!

2. Look at the Miller Projection, and point out its shortcomings. For example:

    - In real life, Greenland is much smaller than Australia, not bigger!
    - In reality, Antarctica is smaller than Africa (which is huge); it's not much bigger than the United States.
    - For fun, continents ranked by size: Asia, Africa, North America, South America, Antarctica, Europe, Australia.
    - Explain why this projection distorts sizes and shapes in the high latitudes so greatly; but also note the reasons why it is helpful to use this projection, because it keeps the lines of latitude straight – and in reality they are straight up and down (though curved in the 3rd dimension).

3. Compare map on page 178 with handout relief map again. Note the different projection.

EUROPE
PHYSICAL—SEAS & WATERWAYS

Cycle 2, Week 3

Key Verse:
The earth *is* the Lord's, and all that therein is; the world and they that dwell therein.
Psalm 24:1

Getting Ready

1. Have children sit around their mothers, so they can look at the pictures in *Exploring the World Through Cartography* with her.

2. Pass out map handouts and colored pencils.

   - Europe Physical Map—no coloring on this one! Only to look at.
   - Europe Physical Map Blackline Map—trace or color, if they want to, during the lesson.
   - Europe vs. Texas Map.

To Start

1. Explain Key Verse.

2. GEOG'RAPHY, noun [Gr. the earth, and to write, to describe.] Properly, a description of the earth or terrestrial globe, particularly of the divisions of its surface, natural and artificial, and of the position of the several countries, kingdoms, states, cities, etc. As a science, geography includes the doctrine or knowledge of the astronomical circles or divisions of the sphere, by which the relative position of places on the globe may be ascertained, and usually treatises of geography contain some account of the inhabitants of the earth, of their government, manners, etc., and an account of the principal animals, plants and minerals. (Noah Webster's 1828)

3. CARTOGRAPHY is the science or art of making maps. (M-W.com) Cartographers are mapmakers.

4. Show satellite photo, *Cartography*, pp. 56–57.

Geography

Drill

1. English Channel
2. Thames
3. North Sea
4. Rhine
5. Baltic Sea
6. Caspian Sea
7. Danube
8. Black Sea
9. Mediterranean Sea
10. Bosporus (by **B**lack Sea!)
11. Dardanelles (by Me**D**iterranean)
12. Aegean Sea
13. Ionian Sea
14. Adriatic Sea
15. Straits of Gibraltar (see p. 81)
16. Seine

Europe Physical

Only time to drill and re-drill, because of so many features to learn!

Drill Again

ICELAND
Surtsey
Horn
Fontur
Arctic Circle
NORWEGIAN SEA
ATLANTIC OCEAN
FAROE ISLANDS (Den.)
Lofoten Islands
Kebnekaise 6,926 Ft. 2,111m
Lapland
Murmansk
Kola Peninsula
WHITE SEA
Scandinavian Peninsula
Gulf of Bothnia
FINLAND
NORWAY
SWEDEN
Galdhøpiggen 8,100 Ft. 2,469m
Helsinki
Lake Ladoga
Lake Onega
Gulf of Finland
Stockholm
Hebrides
Orkney Islands
Grampian Mts.
Land Elevation
Meters
Feet
3,000
9,840
2,000
6,560
500
1,640
200
656
0
0
Water Depth
0
0
200
656
2,000
6,560
UNITED KINGDOM
NORTH SEA
Skagerrak
Vänern
Vättern
Öland
BALTIC SEA
ESTONIA
Lake Peipus
Rybinsk Res.
RUSSIA
Moscow
Valdai Hills
LATVIA
DENMARK
Cheviot Hills
IRELAND
Irish Sea
Great Britain
St. George's Channel
Thames
London
Bornholm (Den.)
LITHUANIA
RUSSIA
Northern European Plain
Central Russian Upland
BELARUS
NETHERLANDS
Berlin
GERMANY
POLAND
English Channel
Strait of Dover
BELGIUM
LUX.
Paris
Paris Basin
CZECH REPUBLIC
Kiev
UKRAINE
Dnieper Lowland
Donets Basin
KAZAKHSTAN
Caspian Depression
Ural Mountains
Northern Uvals (Uplands)
Timan Ridge
ASIA
0 100 200 300 400 Miles
0 200 400 600 Kilometers
Copyright by Rand McNally & Co.
Lambert Conformal Conic Projection
FRANCE
Bay of Biscay
Black Forest
Bohemian Forest
SLOVAKIA
Carpathian Mts.
MOLDOVA
Jura
SWITZERLAND
LIECH.
AUSTRIA
HUNGARY
Great Hungarian Plain
ROMANIA
Transylvanian Alps
Sea of Azov
Crimean Peninsula
Caucasus
Mt. Elbrus 18,510 Ft. 5,642m
GEORGIA
ARMENIA
AZERBAIJAN
CASPIAN SEA
Mt. Blanc 15,771 Ft. 4,808m
Alps
Massif Central
SLOVENIA
CROATIA
BOSNIA AND HERZEGOVINA
Cantabrian Mts.
Pyrenees
ANDORRA
Iberian Peninsula
Iberian Mts.
Lisbon
PORTUGAL
SPAIN
Sierra Morena
MONACO
Corsica (Fr.)
SAN MARINO
Apennines
Dinaric Alps
ADRIATIC SEA
Balkan Peninsula
YUGOSLAVIA
BULGARIA
BLACK SEA
Istanbul
Rome
ITALY
ALBANIA
MACEDONIA
Balearic Islands
Minorca
Majorca
Ibiza
Sardinia (It.)
Vesuvius 4,190 Ft. 1,277m
Mt. Olympus 9,570 Ft. 2,917m
GREECE
AEGEAN SEA
TURKEY
IRAN
Tehran
UZBEKISTAN
TURKMENISTAN
Aral Sea
Strait of Gibraltar
GIBRALTAR (U.K.)
TYRRHENIAN SEA
Mt. Etna 10,902 Ft. 3,323m
Sicily
IONIAN SEA
Algiers
AFRICA
MOROCCO
ALGERIA
TUNISIA
MEDITERRANEAN SEA
MALTA
Crete
Rhodes
NORTH CYPRUS
CYPRUS
SYRIA
IRAQ
LEBANON


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North Sea
United Kingdom
Denmark
Hamburg
Ireland
Birmingham
Berlin
Netherlands
Polan
London
Belgium
Germany
Cologne
Prague
Kra
Czech Rep
Paris
Munich
Bratislava
Slo
Vaduz
Austria
France
Hun
Zagreb
Milan
Croatia
Turin
Marseille
Italy
Rome
Barcelona
Portugal
Madrid
Tyrrhenian Sea
Lisbon
Spain

GEOGRAPHY

EUROPE
PHYSICAL—LAND FEATURES

Cycle 2, Week 4

Key Verse:
The earth *is* the Lord's, and all that therein is; the world and they that dwell therein.
Psalm 24:1

Getting Ready

1. Have children sit around their mothers, so they can look at the pictures in *Exploring the World Through Cartography* with her.

2. Pass out map handouts and colored pencils.

   - Europe Physical Map—no coloring on this one! Only to look at.
   - Europe Physical Map Blackline Map—trace or color, if they want to, during the lesson.
   - Europe vs. Texas Map.

To Start

1. Explain Key Verse.

2. GEOG'RAPHY, noun [Gr. the earth, and to write, to describe.] Properly, a description of the earth or terrestrial globe, particularly of the divisions of its surface, natural and artificial, and of the position of the several countries, kingdoms, states, cities, etc. As a science, geography includes the doctrine or knowledge of the astronomical circles or divisions of the sphere, by which the relative position of places on the globe may be ascertained, and usually treatises of geography contain some account of the inhabitants of the earth, of their government, manners, etc., and an account of the principal animals, plants and minerals. (Noah Webster's 1828)

3. CARTOGRAPHY is the science or art of making maps. (M-W.com) Cartographers are mapmakers.

Geography

Drill

1. Britain
2. Ireland
3. Scandinavian Penninsula
4. Ural Mountains
5. Caucasus Mountains
6. Pelopenessus
7. Balkan Pennisula
8. Apennines
9. Alps
10. Iberian Pennisula
11. Black Forest

Europe Physical

Turn to *Cartography* p. 56–57.

- Review how to understand a physical/relief map.
- Review projections; compare our Europe Physical map with the one on p. 60.
- Point out size of Europe, use Europe vs. Texas Map.
- Look at pictures on pages 58–87, as time permits, exploring natural beauty and culture of Europe.

Drill Again

Geography

Europe
Major Cities

Cycle 2, Week 5

Key Verse:
The earth *is* the Lord's, and all that therein is; the world and they that dwell therein.
Psalm 24:1

Getting Ready

1. Have children sit around their mothers, so they can look at the pictures in *Exploring the World Through Cartography* with her.

2. Pass out map handouts and colored pencils.

   - Europe Cities Map—no coloring on this one! Only to look at.
   - Europe Cities Blackline Map—trace or color, if they want to, during the lesson.

To Start

1. Explain Key Verse.

2. GEOG'RAPHY, noun [Gr. the earth, and to write, to describe.] Properly, a description of the earth or terrestrial globe, particularly of the divisions of its surface, natural and artificial, and of the position of the several countries, kingdoms, states, cities, etc. As a science, geography includes the doctrine or knowledge of the astronomical circles or divisions of the sphere, by which the relative position of places on the globe may be ascertained, and usually treatises of geography contain some account of the inhabitants of the earth, of their government, manners, etc., and an account of the principal animals, plants and minerals. (Noah Webster's 1828)

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Geography

Drill

1. Rome
2. Athens
3. Istanbul (Constantinople)
4. Vienna
5. Prague
6. Berlin
7. Moscow
8. St. Petersburg
9. Copenhagen
10. Amsterdam
11. Geneva
12. Paris
13. London
14. Madrid
15. Lisbon

Europe Physical

Turn to *Cartography* p. 56–57.

- Review how to understand a physical/relief map.
- Look at pictures on pages 58–87, as time permits, exploring natural beauty and culture of Europe.

Drill Again


GREENLAND
Kalaallit Nunaat
(Denmark)
NORWEGIAN SEA
Jan Mayen
(Norway)
North Cape
New Zemlya
Vaygach I.
Kolguyev I.
Kara Strait
Cape
Kanin Nos
Chesha Bay
Kola
Peninsula
Denmark Strait
ARCTIC CIRCLE
ICELAND
Vatnajökull
REYKJAVIK
WHITE SEA
SWEDEN
FINLAND
NORWAY
Scandinavia
Lapland
Gulf of Bothnia
Lakes Region
Lake Ladoga
Lake Onega
RUSSIAN FEDERATION
Ural Mountains
Faroe Islands
(Denmark)
Shetland Islands
(UK)
Orkney Islands
Isle of Lewis
Hebrides
Rockall
British
Isles
OSLO
STOCKHOLM
HELSINKI
St Petersburg
Gulf of Finland
ESTONIA
LATVIA
LITHUANIA
Gotland
Oland
BALTIC SEA
NORTH
SEA
Skagerrak
DENMARK
COPENHAGEN
SCOTLAND
UNITED
KINGDOM
IRELAND
DUBLIN
ENGLAND
LONDON
CELTIC SEA
English Channel
NETHERLANDS
AMSTERDAM
BELGIUM
BERLIN
POLAND
WARSAW
BELARUS
MINSK
MOSCOW
KAZAKHSTAN
Caspian Depression
Aral
Sea
NORTH
ATLANTIC
OCEAN
GERMANY
PRAGUE
CZECH REP.
SLOVAKIA
Carpathians Mts
KIEV
UKRAINE
MOLDOVA
PARIS
FRANCE
LUX.
SWITZ.
Alps
AUSTRIA
VIENNA
HUNGARY
BUDAPEST
ROMANIA
BUCHAREST
SLOVENIA
CROATIA
BOSNIA & H.
SERBIA
BELGRADE
Danube
Sea of Azov
Crimea
BLACK SEA
Caucasus
GEORGIA
CASPIAN
SEA
UZBEKISTAN
TURKMENISTAN
Kara-Kum
Bay of
Biscay
Massif
Central
Pyrenees
Corsica
ITALY
ROME
BULGARIA
SOFIA
F.Y.R.O.M.
ALBANIA
Bosporus
TURKEY
ANKARA
Anatolia (Asia Minor)
ARMENIA
AZERBAIJAN
PORTUGAL
LISBON
SPAIN
MADRID
Sierra Morena
Balearic Is.
Sardinia
MEDITERRANEAN SEA
Sicily
Peloponnesus
GREECE
ATHENS
AEGEAN SEA
Crete
CYPRUS
SYRIA
IRAQ
TEHRAN
IRAN
Salt
Desert
AFGH.
Azores
(Portugal)
Strait of Gibraltar
ALGIERS
TUNIS
TUNISIA
ALGERIA
MOROCCO
RABAT
Casablanca
MALTA
VALLETTA
LEBANON
BAGHDAD
DAMASCUS
EUROPE
0 km 350 700 1050 km
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GEOGRAPHY

EUROPE
POLITICAL

Cycle 2, Week 6

Key Verse:
The earth *is* the Lord's, and all that therein is; the world and they that dwell therein.
Psalm 24:1

Getting Ready

1. Have children sit around their mothers, so they can look at the pictures in *Exploring the World Through Cartography* with her.

2. Pass out map handouts and colored pencils.

   - Europe Political Map—no coloring on this one! Only to look at.
   - Europe Political Blackline Map—trace or color, if they want to, during the lesson.

To Start

1. Explain Key Verse.

2. GEOG'RAPHY, noun [Gr. the earth, and to write, to describe.] Properly, a description of the earth or terrestrial globe, particularly of the divisions of its surface, natural and artificial, and of the position of the several countries, kingdoms, states, cities, etc. As a science, geography includes the doctrine or knowledge of the astronomical circles or divisions of the sphere, by which the relative position of places on the globe may be ascertained, and usually treatises of geography contain some account of the inhabitants of the earth, of their government, manners, etc., and an account of the principal animals, plants and minerals. (Noah Webster's 1828)

3. CARTOGRAPHY is the science or art of making maps. (M-W.com) Cartographers are mapmakers.

Geography

Drill

1. Russia
2. Scandinavia
3. Baltic States
4. Poland
5. Hungary
6. Czech Republic
7. Italy
8. Greece
9. Balkan States
10. United Kingdom
11. France
12. Spain
13. Portugal
14. Belgium
15. The Netherlands
16. Germany (Prussia)
17. Switzerland

Europe Political (maybe we'll have time for some of this. for once?!)

Turn to *Cartography* p. 56–57.

- Review how to understand a physical/relief map.
- Look at pictures on pages 58–87, as time permits, exploring natural beauty and culture of Europe.

Drill Again


Europe
International Boundary
Road
River
National Capital
City or Town
0 250 500 KM
0 250 500 Miles
© 2007 Geology.com
Reykjavik
Thjorsa
ICELAND
Norwegian Sea
Barents Sea
Faroe Islands
Shetland Islands
Trondheim
Bergen
NORWAY
Oslo
SWEDEN
Osterdalalven
Gulf of Bothnia
FINLAND
Turku
Helsinki
St. Petersburg
Stockholm
Tallinn
ESTONIA
Goteborg
DENMARK
Arhus
Copenhagen
Malmo
Liepaja
Riga
LATVIA
Daugavpils
Baltic Sea
LITHUANIA
Vilnius
Minsk
BELARUS
U.K.
Glasgow
Edinburgh
Belfast
IRELAND
Dublin
Cork
Liverpool
Manchester
Birmingham
Bristol
London
North Sea
NETHERLANDS
Amsterdam
BELGIUM
Antwerp
Brussels
Atlantic Ocean
Berlin
GERMANY
Gdansk
RUSSIA
Warsaw
POLAND
Lodz
Krakow
Prague
CZECH REP.
LUXEMBOURG
Paris
Nantes
FRANCE
SWITZERLAND
LIECHTENSTEIN
Bern
Vienna
Bratislava
SLOVAKIA
AUSTRIA
Budapest
HUNGARY
Bay of Biscay
Lyon
Milan
Turin
SLOVENIA
Ljubljana
Zagreb
CROATIA
Gijon
Bilbao
Oporto
Valladolid
Duero
Zaragoza
ANDORRA
Toulouse
Marseille
MONACO
Genoa
SAN MARINO
Florence
ITALY
PORTUGAL
Lisbon
Madrid
Barcelona
Corsica
Rome
Guadiana
SPAIN
Sevilla
Valencia
Malaga
Murcia
GIBRALTAR
Naples
Bari
Sardinia
Cagliari
Mediterranean Sea
Palermo
Sicily
Catania
MALTA
Casablanca
Rabat
Algiers
Constantine
Tunis
MOROCCO
ALGERIA
TUNISIA
Tripoli
LIBYA
WESTERN SAHARA
MAURITANIA
BOSNIA & HERZE.
Sarajevo
SERBIA
Belgrade
MONTENEGRO
Podgorica
Tirana
ALBANIA
MACEDONIA
Skopje
BULGARIA
Sofia
ROMANIA
Brasov
Bucharest
MOLDOVA
Chisinau
Odesa
UKRAINE
Kiev
L'viv
Kharkiv
Dnipropetrovs'k
Donets'k
Rostov
GREECE
Thessaloniki
Athens
Crete
Istanbul
Bursa
Izmir
Ankara
TURKEY
Adana
CYPRUS
Nicosia
Black Sea
GEORGIA
Tiflis
ARMENIA
Yerevan
AZERBAIJAN
Baku
AZ.
Tabriz
Caspian Sea
TURKMENISTAN
UZBEKISTAN
KAZAKHSTAN
Ural
IRAN
Tehran
Qom
Kermanshah
Mosul
Murat
Tigris
Euphrates
SYRIA
Aleppo
Damascus
LEBANON
Beirut
ISRAEL
Jerusalem
'Amman
JORDAN
IRAQ
Baghdad
Ahvaz
Basra
Kuwait
KUWAIT
SAUDI ARABIA
EGYPT
Alexandria
Cairo
RUSSIA
Pechora
Vychegda
Kama
Sukhona
Lake Onega
Lake Ladoga
Moscow
Kostroma
Yaroslavl'
Nizhniy Novgorod
Kazan'
Volga
Ryazan'
Tula
Voronezh
Don
Perm'
Yekaterinburg
Chelyabinsk
Ufa
Ob'
Irtysh
Tobol

Geography

Tectonic Plates & Catastrophic Plate Tectonic Theory

Cycle 2, Week 13

Key Verse:

The earth *is* the Lord's, and all that therein is; the world and they that dwell therein.
Psalm 24:1

Getting Ready

1. Have children sit around their mothers, so they can look at the pictures in *Exploring the World Through Cartography* with her.

2. Pass out map handouts and colored pencils. (They may trace or color the blackline map, but the other maps are for them to look at; they may *not* color on those.)

   - "Moving Around the Pieces" (p. 2 of "Noah's Lost World)
   - "How Do We Know Pangaea Is Not the Created Continent?" (p. 4 of article)
   - Plate Boundaries map to color (*Answers* Magazine, Jan. 1, 2016, p. 53).
   - One per family, to read along during class (and take home): "Noah's Lost World" (*Answers* Magazine, April 1, 2014, pp. 80–85).
   - One per family, for interested students to read at home: "Plate Tectonics – The Reality Behind A Theory" (*Answers* Magazine, Jan. 1, 2016, pp. 52–55).

To Start

1. Review Key Verse.

2. GEOG'RAPHY, noun [Gr. the earth, and to write, to describe.] Properly, a description of the earth or terrestrial globe, particularly of the divisions of its surface, natural and artificial, and of the position of the several countries, kingdoms, states, cities, etc. As a science, geography includes the doctrine or knowledge of the astronomical circles or divisions of the sphere, by which the relative position of places on the globe may be ascertained, and usually treatises of geography contain some account of the inhabitants of the earth, of their government, manners, etc., and an account of the principal animals, plants and minerals. (Noah Webster's 1828)

3. CARTOGRAPHY is the science or art of making maps. (M-W.com)

Geography

Tectonic Plates

1. Explain difference between science (even creation science) and scripture. (Scripture is definitely true; science is what men think about God's works; science done by men who believe the Bible can tell us a lot about God's creation, but even people who love the Lord can get it wrong sometimes, so we always remember the difference between scientific "facts" (which may be proven untrue!) and the facts of scriptures (which are definitely true!).

2. Read & explain *Cartography* pp. 14-15.

3. Wherefore the world that then was, perished, overflowed with the water. (2 Peter 3:6)

4. Begin to read "Noah's Lost World" article, just introduction; read in-depth next week.

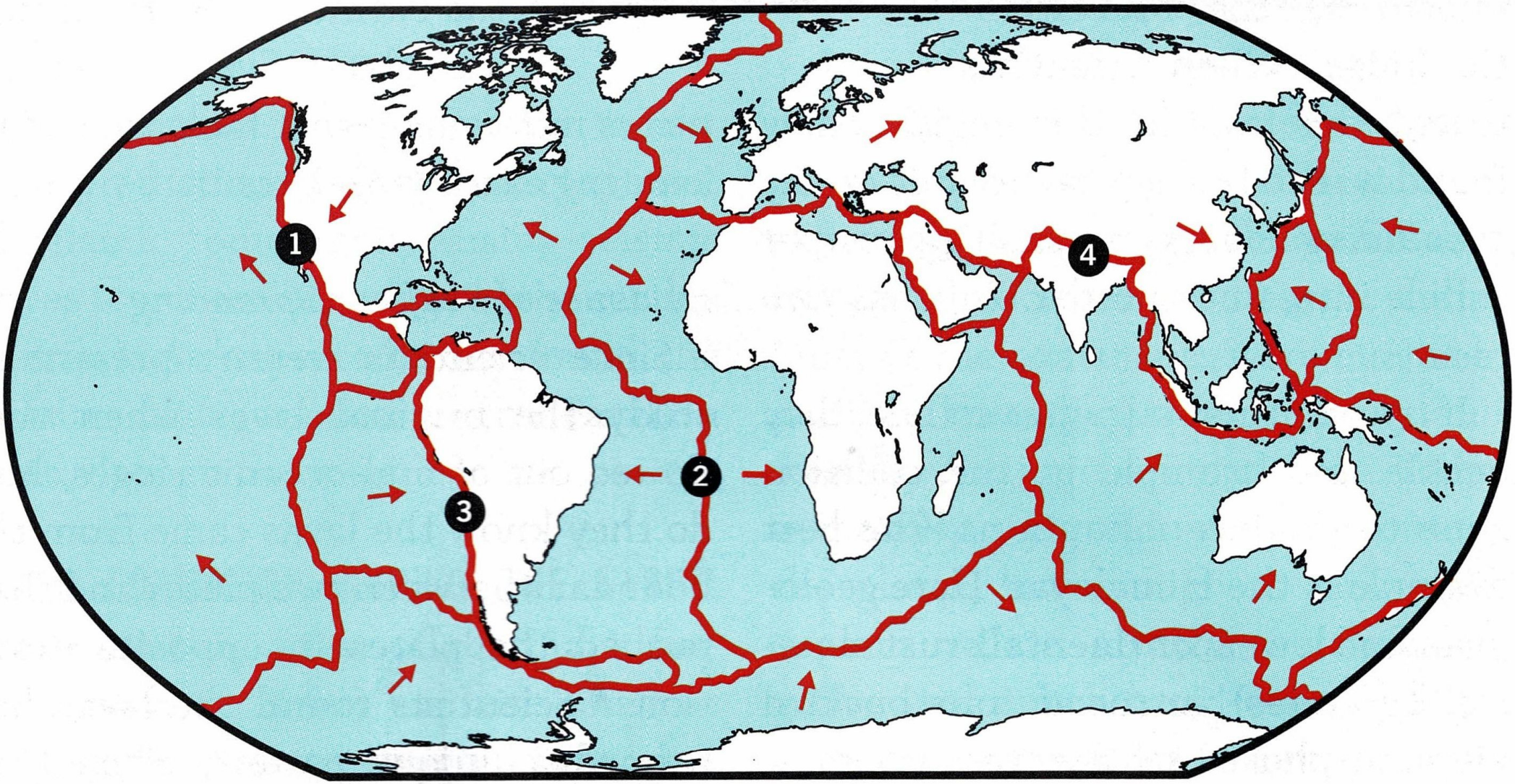


Figure 1

DIFFERENT TYPES OF PLATE BOUNDARIES

According to plate tectonics theory, the earth consists of moving plates.
At their boundaries, the plates interact in one of four ways, with very different effects.

Noah's Lost World

by Dr. Andrew A. Snelling

Noah's world looked nothing like the continents today. With the help of geology, we can put many pieces back together.

The world that we see today is not the one that existed in Noah's day (*2 Peter 3:6*). That land was destroyed. In fact, it appears that the original continent was broken up and the pieces separated by thousands of miles. If true, Noah never walked along the Santa Cruz Mountains and looked out over the scenic San Francisco Bay. He never hiked along the Apennines and gazed down upon the panoramic Mediterranean Sea. There were no Alps, Rockies, or snow-covered Himalayas; no Mississippi River rolling down into the Gulf of Mexico; no Amazon spilling into the Atlantic. The geography of the pre-Flood world was completely changed.

We get a glimpse into this different world in *Genesis 1:9–10*. On Day Three of the Creation Week, God gathered the waters together into "one place," separate from the dry land. Somewhere on this land was a lovely place called Eden, out of which four great rivers flowed (*Genesis 2:8–10*). Nothing like that exists today. It appears that the whole planet was different. For example, if Noah stood in the spot where San Francisco was later built, he probably looked out over the warm landscape of Antarctica, or perhaps Australia, since no water then separated these land masses. That's just one of the many differences. But how can such things be possible?

Geologists have stumbled across tantalizing clues that allow them to begin reconstructing the sequence of events necessary to produce the dramatic features on earth today. This ongoing work is exciting for creationists. Though the details are fragmentary, a picture is emerging of what may have been the supercontinent Noah lived on.

These findings point to Scripture, which makes much better sense of the catastrophic evidence than slow processes over millions of years. They also remind all of us about God's terrifying judgment against sin. We are without excuse.

Continental Fragments from an Earlier Time

Have you ever wondered what Noah's world was like before the Flood? The fragments that survived the Flood make it possible to begin piecing together the puzzle, at least in broad terms.

Evidence indicates that the continents have moved around, broken apart, and crashed together, but the basic pieces have remained fairly constant. Violent catastrophes tore off slivers from the edges of the continents, but the core pieces seem to have survived.

Geologists call the cores of these pieces "cratons." They seem to have remained stable throughout history. At one time they appear to have been joined together, but violent forces—unleashed during the Flood—tore them into many fragments.

The core of North America appears to be one of these cratons. In fact, most geologists believe it was a major component of the early earth's supercontinent.

Moving Around the Pieces

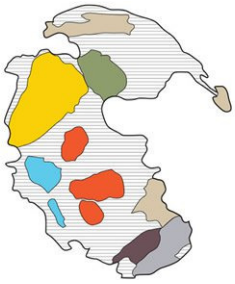
Rodinia

Pangaea

Today

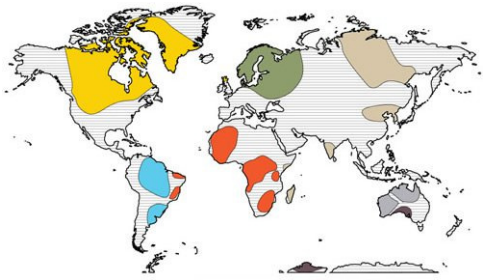
Original Supercontinent
(made of cratons)

Our modern continents are made out of pieces from the original earth, which broke apart during the Flood. These core pieces are called cratons. Certain features within these pieces and on their edges can be lined up, helping us put them back together. We call this original continent Rodinia, but so much has been lost that many puzzles remain.



Temporary Supercontinent
(made of original cratons and Flood sediments)

After the original continent broke apart during the Flood, the pieces crashed together temporarily, forming a supercontinent known as Pangaea. How do we know this? The pieces were already covered with fossil-containing sediment layers when they crashed together. In the impact zones, these layers were pushed into folded mountains that we still see today.



Modern Continent
(made of original cratons and sediments)

Today the earth consists of many separate continents, formed out of pieces from the first supercontinent. Only the cores survived. The rest of our modern continents were filled in by mud and sand that the Flood stripped from the earth's surface. Geologists are studying the original pieces to see how the edges originally aligned.

Coastlines of a Super Continent?

One of the biggest clues for the original configuration of continents is evident on any world map.

In 1859 creationist geologist Antonio Snider-Pellegrini noticed the jigsaw puzzle fit of North and South America with Europe and Africa if the Atlantic Ocean basin were closed up.[1] He also read *Genesis 1:9–10* and realized that the landmass God formed on Day Three of the Creation Week was probably a supercontinent. Then that supercontinent broke apart during the Flood and continental sprint opened up today's Atlantic Ocean. Thus was born the catastrophic plate tectonics model, which provides a physical mechanism for the Flood.[2] At the initiation of the Flood the fountains of the great deep were broken up (*Genesis 7:11*), ripping apart the pre-Flood supercontinent. The upwelling molten rock from the underlying mantle then helped to propel the continental fragments across the globe, opening up new ocean basins and colliding to produce today's mountains.

Much geologic data is consistent with this scenario, although the rapid movement of plates is a separate topic.[3] By locating the remnants of the original pre-Flood supercontinent we can project the movements of those fragments back to their original positions to potentially reassemble Noah's lost world.

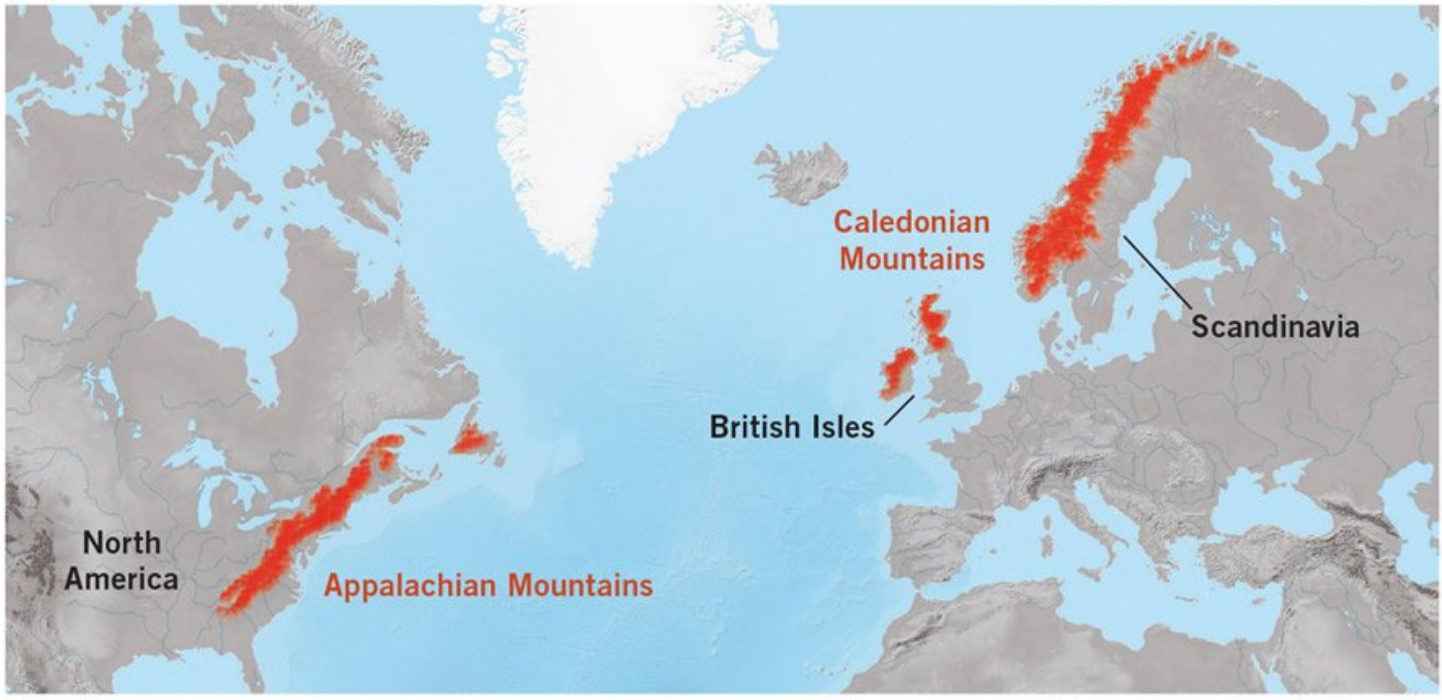
Pangaea Was Not Noah's Lost World

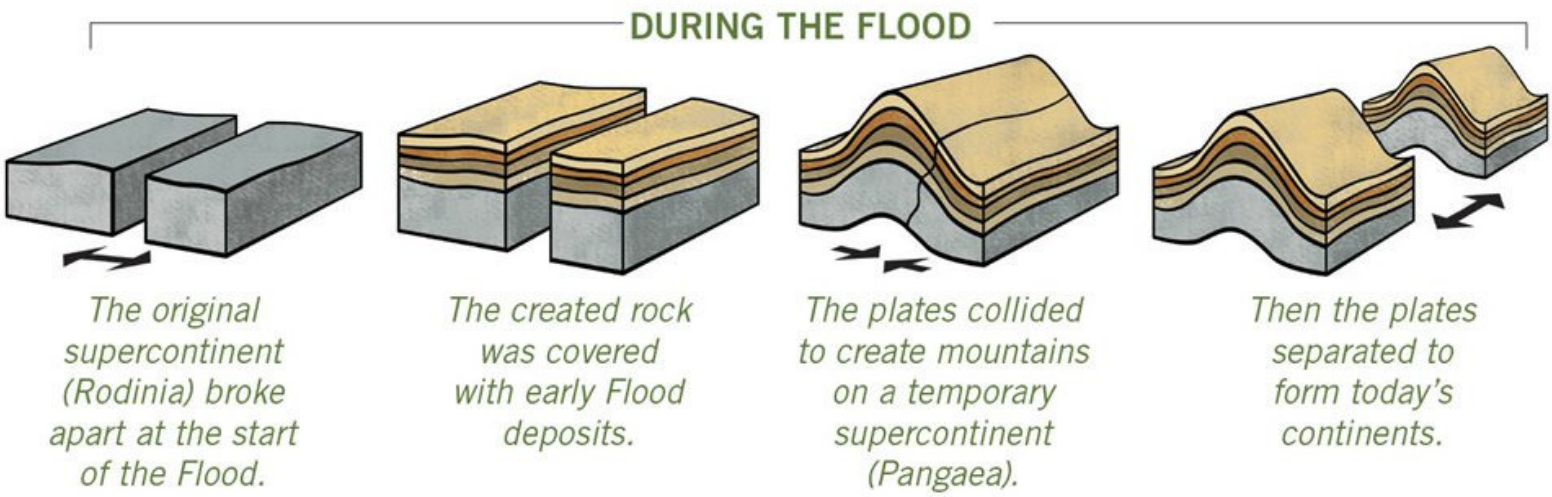
However, there is a complication that has sometimes caused misunderstandings. The supercontinent Snider-Pellegrini reconstructed became known by geologists as Pangaea (sometimes spelled *Pangea*), after the ancient Greek words *pan* meaning "entire" and *Gaia* meaning "Mother Earth." We now know Pangea could not have been the pre-Flood supercontinent. Something must have occurred earlier to produce the features on Pangaea.

When we remove the Atlantic Ocean and put the pieces back together again, we find a long mountain chain that ran from North America through Europe. The problem is that this chain, known as the Appalachian-Caledonian mountains, is made out of fossil-bearing sediments that were deposited earlier during the Flood. The only known way to form a mountain chain like this is for one continent to collide with another continent. This means that the Flood had to deposit fossil-bearing layers in North America and Europe before they crashed into each other to form Pangaea.

Thus Pangaea cannot have been the pre-Flood supercontinent that Noah lived on. It could only have been a temporary merger of continental fragments during the Flood, lasting no more than a few weeks. Pangaea was a supercontinent during the Flood, but it was completely underwater.

How Do We Know Pangaea Is Not the Created Continent?





Today's continents were once joined together because some mountain chains, such as the Appalachians (US) and Caledonians (UK and Scandinavia), are now separated by thousands of miles. But these mountains were not on the original supercontinent because they are made out of Flood deposits.

The only way such mountain chains could form is for the original supercontinent to break apart, the plates get covered by layers containing dead animals, and then crash together temporarily. As these plates moved again, they took with them pieces of the mountain chain formed by the collision, one piece in the US and one piece in the UK and Scandinavia.

Clues to Realign the Pre-Flood Continental Fragments

Today geologists are trying to identify the edges of the continental fragments (or cratons), and then line them up in their original configuration. This helps them reconstruct the appearance of the original landmass.

EVEN THOUGH THERE IS SPECULATION, SOME RELIABLE CLUES EXIST TO AID GEOLOGISTS.

The Pangaean rearrangement is generally agreed on, but speculation increases as we go further back in time. For example, secular geologists find rock layers with large salt and sand deposits and assume these came from deserts that were close to the equator. However, Flood geologists know those sand layers were deposited underwater, apparently stripped from postulated coastal beaches around the world at that time.

Even though speculation increases the further we go back in time, several reliable clues have come to geologists' aid.

Paleomagnetism

One clue is called paleomagnetism. Don't let the term intimidate you. Since the earth has a magnetic field, minerals that are magnetic will tend to line up with the earth's magnetic poles. Whenever lava cools, for instance, those minerals will align themselves with the points of the compass.

Once the rocks harden, geologists can use their alignment to determine the latitude where the rocks formed. If the landmass is moving quickly over hundreds of miles, different lavas will align in different magnetic directions as they harden.

Rock Types

Another clue is the physical content of the rocks. There are thousands of different types of rocks, such as huge piles of certain basalt lavas that can be matched between some continents, and hundreds of ways to measure different rock contents, including the type of fossils they contain and the radioactive decay within certain minerals. Based on these clues, geologists can often determine which large deposits once lay next to each other, even after they have moved thousands of miles apart.

Debris Deposits

Perhaps the most significant clue to line up the continents is the type of sedimentary rock layers that the Flood initially deposited at the edges of the cratons. These deposits, just above the "basement" rocks, have some distinctive characteristics that can be lined up between continents.

The basement rocks do not have multicellular fossils in them. They appear to be the originally created rocks, and sediment layers deposited in the pre-Flood world. The remnants are all that we have left after the Flood waters shaved off the surfaces of the continents.[4] The boundary between the pre-Flood and Flood rocks usually has a distinctive erosion surface, sometimes associated with huge broken fragments of rocks.

The huge fragments, sometimes measuring up to two-thirds of a mile across, represent places where the edge of the pre-Flood supercontinent collapsed at the initiation of the Flood.[5] Huge slabs broke off and cascaded down into deeper waters. The initial Flood sediments then piled up on top of these debris deposits. The same deposits can be traced along the edge of the pre-Flood North American fragment.[6]

Others have also noticed these same debris deposits at many other places around the globe at the same level in the strata sequence.[7] They help define the edges of the pre-Flood supercontinent.

The Pre-Flood Super Continent Rodinia

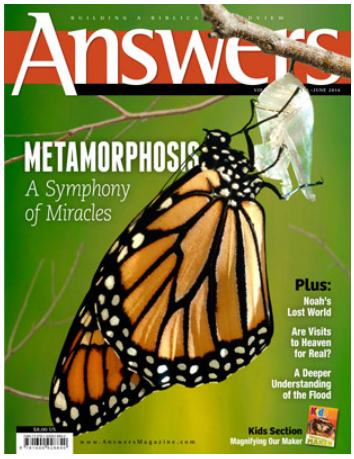
So is there geologic evidence of an earlier supercontinent, which broke apart and its fragments subsequently collided and coalesced together to form Pangaea, which then broke apart into today's continents that sprinted into their present positions? Yes! This earlier supercontinent, which was thus likely Noah's lost world, has been called Rodinia (from the Russian word *rodina*, meaning "The Motherland"). What then did Rodinia look like? Geologists are fairly certain about the basic configuration of the core cratons, but they are still unsettled about many of the details. There are multiple ways to fit together the fragmentary continental pieces of the puzzle. Remember, we are looking at scattered, damaged, and altered rocky remnants of the pre-Flood world.

Several reconstructions of Rodinia have been published.[8] Yet all consider the North American fragment to be the central piece of the puzzle, and Australia and Eastern Antarctica are placed along the western edge. So far, nobody can agree on how much of the edges are missing, or the precise location of some fragments, such as South China or Australia.[9] Reconstructing Noah's lost world is very complex. No reconstruction is yet able to produce the one coherent supercontinent from all the fragments. All such reconstructions must have an element of speculation because so much was destroyed by the Flood cataclysm.

But we do have a reasonable picture of what happened at the catastrophic initiation of the Flood. Huge plumes of molten rock blasted the underside of the earth's crust like massive blow-torches.[10] Eventually the crust was ripped apart, and steam and molten rock burst forth. The supercontinent collapsed, with slivers of land sliding into the ocean at the margins.[11] It must have been horrific.

The one certainty we have about the pre-Flood world is the Creator's brief eyewitness account given in His Word. We have forever lost the world where Noah lived; it was ripped apart and wiped away by the global Flood cataclysm. The surviving clues should be a sober reminder of the warning by Jesus Christ, the Creator Himself: when He comes again to judge all mankind, circumstances will resemble Noah's day, when "the Flood came and took them all away" (*Matthew 24:37–39*).

Dr. Andrew Snelling *holds a PhD in geology from the University of Sydney and has worked as a consultant research geologist in both Australia and America. Author of numerous scientific articles, Dr. Snelling is now director of research at Answers in Genesis–USA.*



Answers Magazine

April – June 2014

A closer look at the Genesis Flood account reveals a beautifully written, unified narrative that points to one inspired author. The passage masterfully highlights one central message: "God remembered Noah." Along with in-depth articles on the Flood, this issue shows biblical and historical evidences of Christ's Resurrection, new discoveries about the miracle of a butterfly's metamorphosis and much more!

Footnotes

1. A. Snider-Pellegrini, *La Création et ses Mystères dévoilés* (Paris, France: A. Frank et E. Dentu, 1859).
2. S. A. Austin, J. R. Baumgardner, D. R. Humphreys, A. A. Snelling, L. Vardiman, and K. P. Wise, "Catastrophic Plate Tectonics: A Global Flood Model of Earth History," in *Proceedings of the Third International Conference on Creationism*, R. E. Walsh, ed. (Pittsburgh, Pennsylvania: Creation Science Fellowship, 1994), pp. 609–621.
3. A. A. Snelling, "Geophysical Issues: Understanding the Origin of the Continents, Their Rock Layers and Mountains," in *Grappling with the Chronology of the Genesis Flood*, S. W. Boyd and A. A. Snelling, eds. (Green Forest, Arkansas: Master Books, 2014), pp. 111–144.
4. S. A. Austin and K. P. Wise, "The Pre-Flood/Flood Boundary: As Defined in Grand Canyon, Arizona and Eastern Mojave Desert, California," in *Proceedings of the Third International Conference on Creationism*, R. E. Walsh, ed. (Pittsburgh, Pennsylvania: Creation Science Fellowship, 1994), pp. 37–47.
5. R. Sigler and V. Wingerden, "Submarine Flow and Slide Deposits in the Kingston Peak Formation, Kingston Range, Mojave Desert, California: Evidence for Catastrophic Initiation of Noah's Flood," in *Proceedings of the Fourth International Conference on Creationism*, R. E. Walsh, ed. (Pittsburgh, Pennsylvania: Creation Science Fellowship, 1998), pp. 487–501.
6. V. Wingerden, "Initial Flood Deposits of the Western North American Cordillera: California, Utah and Idaho," in *Proceedings of the Fifth International Conference on Creationism*, R. L. Ivey, Jr., ed. (Pittsburgh, Pennsylvania: Creation Science Fellowship, 2003), pp. 349–358.
7. They often have warm water limestone deposits associated with them, so the interpretation that they are glacial deposits is wrong. Z. X. Li, D. A. D. Evans, and G. P. Halverson, "Neoproterozoic Glaciations in a Revised Global Paleogeography from the Breakup of Rodinia to the Assembly of Gondwanaland," *Sedimentary Geology* 294 (2013): 219–232.
8. D. A. D. Evans, "Reconstructing Pre-Pangean Supercontinents," *Geological Society of America Bulletin* 125 (2013): 1735–1751.
9. Where to put the Australian pre-Flood remnant in relation to the North American fragment is quite disputed. A link with the Southwest U.S. is called the SWEAT connection; see I. W. D. Dalziel, "Global Paleotectonics: Reconstructing a Credible Supercontinent," *Geological Society of America Bulletin* 109 (1997): 16–42. Others link it with the western U.S. (the AUSWUS connection); see K. E. Karlstrom et al, "Refining Rodinia: Geological Evidence for the Australia-Western U.S. Connection in the Proterozoic," *GSA Today* 9 (1999): 1–7. Others link with Mexico (the AUSMEX connection); see S. A. Pisarevsky et al, "Models of Rodinia Assembly and Fragmentation," in *Proterozoic East Gondwana: Supercontinent Assembly and Breakup*, M. Yoshida, B. F. Windley and S. Dasgupta, eds. (Geological Society of London Special Publication 206, 2003), pp. 35–55. Others add a "missing link" that eroded away; see Z. X. Li et al, "Assembly, Configuration and Break-up History of Rodinia: A Synthesis," *Precambrian Research* 160 (2008): 179–210.
10. Ref. 8 and A. Johansson, "From Rodinia to Gondwana with the 'Samba' Model—A Distant View from Baltica Towards Amazonia and Beyond," *Precambrian Research* (2013), http://dx.doi.org/10.1016/j.precamres.2013.10.012.
11. Ref. 2.

Geology

The San Andreas Fault extends over 800 miles (1290 km) through California, where two plates slide next to each other.

PLATE TECTONICS— THE REALITY BEHIND A THEORY

by Andrew A. Snelling

The idea that continents move sounds crazy . . . until you look at the facts.

One of the most incredible claims of modern science is that continents move. When Alfred Wegener proposed a version of this theory in 1912, fellow scientists accused him of "pseudoscience," "delirious ravings," and suffering from "moving crust disease." Now that his theory is widely accepted, most schoolbooks and museums present it simply as fact, without detailed justification.

Christians need to be careful of both extremes, especially on a topic so central to our understanding of earth history. Just because evolutionists developed a theory doesn't make it wrong, but scientific "consensus" doesn't mean we should blindly accept everything they say without some fact-checking.

No one wants to sound like Wegener's original close-minded, shrill opponents. If we're not careful, educated people may ignore anything we say, including what we say about the Bible's history, Christ, and the gospel.

This isn't just an intellectual exercise. Digging a little deeper provides immense rewards for our witness. It shows that Christians embrace the best of science. And more important, it shows the power of the Bible's Flood account to help us better understand our world.

A STRANGE PATTERN THAT DEMANDS EXPLANATION. Have you ever wondered why some of the most powerful earthquakes strike places like southern California but leave other regions unscathed? Why do active volcanoes explode in the Pacific Northwest but skip the Midwest? Similar patterns are repeated around the globe and demand an explanation. They are important clues indicating that the earth's surface really does move.

Most of the world's active volcanoes occur in linear belts that coincide with earthquake zones. This is especially obvious at the outer edge of the Pacific Ocean. Volcanoes are so plentiful here that this circle is called the "Ring of Fire." Active volcanoes belch out steam, ash, and lavas from the upwelling of hot molten rock (called magma) from inside the earth. Why are so many volcanoes here and not elsewhere?

Not only do earthquakes track around the rim of the Pacific Ocean, they also encircle the globe in an interlinked pattern. A line of earthquake zones runs down the center of the Atlantic Ocean and then east into the Indian Ocean, where it splits in two, one branch heading northward towards Arabia, and the

other branch heading eastward into the Pacific Ocean. Clearly something is happening at these special zones.

EVIDENCES OF PLATE MOVEMENT. Geologists believe that this interlinked pattern of earthquake zones and active volcanoes marks the edges of "plates" that divide the earth's outer skin, or crust, into more than a dozen pieces. (Strictly speaking, the plates include the uppermost mantle beneath the crustal pieces.) They claim that the movements of these plates cause earthquakes and volcanoes. But do they have any evidence?

Satellites Measure Ground Movement

With the advent of satellite technologies, scientists can now measure precise movements of land on both sides of the plate boundaries. A network of base stations sends signals up to the satellites, which show that the plates are indeed moving, albeit at a snail's pace of inches per year (about the same pace as fingernails grow).

The study of earth movements is technically known as "tectonics," so the study of plate movements is called "plate tectonics." (Note that it is no longer accurate to call it "continental drift." We now know that the ocean floor crust is also moving. In fact, the Pacific, Nazca, Cocos, and Scotia plates are moving even though they consist almost entirely of ocean floor crust. See *Figure 1*.)

But do these plate movements cause volcanoes and earthquakes?

Chemical Tests of Lava Show Ocean Crust Moving Under Continental Crust

Perhaps you never realized it, but the earth has two different types of crust. When ocean vessels began sampling the ocean floor in the 1960s, scientists realized how different the ocean crust was from the continents' crust. If the ocean crust was moving *under the continental crust*, scientists suspected they might find evidence in the lavas rising up onto the continents' surfaces.

The differences are very distinct. The continents are made up of many different rock types, but if we were to grind them all up, the average composition would be similar to granite. On the other hand, drilling into the ocean floors has revealed that the oceanic crust beneath the ooze is made up of basalt (dark volcanic rock). Granites contain a lot of silicon and not so much iron and magnesium, whereas basalts contain a lot less silicon but much more iron and magnesium.

Cooled oceanic crust is heavier than the hot mantle beneath it. So it tends to sink. The continental crust, in contrast, is much lighter (less dense), so it floats. As a result, the continents "ride" higher than the ocean crust. If they collide, the ocean crust would slide under the continental crust because it is heavier.

The high pressure and temperature in a collision would cause a melting reaction that would ultimately send hot magma from the upper mantle toward the surface. Scientists have checked the chemistry of many lavas on the edges of continents and found that they are generally mixtures of ocean basalt rock and continental granitic rocks, producing intermediate rocks called andesites and dacites.

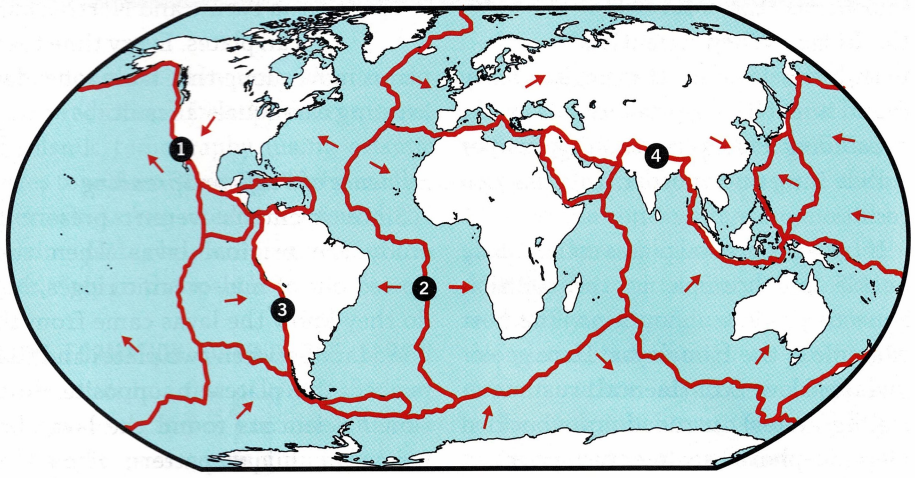
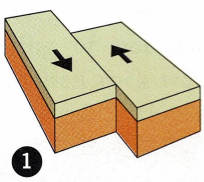


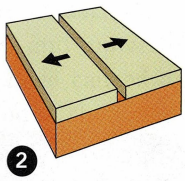
Figure 1

DIFFERENT TYPES OF PLATE BOUNDARIES

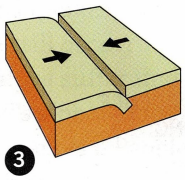
According to plate tectonics theory, the earth consists of moving plates. At their boundaries, the plates interact in one of four ways, with very different effects.



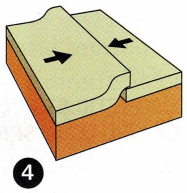
1 Plates slide past each other. When plates slide past each another, they cause earthquakes but not volcanoes. An infamous example is the San Andreas Fault of California.



2 Plates pull apart. Wherever oceanic plates pull apart, material rises from the mantle with the same chemistry as ocean crust. The best example is the Mid-Atlantic Ridge.



3 Plates collide (ocean-continent). Wherever oceanic plates collide with continental plates, they slide underneath. Volcanic material (andesite) rises up to form mountains, such as the Andes.



4 Plates collide (continent-continent). Wherever two continental plates collide, they form mountains containing granites, such as the Himalayas.

Evidence of Four Types of Plate Boundaries

If the crustal plates are jostling against one another, they should do so in one of four ways: pulling apart, colliding in two ways, or sliding past each other (*Figure 1*). Geologists have found evidence of all four.

Pulling apart. Wherever oceanic plates are pulling apart, geologists would expect to find lava that rose from the uppermost mantle beneath the rift to produce new oceanic crust. The best example is the boundary down the middle of the Atlantic Ocean. The rifting has produced a topographic feature known as the Mid-Atlantic Ridge. When scientists tested the lava in this region, they found it matches typical oceanic crust.

Plate tectonics give us insights as to what likely happened during the global Flood.

Colliding. Plates also push against, or collide into, one another. This has two results.

If two continental plates collide, they buckle and crumple in the collision zone to produce mountains. The best example is the Himalayas. Here geologists find lower continental crust material (granites) intruded into buckled metamorphosed sedimentary layers.

If an oceanic plate collides with a continental plate, it is pushed down underneath the edge of the continental plate (technically known as subduction). One of the best-known examples is off the coast of Peru and Chile. Here the Nazca plate is being pushed down under the South American plate. The result is the Andes Mountains. Here geologists find lavas that are a mixture of oceanic and continental crust material (called andesite).

Sliding Past Each Other. The fourth possible interaction is plates sliding past one another. Here geologists find earthquakes but not volcanoes. The most infamous example is the San Andreas Fault of southern California, the boundary between the Pacific and North American plates. Every time these plates move along that fault zone, devastating earthquakes result.

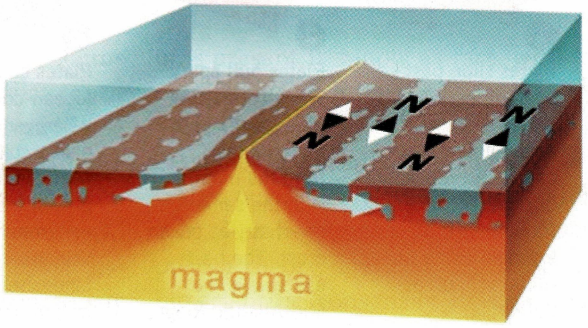
Evidence of Seafloor Spreading

Since scientists weren't present to study the original lavas when they flowed out of mid-oceanic ridges, how do they know the lavas came from the boundary between two plates and then pushed the plates in opposite directions? Scientists found the lavas had formed a unique pattern when they cooled, known as magnetic "stripes" (*Figure 2*).

Figure 2

MAGNETIC STRIPES—EVIDENCE OF SEAFLOOR SPREADING

Molten material rises wherever plates are separating. As the lava cools, magnetic portions point toward the earth's magnetic north. New deposits point in a different direction if the magnetic north has flipped. The unique pattern of matching magnetic "stripes" on the seafloor—on either side of the mid-oceanic ridge—shows it has been spreading.



It's a bit complicated, but here is how it basically works. It appears that in the past the earth's magnetic field changed direction. So when each new surge of seafloor basalts upwelled and cooled, it should have recorded a different magnetic field direction. This is possible because basalts contain magnetic iron in a mineral called magnetite. When the magma cools, regions within the magnetite crystals (called magnetic domains) align themselves with the magnetic field and "freeze" into the rock, recording the direction of the earth's magnetic field at that time.

When oceangoing research vessels first towed recording devices across the ridge in the 1960s, they found this pattern of magnetic "stripes." The pattern was the same on either side of the ridge, providing powerful evidence of seafloor spreading.

Other Evidences of Earth Movements

There are many other amazing evidences of earth movements. One is the existence of deep-sea trenches at the subduction zones. We find these trenches where oceanic plates are sliding under continental plates (*Figure 3*). One of the most famous trenches occurs where the Pacific plate is being pushed under the Eurasian plate off Japan's coast. The sinking plate has folded and dragged the seafloor down to form a deep trench. Every time this seafloor moves, it generates a massive earthquake. Making matters worse, the seafloor movements also jolt the ocean water above, generating tsunamis which sweep across the ocean and over the coast. These tsunamis result in horrifying devastation, such as the 2011 tsunami that killed 19,000 people and caused $300 billion in damage along Japan's coast.

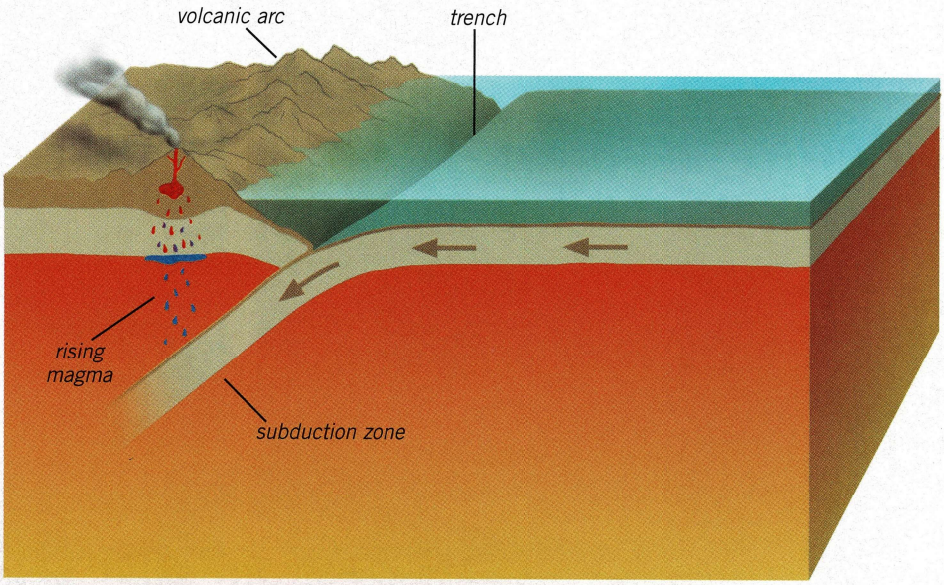
Another evidence of plate movements is the ability of seismic recorders to pinpoint the positions of the movements under the earth's surface, precisely where their movements and

Figure 3

EVIDENCE OF COLLIDING PLATES

Oceanic plates sliding under continental plates produce many distinctive features that can be explained only by this "subduction."

- *First, deep-sea trenches appear where the sinking plate has folded and dragged the seafloor down. One of the most famous trenches occurs off Japan's coast.*
- *Second, volcanic arcs rise next to the trenches, where the upper surface of the subducting plate melts and the magma rises to the surface.*
- *Third, the lava spewing from the volcanoes is a mixture of both continental and oceanic crust material.*
- *Fourth, seismic recorders measure major movement at the depths where the sinking plate is colliding with the upper plate.*



collisions should be generating earthquakes. In subduction zones, seismologists proved that deep earthquakes originate precisely where the upper surfaces of the subducting plates are pushing against both the upper plates and the mantle beneath. This confirms that subduction is occurring.

Further evidence is the "volcanic arcs" next to trenches. If plates are sinking, the higher temperature deeper in the earth and the friction of the subducting plates should generate enough heat to melt rocks, both at the top of the sinking plate and within the mantle above it. This magma should rise to the surface and erupt through volcanoes. As expected, an arc of volcanoes *does* rise parallel to each offshore trench. In fact, the Japanese islands were largely built by volcanic eruptions next to a deep-sea trench.

Another amazing prediction of plate tectonics is the existence of the plate that drove into the western edge of North America, pushing up the Rocky Mountains and then disappearing under the continent. Scientists predicted this plate should have sunk deep into the mantle under western North America. They were able to test their prediction after the development of seismic tomography (using seismic waves to make a 3D image of the earth's interior). As expected, they found the missing plate, known as the Farallon plate, deep in the mantle.

PLATE FORMATION DURING THE FLOOD. These are only a few of the many features plate tectonics explains. Just as exciting, it gives us insights into what likely happened during the global Flood judgment of Noah's day.

Genesis 7:11 says the Flood began with the breaking up of "the fountains of the great deep." This catastrophic bursting of hot waters and upwelling molten rock would have caused a massive rift in the seafloor ("the great deep"). Such rifting would have rapidly spread around the globe, including across the pre-Flood supercontinent, tearing it apart to make today's continents.

Shortly thereafter, the cold pre-Flood ocean crust would have started to sink, being subducted under the less dense continental crust, which continued to "float." Creation scientist John Baumgardner has shown that plate movements would have been extremely fast during the Flood event, compared to what we observe today. Most of the continents were moved by seafloor spreading and runaway subduction during the Flood year. Today, we merely see residual movements of the plates, but enough to powerfully explain where all the earthquakes, active volcanoes, mid-ocean ridges, and deep-sea trenches occur on earth.

As we share the warnings of God's Word with a skeptical generation, we have no reason to fear we will sound pseudoscientific. Plate movements, earthquakes, and volcanic eruptions are still occurring today and remind us that we suffer under the aftereffects of God's global Flood judgment on human wickedness. People need to hear Jesus' warning that, as it was in the days of Noah, so shall it be in the day of His second coming, when He will judge the earth a second time, not by water but by fire (Luke 17:26-30). ■

Dr. Andrew Snelling *holds a PhD in geology from the University of Sydney and has worked as a consultant research geologist in both Australia and America. Author of numerous scientific articles, Dr. Snelling is now director of research at Answers in Genesis.*

Geography

Tectonic Plates & Catastrophic Plate Tectonic Theory

Cycle 2, Week 14

Key Verse:

The earth *is* the Lord's, and all that therein is; the world and they that dwell therein.
Psalm 24:1

Getting Ready

1. Have children sit around their mothers, so they can look at the pictures in *Exploring the World Through Cartography* with her.

2. Pass out map handouts and colored pencils. (They may trace or color the blackline map, but the other maps are for them to look at; they may *not* color on those.)

   - "Moving Around the Pieces" (p. 2 of "Noah's Lost World)
   - "How Do We Know Pangaea Is Not the Created Continent?" (p. 4 of article)
   - Plate Boundaries map to color (*Answers* Magazine, Jan. 1, 2016, p. 53).
   - One per family, to read along during class (and take home): "Noah's Lost World" (*Answers* Magazine, April 1, 2014, pp. 80–85).
   - One per family, for interested students to read at home: "Plate Tectonics – The Reality Behind A Theory" (*Answers* Magazine, Jan. 1, 2016, pp. 52–55).

To Start

1. Review Key Verse.

2. GEOG'RAPHY, noun [Gr. the earth, and to write, to describe.] Properly, a description of the earth or terrestrial globe, particularly of the divisions of its surface, natural and artificial, and of the position of the several countries, kingdoms, states, cities, etc. As a science, geography includes the doctrine or knowledge of the astronomical circles or divisions of the sphere, by which the relative position of places on the globe may be ascertained, and usually treatises of geography contain some account of the inhabitants of the earth, of their government, manners, etc., and an account of the principal animals, plants and minerals. (Noah Webster's 1828)

3. CARTOGRAPHY is the science or art of making maps. (M-W.com)

Geography

Tectonic Plates

1. Brief review of last week.

2. Wherefore the world that then was, perished, overflowed with the water. (2 Peter 3:6)

3. Read "Noah's Lost World" article.

    - *Pangaea Was Not Noah's Lost World* (p. 3) – explain about fossils. Ask:
    - What are fossils? (The remains of dead things, encased in rock.)
    - Do all things that die turn into fossils? (Think of a dead coyote by the roadside, etc. No way!)
    - Do dead things lie around for millions of years, like the Darwinists say, untouched, turning to stone? (No way; dead things don't even lie undisturbed for a day!)
    - How are fossils formed? (Special circumstance where (usually) the dead creature is immediately buried in water filled with just the right mixture of minerals, so that it will quickly harden into stone (like cement quickly turns to stone (concrete).)
    - Were dead things in the rocks when God created Adam? (No, because there was no death until after Adam sinned.)

GEOGRAPHY

AFRICA
PHYSICAL—SEAS & WATERWAYS

Cycle 2, Week 15

Key Verse:
The earth *is* the Lord's, and all that therein is; the world and they that dwell therein.
Psalm 24:1

Getting Ready

1. Have children sit around their mothers, so they can look at the pictures in *Exploring the World Through Cartography* with her.

2. Pass out map handouts and colored pencils.

   - Africa Physical Map—no coloring on this one! Only to look at.
   - Africa Physical & Political Map—no coloring on this one! Only to look at.
   - Africa Physical Blackline Map—trace or color, if they want to, during the lesson.
   - Africa Rivers Blackline Map—trace or color, if they want to, during the lesson.

To Start

1. Explain Key Verse.

2. GEOG'RAPHY, noun [Gr. the earth, and to write, to describe.] Properly, a description of the earth or terrestrial globe, particularly of the divisions of its surface, natural and artificial, and of the position of the several countries, kingdoms, states, cities, etc. As a science, geography includes the doctrine or knowledge of the astronomical circles or divisions of the sphere, by which the relative position of places on the globe may be ascertained, and usually treatises of geography contain some account of the inhabitants of the earth, of their government, manners, etc., and an account of the principal animals, plants and minerals. (Noah Webster's 1828)

3. CARTOGRAPHY is the science or art of making maps. (M-W.com) Cartographers are mapmakers.

Geography

Drill

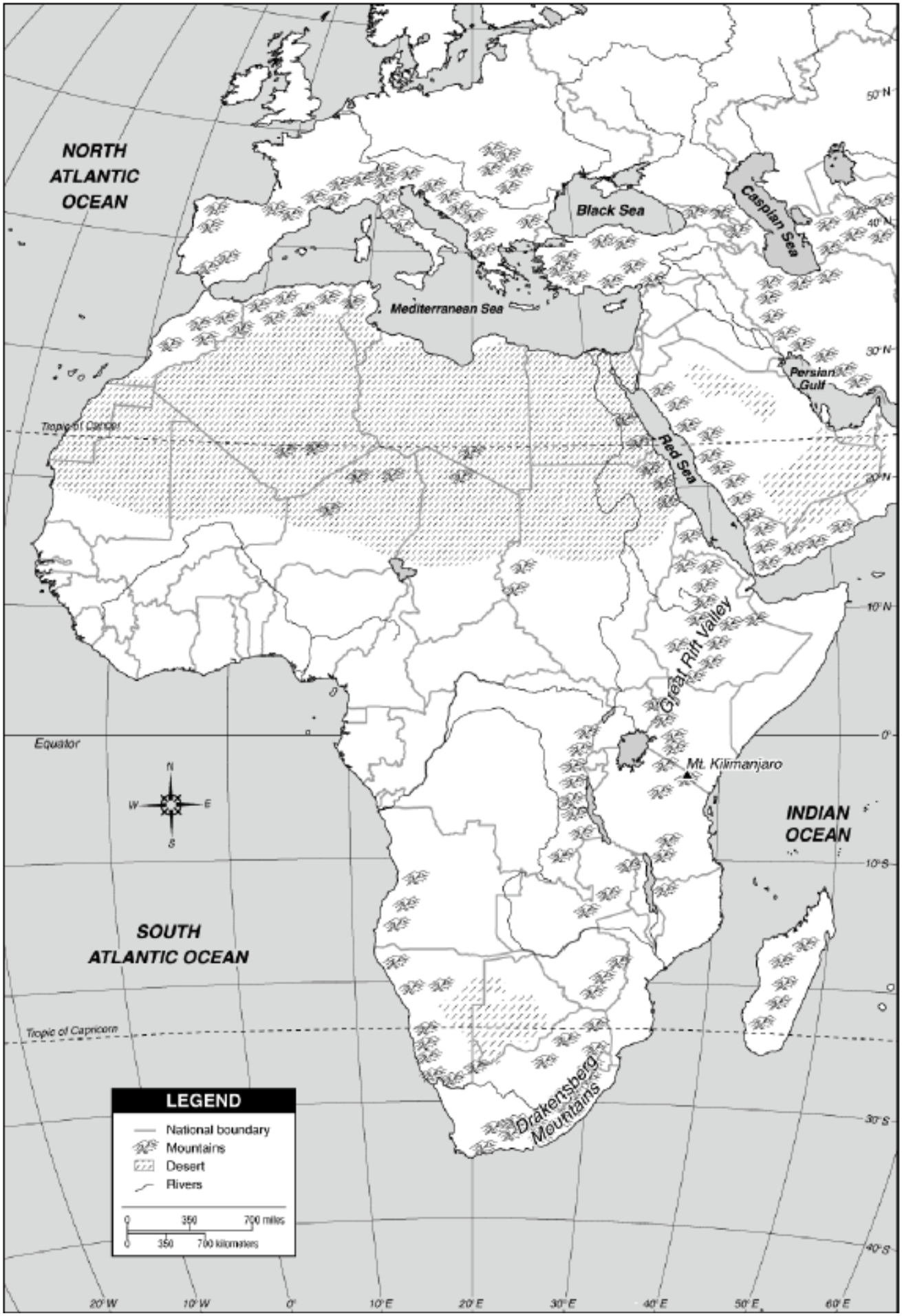
1. Strait of Gibraltar
2. Nile River
3. Indian Ocean
4. Red Sea
5. Suez Canal
6. Niger River
7. Lake Victoria
8. Ivory Coast & Gold Coast
9. Cape of Good Hope

Africa Physical

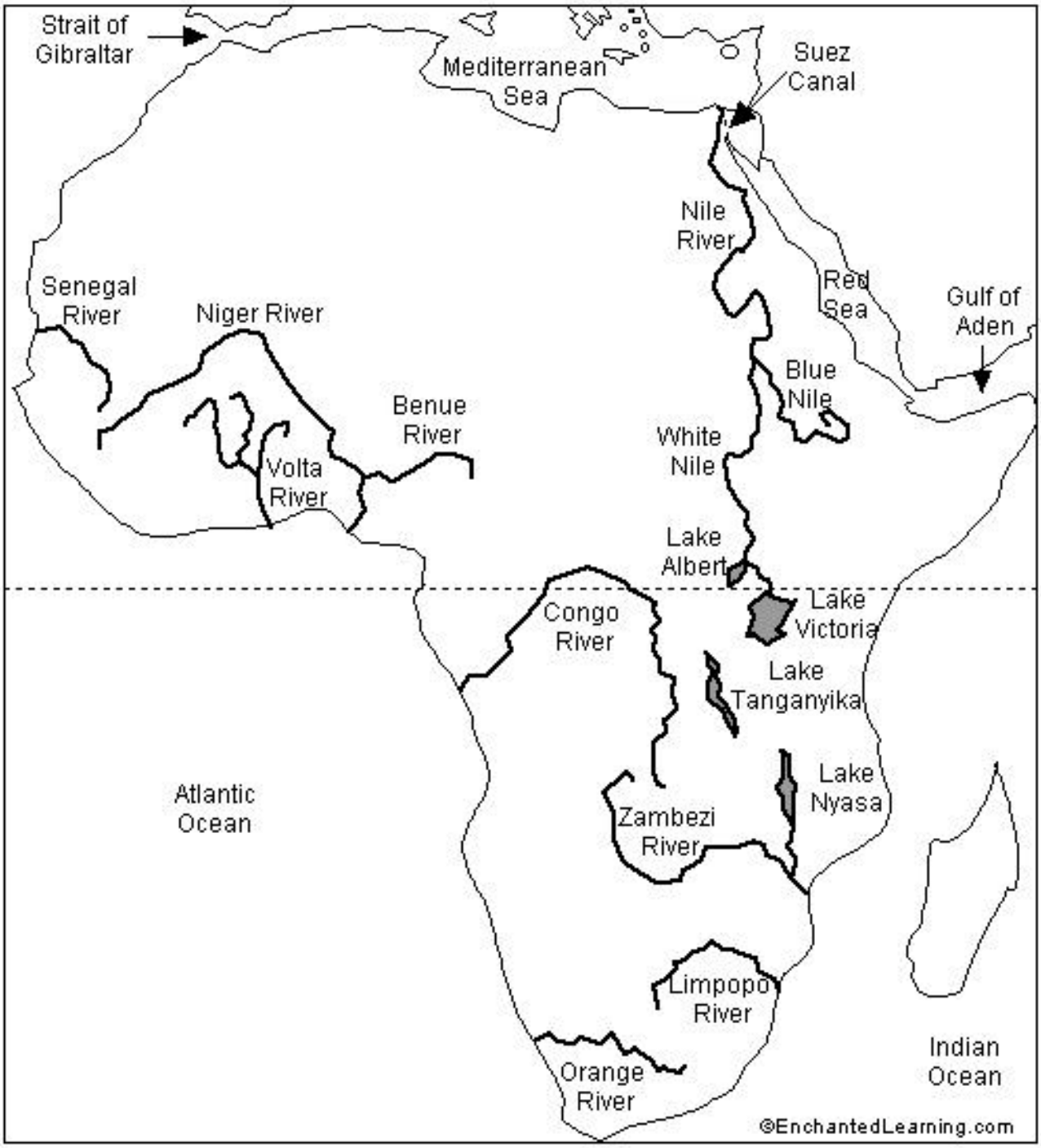
Only time to drill and re-drill, because of so many features to learn!

Drill Again

Africa. Shaded relief map. Colored according to vegetation. Projection Data source: NASA


NORTH ATLANTIC OCEAN
Black Sea
Caspian Sea
Mediterranean Sea
Persian Gulf
Red Sea
Tropic of Cancer
Great Rift Valley
Equator
Mt. Kilimanjaro
INDIAN OCEAN
SOUTH ATLANTIC OCEAN
Tropic of Capricorn
Drakensberg Mountains
50° N
40° N
30° N
20° N
10° N
0°
10° S
30° S
40° S
20° W
10° W
0°
10° E
20° E
30° E
40° E
50° E
60° E
N
W
E
S
LEGEND
National boundary
Mountains
Desert
Rivers
0 350 700 miles
0 350 700 kilometers

Lisbon
Valencia
Palma
Majorca
Sardinia
Tyrrhenian Sea
ITALY
Ankara
Lesbos
Izmir
Ardabil
Tabriz
PORTUGAL
Cordoba
Sevilla
Palermo
Sicily
Monte Etna
Catania
Ionian Sea
Agrinion
Athens
Peloponnesus
Aegean Sea
Khania
Iraklion
Rhodes
Crete
Adana
Antalya
Mosel
Aleppo
Nicosia
CYPRUS
Strait of Gibraltar
Gibraltar
Tangier
Oran
Algiers
Constantine
Annaba
Tunis
Batna
Sfax
Gafsa
Medenine
MALTA
Valletta
Madeira Island
Rabat
Casablanca
MOROCCO
Atlas Mountains
Marrakech
TUNISIA
Ouargla
Tripoli
Misratah
Mediterranean Sea
Beirut
LEBANON
Damascus
SYRIA
ISRAEL
Jerusalem
Amman
JORDAN
Baghdad
IRAQ
Basra
Kuwait
KUWAIT
Persian Gulf
Canary Islands
Grand Erg Occidental
Grand Erg Oriental
Timimoun
Banghazi
Alexandria
Port Said
Cairo
Suez
Qattara Depression
Beni Suef
El-Minya
Layoun
ALGERIA
Reggane
Sabhah
Marzuq
LIBYA
EGYPT
SAUDI ARABIA
Al Manamah
Ad Dawhah
Djanet
Ahaggar Mtns.
Al Jawf
Libyan Desert
Aswan
Lake Nasser
Red Sea
Medina
Riyadh
Arabian Peninsula
Mecca
WESTERN SAHARA
Sahara Desert
Taoudenni
Aozou
Tibesti Mtns.
Erg du Tenere
Nubian Desert
Port Sudan
Atar
Tessalit
MAURITANIA
Araouane
Bilma
Nouakchott
MALI
Faya-Largeau
CHAD
SUDAN
Rub Al Khali
Tombouctou
Agades
NIGER
Atbarah
YEMEN
Gao
Asmara
Sanaa
Al Ghaydah
Cape Verde
Dakar
SENEGAL
Tahoua
Khartoum
Al Mukalla
Kayes
Tambacounda
Tamba
Niamey
Zinder
L. Chad
Al Fashir
Mekele
Taizz
Gulf of Aden
Banjul
GAMBIA
Bamako
Sokoto
Katsina
Ouagadougou
Maiduguri
NDjamena
DJIBOUTI
Djibouti
BURKINA FASO
Bobo Dioulasso
NIGERIA
Bissau
GUINEA
Kankan
BENIN
Zaria
Dire Dawa
Berbera
Somali Pen.
GUINEA BISSAU
Korhogo
Parakou
Kaduna
Jos
Hargeysa
Conakry
Tamale
COTE D'IVOIRE
Sokode
Abuja
Moundou
Ndele
Ethiopian Highlands
Addis Abbaba
Asela
SOMALIA
Freetown
Man
Bouake
Ibadan
ETHIOPIA
SIERRA LEONE
LIBERIA
Kumasi
GHANA
Lome
Lagos
Ngaoundere
CENTRAL AFRICAN REPUBLIC
Waw
Goba
Monrovia
Abidjan
Accra
Porto Novo
Port Harcourt
Bossangoa
CAMEROON
Juba
Bangui
Bangassou
Gulf of Guinea
Douala
Berberati
Yaounde
Lake Turkana
Ebolowa
EQUATORIAL GUINEA
Gulu
Bumba
Lake Albert
UGANDA
KENYA
Bata
Makokou
Mogadishu
Libreville
Kisangani
Kampala
Eldoret
Mbandaka
Kisumu
Lake Victoria
Sao Tome
CONGO
Congo Basin
Chisimayu
Port Gentil
GABON
RWANDA
Kigali
Nairobi
Bukavu
Bujumbura
Mwanza
Kilimanjaro
INDIAN OCEAN
Brazzaville
BURUNDI
Kayes
Pointe-Noire
Kinshasa
DEM. REP. OF CONGO
Mombasa
Tabora
Tanga
Matadi
Kananga
Kalemi
TANZANIA
Zanzibar Island
Dar es Salaam
Luanda
Kamina
Mbeya
Malange
ANGOLA
Kasama
Likasi
Katanga Plateau
Lubumbashi
Luena
Comoros
Antsiranana
Huambo
Chipata
MOZAMBIQUE
Lilongwe
ZAMBIA
ATLANTIC OCEAN
Lusaka
Nampula
Lubango
Mongu
Blantyre
Mozambique Channel
MADAGASCAR
Livingstone
Victoria Falls
Harare
ZIMBABWE
Antananarivo
Tsumeb
Maun
Bulawayo
Beira
NAMIBIA
BOTSWANA
Francistown
Fianarantsoa
Windhoek
Kalahari Desert
Namib Desert
Walvis Bay
Gaborone
Pietersburg
Tulear
Tolanaro
Pretoria
Maputo
Keetmanshoop
Johannesburg
Mbabane
SWAZILAND
Luderitz
Welkom
Drakensberg
Bloemfontein
Maseru
LESOTHO
SOUTH AFRICA
Durban
Beaufort West
Umtata
Bisho
East London
Cape Town
Oudtshoorn
Cape of Good Hope
Port Elizabeth
0
500 Miles
0
500 KM
Parallel scale at 0û 0û


Strait of Gibraltar
Mediterranean Sea
Suez Canal
Nile River
Red Sea
Gulf of Aden
Senegal River
Niger River
Blue Nile
Benue River
White Nile
Volta River
Lake Albert
Lake Victoria
Congo River
Lake Tanganyika
Lake Nyasa
Atlantic Ocean
Zambezi River
Limpopo River
Indian Ocean
Orange River
©EnchantedLearning.com

GEOGRAPHY

AFRICA
PHYSICAL—LAND FEATURES

Cycle 2, Week 16

Key Verse:
The earth *is* the Lord's, and all that therein is; the world and they that dwell therein.
Psalm 24:1

Getting Ready

1. Have children sit around their mothers, so they can look at the pictures in *Exploring the World Through Cartography* with her.

2. Same map handouts, colored pencils.

   - Africa Physical Map—no coloring on this one! Only to look at.
   - Africa Physical & Political Map—no coloring on this one! Only to look at.
   - Africa Physical Blackline Map—trace or color, if they want to, during the lesson.
   - Africa Rivers Blackline Map—trace or color, if they want to, during the lesson.

To Start

1. Explain Key Verse.

2. GEOG'RAPHY, noun [Gr. the earth, and to write, to describe.] Properly, a description of the earth or terrestrial globe, particularly of the divisions of its surface, natural and artificial, and of the position of the several countries, kingdoms, states, cities, etc. As a science, geography includes the doctrine or knowledge of the astronomical circles or divisions of the sphere, by which the relative position of places on the globe may be ascertained, and usually treatises of geography contain some account of the inhabitants of the earth, of their government, manners, etc., and an account of the principal animals, plants and minerals. (Noah Webster's 1828)

3. CARTOGRAPHY is the science or art of making maps. (M-W.com) Cartographers are mapmakers.

Geography

Drill

1. Sahara Desert
2. Sub-Saharan Africa
3. Madagascar
4. Great Rift Valley
5. Canary Islands
6. Mount Kilimanjaro
7. The Congo
8. Kalahari Desert
9. Namib Desert

Review Drill

1. Strait of Gibraltar
2. Nile River
3. Indian Ocean
4. Red Sea
5. Suez Canal
6. Niger River
7. Lake Victoria
8. Ivory Coast & Gold Coast
9. Cape of Good Hope

Africa Physical

Only time to drill and re-drill, because of so many features to learn!

Drill Again

Geography

Africa
Physical—Major Cities

Cycle 2, Week 17

Key Verse:
The earth *is* the Lord's, and all that therein is; the world and they that dwell therein.
Psalm 24:1

Getting Ready

1. Have children sit around their mothers, so they can look at the pictures in *Exploring the World Through Cartography* with her.

2. Same map handouts, colored pencils.

   - Africa Political Map—no coloring on this one! Only to look at.
   - Africa Colonial Influence Map—no coloring on this one! Only to look at.
   - Africa Cities Blackline Map—trace or color, if they want to, during the lesson.

To Start

1. Explain Key Verse.

2. GEOG'RAPHY, noun [Gr. the earth, and to write, to describe.] Properly, a description of the earth or terrestrial globe, particularly of the divisions of its surface, natural and artificial, and of the position of the several countries, kingdoms, states, cities, etc. As a science, geography includes the doctrine or knowledge of the astronomical circles or divisions of the sphere, by which the relative position of places on the globe may be ascertained, and usually treatises of geography contain some account of the inhabitants of the earth, of their government, manners, etc., and an account of the principal animals, plants and minerals. (Noah Webster's 1828)

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Geography

Discover & Drill

1. Casablanca
2. Marrakech
3. Tunis (Carthage)
4. Tripoli
5. Cairo
6. Alexandria
7. Addis Ababa
8. Khartoum
9. Kampala
10. Nairobi
11. Lilongwe
12. Lusaka
13. Cape Town
14. Johannesburg & Pretoria
15. Kinshasa
16. Monrovia
17. Freetown
18. Timbuktu (Tombouctou)

Discover More

Study the Africa Colonial Influence map. These European languages are the uniting language spoken in most of these countries. For example, in Kenya, English is widely spoken, as well as the old tribal languages. But there are many different tribal languages; so English is the uniting language. Special note: South Africa was originally a Dutch colony, until the Boer Wars, when the British conquered it, so Afrikaans, the South African version of Dutch, has a big influence in that South Africa and Namibia.


Lisbon
Algiers
Tunis
Athens
TURKEY
MOROCCO
Tripoli
Damascus
IRAQ
Cairo
Kuwait
Asia
ALGERIA
LIBYA
EGYPT
Riyadh
Abu Dhabi
SAUDI ARABIA
MAURITANIA
MALI
CHAD
OMAN
Dakar
Asmara
YEMEN
NIGER
SUDAN
Ouagadougou
Djibouti
GUINEA
Freetown
NIGERIA
Monrovia
Accra
ETHIOPIA
Bangui
CAMEROON
SOMALIA
KENYA
GABON
Kigali
Brazzaville
TANZANIA
Luanda
ANGOLA
ZAMBIA
ZIMBABWE
MOZAMBIQUE
MADAGASCAR
NAMIBIA
BOTSWANA
Maputo
SOUTH AFRICA
-14°
6°
26°
46°
22°
2°
-18°
kilometers
0
500
1000
© 2011 Maphill

African Colonies after the Berlin Conference of 1884


Black Sea
Caspian Sea
Mediterranean Sea
Red Sea
Persian Gulf
Gulf of Aden
Gulf of Guinea
Equator
Lake Victoria
Lake Tanganyika
Lake Nyasa
Mozambique Channel
SOUTH ATLANTIC OCEAN
St. Helena (U.K.)
TRISTAN DA CUNHA (St. Helena)
Ascension (St. Helena)
St. Helena (St. Helena)
Martin Vaz (BRAZIL)
PENEDOS DE SÃO PEDRO E SÃO PAULO (BRAZIL)
AZORES (PORT.)
MADEIRA ISLANDS (PORT.)
CANARY ISLANDS (SP.)
Annobon (EQUA. GUI.)
Socotra (YEMEN)
Juan de Nova Island (FR.)
Europa Island (FRANCE)
Bassas da India (FRANCE)
Tromelin Island (FRANCE)
Glorioso Islands (FRANCE)
Reunion (FRANCE)
Mayotte (administered by FRANCE, claimed by COMOROS)
PORTUGAL
Lisbon
SPAIN
Madrid
Barcelona
Valencia
Sevilla
Bilbao
ANDORRA
Marseille
Corsica (FR.)
ITALY
VATICAN CITY
Rome
Naples
Sardinia (IT.)
Palermo
Sicily (IT.)
MALTA
Valletta
BALEARIC ISLANDS (SP.)
Gibraltar (U.K.)
Ceuta (SP.)
Melilla (SP.)
Casablanca
Rabat
Marrakech
MOROCCO
Laayoune (El Aaiún)
Western Sahara
Algiers
Oran
Tunis
TUNISIA
Tripoli
ALGERIA
LIBYA
Sarajevo
SER. & MONT.
Sofia
BULGARIA
Skopje
MACEDONIA
ALB.
Tirana
GREECE
Athens
Crete (GR.)
İstanbul
Bursa
İzmir
Ankara
TURKEY
Konya
Adana
GEORGIA
Tbilisi
ARMENIA
Yerevan
AZERBAIJAN
Baku
TURKMENISTAN
Ashgabat
UZBEKISTAN
Tabrīz
Mosul
Kirkuk
Aleppo
SYRIA
Nicosia
CYPRUS
LEB.
Beirut
Damascus
IRAQ
Baghdad
Tehran
Mashhad
Eşfahān
IRAN
Shirāz
Banghāzī
Alexandria
Cairo
Al Jīzah
EGYPT
Tel Aviv-Yafo
ISRAEL
Jerusalem
Amman
JORDAN
Al Basrah
KUWAIT
Kuwait
BAHRAIN
Manama
QATAR
Doha
Abu Dhabi
UNITED ARAB EMIRATES
OMAN
Muscat
SAUDI ARABIA
Riyadh
Aswān
Jiddah
Mecca
Port Sudan
Omdurman
Khartoum
SUDAN
ERITREA
Asmara
YEMEN
Sanaa
Aden
DJIBOUTI
Djibouti
Berbera
Addis Ababa
ETHIOPIA
SOMALIA
Mogadishu
Nouakchott
MAURITANIA
MALI
Tombouctou
NIGER
CHAD
N'Djamena
CAPE VERDE
Praia
Dakar
SENEGAL
Banjul
THE GAMBIA
Bissau
GUINEA-BISSAU
GUINEA
Conakry
Freetown
SIERRA LEONE
Monrovia
LIBERIA
Abidjan
Bamako
BURKINA FASO
Ouagadougou
Niamey
Kano
NIGERIA
Abuja
Ogbomoso
Ibadan
Lagos
BENIN
Porto-Novo
TOGO
Lomé
Accra
GHANA
CÔTE D'IVOIRE
Yamoussoukro
CAMEROON
Douala
Yaoundé
Malabo
EQUATORIAL GUINEA
SAO TOME AND PRINCIPE
São Tome
Libreville
GABON
REP. OF THE CONGO
Brazzaville
Kinshasa
ANGOLA (Cabinda)
CENTRAL AFRICAN REPUBLIC
Bangui
Juba
Kisangani
DEMOCRATIC REPUBLIC OF THE CONGO
UGANDA
Kampala
KENYA
Nairobi
RWANDA
Kigali
BURUNDI
Bujumbura
Dodoma
TANZANIA
Dar es Salaam
Mombasa
Victoria
SEYCHELLES
Luanda
ANGOLA
Lubumbashi
Namibe
ZAMBIA
Lusaka
Lilongwe
MALAWI
Moroni
COMOROS
MOZAMBIQUE
Beira
Harare
ZIMBABWE
Antananarivo
MADAGASCAR
Saint-Denis
Port Louis
MAURITIUS
NAMIBIA
Windhoek
Walvis Bay
BOTSWANA
Gaborone
Pretoria
Johannesburg
Maputo
Mbabane
SWAZILAND
LESOTHO
Maseru
SOUTH AFRICA
Durban
Cape Town
Port Elizabeth

GEOGRAPHY

AFRICA
POLITICAL

Cycle 2, Week 18

Key Verse:
The earth *is* the Lord's, and all that therein is; the world and they that dwell therein.
Psalm 24:1

Getting Ready

1. *Makers of History VIII: Cleopatra*, by Jacob Abbott.

2. Hang the 3 colored political maps up, going from oldest to newest, for the children to compare. Pass out map handouts, colored pencils.

   - Africa Political Map (from last week)
   - Africa Political Blackline Map—trace or color during the lesson, if desired.
   - Africa 19th Century Political Map (not to color)
   - Not a handout, just for hanging up: Africa 1805 Political Map
   - Abbott's Illustrated Biographies Northern Africa Map (not to color)

To Start

1. Explain Key Verse.

2. GEOG'RAPHY, noun [Gr. the earth, and to write, to describe.] Properly, a description of the earth or terrestrial globe, particularly of the divisions of its surface, natural and artificial, and of the position of the several countries, kingdoms, states, cities, etc. As a science, geography includes the doctrine or knowledge of the astronomical circles or divisions of the sphere, by which the relative position of places on the globe may be ascertained, and usually treatises of geography contain some account of the inhabitants of the earth, of their government, manners, etc., and an account of the principal animals, plants and minerals. (Noah Webster's 1828)

3. CARTOGRAPHY is the science or art of making maps. (M-W.com) Cartographers are mapmakers.

Geography

Today's Lesson

We'll do things a little differently today; I'll simply read the opening chapter of Abbott's Makers of History, *Cleopatra*.

Before we begin, look at your Africa Political Maps; I'll quickly read the names of each country:

1. Egypt
2. Libya
3. Tunisia
4. Algeria
5. Morocco
6. Western Sahara
7. Mauritania
8. Senegal
9. Cape Verde
10. The Gambia
11. Guinea-Bisseau
12. Guinea
13. Mali
14. Sierra Leone
15. Liberia
16. Côte d'Ivoire
17. Burkina Fasso
18. Ghana
19. Togo
20. Benin
21. Niger
22. Nigeria
23. Cameroon
24. Equatorial Guinea
25. Sao Tome and Principe
26. Chad
27. Central African Republic
28. Sudan & South Sudan
29. Eritrea
30. Ethiopia
31. Djibouti
32. Somalia
33. Kenya
34. Uganda
35. Rwanda
36. Burundi
37. Tanzania
38. Democratic Republic of the Congo
39. Republic of the Congo
40. Gabon
41. Angola
42. Zambia
43. Malawi
44. Mozambique
45. Comoros
46. Seychelles
47. Madagascar
48. Maurit
49. Zimbabwe
50. Botswana
51. Namibia
52. South Africa
53. Lesotho
54. Swaziland

Now look at your 19th century Africa map, and notice how different the political names and lines are! Now, I'll be reading to you a description of the geography of North Africa, the Mountains of the Moon, and Egypt. While I'm reading, study your political map!

J. Bartholomew, Edin.


A
NEW MAP
OF
AFRICA
FROM THE LATEST AUTHORITIES.
By JOHN CARY, Engraver.
1805.
SPAIN
TURKEY IN ASIA
ASIA
ARABIA
YEMEN
PALESTINE
CANDIA
Tropic of Cancer
Tropic of Capricorn
NORTH PACIFIC OCEAN
SOUTH ATLANTIC OCEAN
INDIAN OCEAN
GREAT DESERT OF ZAARA
TUABRICK
GUALATA
Desert of Barca
BOURNOU
SOUDAN OR NIGRITIA
Mountains of Kong
Mountains of the Moon
NEGROES
UPPER GUINEA
GULF OF GUINEA
EQUATOR OR EQUINOCTIAL LINE
GABON
LOANGO
KINGDOM OF GINGIRI
MACHIDAS
MARACATOS
NIMEAMAY
RUENGAS
UNKNOWN
PARTS
BOROROS
GREAT NAMAQUAS
LITTLE NAMAQUAS
CAPE of GOOD HOPE
St. Helena
COMOROS
Meridian of Greenwich
Longitude West 20 from Greenwich

Africa

GEOGRAPHY

ASIA
MIDDLE EAST

Cycle 2, Week 25

Key Verse:
The earth *is* the Lord's, and all that therein is; the world and they that dwell therein.
Psalm 24:1

Getting Ready

1. Have children sit around their mothers, so they can look at the pictures in *Exploring the World Through Cartography* with her.

2. Pass out map handouts, colored pencils.

   - Asia Physical Map (not to color)
   - Middle East Physical Map (not to color)
   - Babylonia & Assyria Map (not to color)
   - Middle East Blackline Map (children can trace during lesson)

To Start

1. Explain Key Verse.

2. GEOG'RAPHY, noun [Gr. the earth, and to write, to describe.] Properly, a description of the earth or terrestrial globe, particularly of the divisions of its surface, natural and artificial, and of the position of the several countries, kingdoms, states, cities, etc. As a science, geography includes the doctrine or knowledge of the astronomical circles or divisions of the sphere, by which the relative position of places on the globe may be ascertained, and usually treatises of geography contain some account of the inhabitants of the earth, of their government, manners, etc., and an account of the principal animals, plants and minerals. (Noah Webster's 1828)

3. CARTOGRAPHY is the science or art of making maps. (M-W.com) Cartographers are mapmakers.

Geography

Today's Lesson

Drill:

1. Red Sea
2. Persian Gulf
3. Euphrates River
4. Tigris River
5. Plain of Nineveh
6. Asia Minor
7. Mesopotamia
8. Babel (Babylon)
9. Plain of Nineveh
10. Black Sea
11. Caspian Sea
12. Arabian Desert
13. Sinai Peninsula (Midian)
14. Israel (Canaan, The Promised Land)
15. Persia (Iran)

Quickly Note the modern countries of this region:

1. Egypt
2. Israel
3. Jordan
4. Lebanon
5. Syria
6. Turkey
7. Georgia
8. Armenia
9. Azerbaijan
10. Iraq
11. Kuwait
12. Iran
13. Saudi Arabia
14. Yemen
15. Oman
16. Bahrain
17. Qatar
18. United Arab Emirates (UAE)

ARCTIC OCEAN
ATLANTIC OCEAN
PACIFIC OCEAN
INDIAN OCEAN
Laptev Sea
East Siberian Sea
Kara Sea
Bering Sea
Sea of Okhotsk
Sea of Japan (East Sea)
Yellow Sea
East China Sea
South China Sea
ARABIAN SEA
BAY OF BENGAL
RUSSIA
KAZAKHSTAN
MONGOLIA
GOBI DESERT
CHINA
UZBEKISTAN
TURKMENISTAN
KYRGYZSTAN
TAJIKISTAN
AFGHANISTAN
PAKISTAN
INDIA
IRAN
IRAQ
SYRIA
TURKEY
ISRAEL
JORDAN
SAUDI ARABIA
YEMEN
OMAN
EGYPT
SUDAN
ETHIOPIA
SOMALIA
NORTH KOREA
SOUTH KOREA
JAPAN
MYANMAR (BURMA)
THAILAND
VIETNAM
CAMBODIA
MALAYSIA
BRUNEI
PHILIPPINES
INDONESIA
EAST TIMOR
PAPUA NEW GUINEA
SRI LANKA
MALDIVES
PALAU
FEDERATED STATES OF MICRONESIA
AUSTRALIA
NEW DELHI
Asia
PHYSICAL
SCALE 1 : 11 000 000
mapsinternational.co.uk


MIDDLE EAST
PHYSICAL
SCALE 1 : 11 000 000
Lambert Azimuthal Equal Area Projection
Land Elevation
Water Depth
mapsinternational.co.uk
RUSSIA
KAZAKHSTAN
UZBEKISTAN
KYRGYZSTAN
TAJIKISTAN
CHINA
TURKMENISTAN
GEORGIA
ARMENIA
AZERBAIJAN
TURKEY
GREECE
BULGARIA
ALBANIA
MACEDONIA
CYPRUS
LEBANON
SYRIA
ISRAEL
JORDAN
IRAQ
IRAN
AFGHANISTAN
PAKISTAN
INDIA
KUWAIT
BAHRAIN
QATAR
UNITED ARAB EMIRATES
OMAN
SAUDI ARABIA
YEMEN
EGYPT
SUDAN
SOUTH SUDAN
ERITREA
DJIBOUTI
SOMALIA
Black Sea
Caspian Sea
MEDITERRANEAN SEA
Red Sea
Persian Gulf
Gulf of Oman
Gulf of Aden
ARABIAN SEA
Aral Sea
Dasht-e Kavīr
Dasht-e Lūt
Syrian Desert
Mesopotamia
An Nafūd
Arabian Peninsula
Ar Rub' al Khālī (Empty Quarter)
Garagum
Qizilqum
Ustirt Plateau
Hindu Kush
Nubian Desert
Libyan Plateau
Qattāra Depression
Aş Şahrā' al Janūbīyah
Lake Nasser
Nile
Tropic of Cancer
Istanbul
ANKARA
TBILISI
YEREVAN
BAKI (BAKU)
TEHRĀN
BAGHDĀD
DIMASHQ (DAMASCUS)
BAYRŪT (BEIRUT)
'AMMĀN
AL QĀHIRAH (CAIRO)
AR RIYĀD (RIYADH)
KĀBUL
ISLAMABAD
TOSHKENT (Tashkent)
ABŪ ZABI (ABU DHABI)
AD DAWHAH (DOHA)
AL KUWAYT (KUWAIT)
MUSQAT (MUSCAT)
ŞAN'Ā'
KHARTOUM
Karāchi
Mumbai (Bombay)
Makkah (Mecca)
Jiddah (Jeddah)
Al Madīnah (Medina)
Suquţrā (Socotra) (Yemen)
Lakshadweep Laccadive Islands (India)

GEOGRAPHY

ASIA
CENTRAL ASIA

Cycle 2, Week 26

Key Verse:
The earth *is* the Lord's, and all that therein is; the world and they that dwell therein.
Psalm 24:1

Getting Ready

1. Have children sit around their mothers, so they can look at the pictures in *Exploring the World Through Cartography* with her.

2. Pass out map handouts, colored pencils.

   - Asia Physical Map (from Week 25)
   - Central Asia Physical Map (not to color)
   - (Central Asia 19th cent. map for families who don't have book; 1/family)
   - Middle East Blackline Map (children can trace during lesson)

To Start

1. Explain Key Verse.

2. GEOG'RAPHY, noun [Gr. the earth, and to write, to describe.] Properly, a description of the earth or terrestrial globe, particularly of the divisions of its surface, natural and artificial, and of the position of the several countries, kingdoms, states, cities, etc. As a science, geography includes the doctrine or knowledge of the astronomical circles or divisions of the sphere, by which the relative position of places on the globe may be ascertained, and usually treatises of geography contain some account of the inhabitants of the earth, of their government, manners, etc., and an account of the principal animals, plants and minerals. (Noah Webster's 1828)

3. CARTOGRAPHY is the science or art of making maps. (M-W.com) Cartographers are mapmakers.

Geography

Today's Lesson

1. Have students study their Asia maps; find Central Asia on their Asia maps.
2. Look at the Central Asia maps and compare them with *Cartography* page 117. Notice the Tartary States; those names are gone, but you'll often read about them!
3. Also look at the map on page 107. Notice Turkestan.

Drill:

1. Aral Sea
2. Lake Balkhash
3. Ukraine
4. Georgia
5. Armenia
6. Azerbaijan
7. Kazakhston
8. Uzbekistan
9. Kyrgyzstan
10. Turkmenistan
11. Tajikistan


CARTE DE TARTARIE
Par Guillaume Del'Isle
NOUVELLE ZEMLE
MER DE LEN
HAFF ou GOLFE DE LEN
MER D'AMOUR
MOSCOVIE
ROYAUME DE SIBERIE
PAYS DES CALMOUCS
TARTARIE INDEPENDANTE
TURKESTAN
PAYS DES MOGOLS
TARTARIE OCCIDENTALE
TARTARIE ORIENTALE
TARTARIE CHINOISE
CHINE
INDES
ROYAUME DU GRAND TIBET
PETITE TARTARIE
CIRCASSIE
MER NOIRE
LAPONIE DANOISE
LAPONIE SUEDOISE
LAPONIE MOSCOVITE
LIVONIE
TERRE D'ESO ou D'YEÇO
Echelle


Central Asia Outline Map
cc: ALearningFamily.com
40°E
45°N
85°E
55°E
70°E

THE CAUCASUS AND CENTRAL ASIA

802996AI (C00678) 7-03

GEOGRAPHY

ASIA
RUSSIA & SIBERIA

Cycle 2, Week 27

Key Verse:
The earth *is* the Lord's, and all that therein is; the world and they that dwell therein.
Psalm 24:1

Getting Ready

1. Have children sit around their mothers, so they can look at the pictures in *Exploring the World Through Cartography* with her.

2. Pass out map handouts, colored pencils.

   - Asia Physical Map (from Week 25)
   - Russia & Siberia Physical Map (not to color)
   - Russia & Siberia Blackline Map (children may trace)
   - Russia & Siberia People Groups Map
   - Russia & Siberia Political Map
   - Britannica Online Siberia Article

To Start

1. Explain Key Verse.

2. GEOG'RAPHY, noun [Gr. the earth, and to write, to describe.] Properly, a description of the earth or terrestrial globe, particularly of the divisions of its surface, natural and artificial, and of the position of the several countries, kingdoms, states, cities, etc. As a science, geography includes the doctrine or knowledge of the astronomical circles or divisions of the sphere, by which the relative position of places on the globe may be ascertained, and usually treatises of geography contain some account of the inhabitants of the earth, of their government, manners, etc., and an account of the principal animals, plants and minerals. (Noah Webster's 1828)

3. CARTOGRAPHY is the science or art of making maps. (M-W.com) Cartographers are mapmakers.

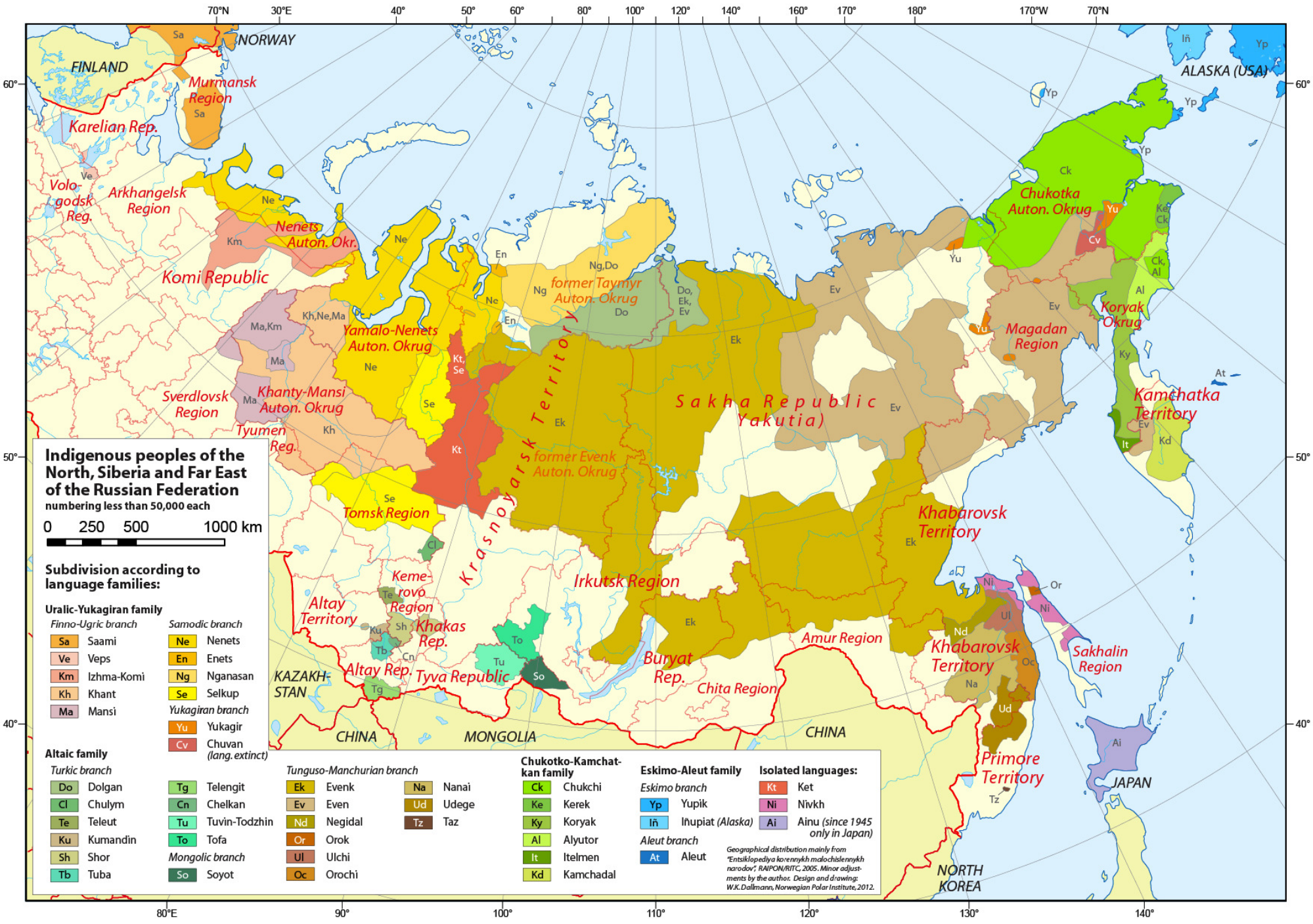
Geography

Today's Lesson

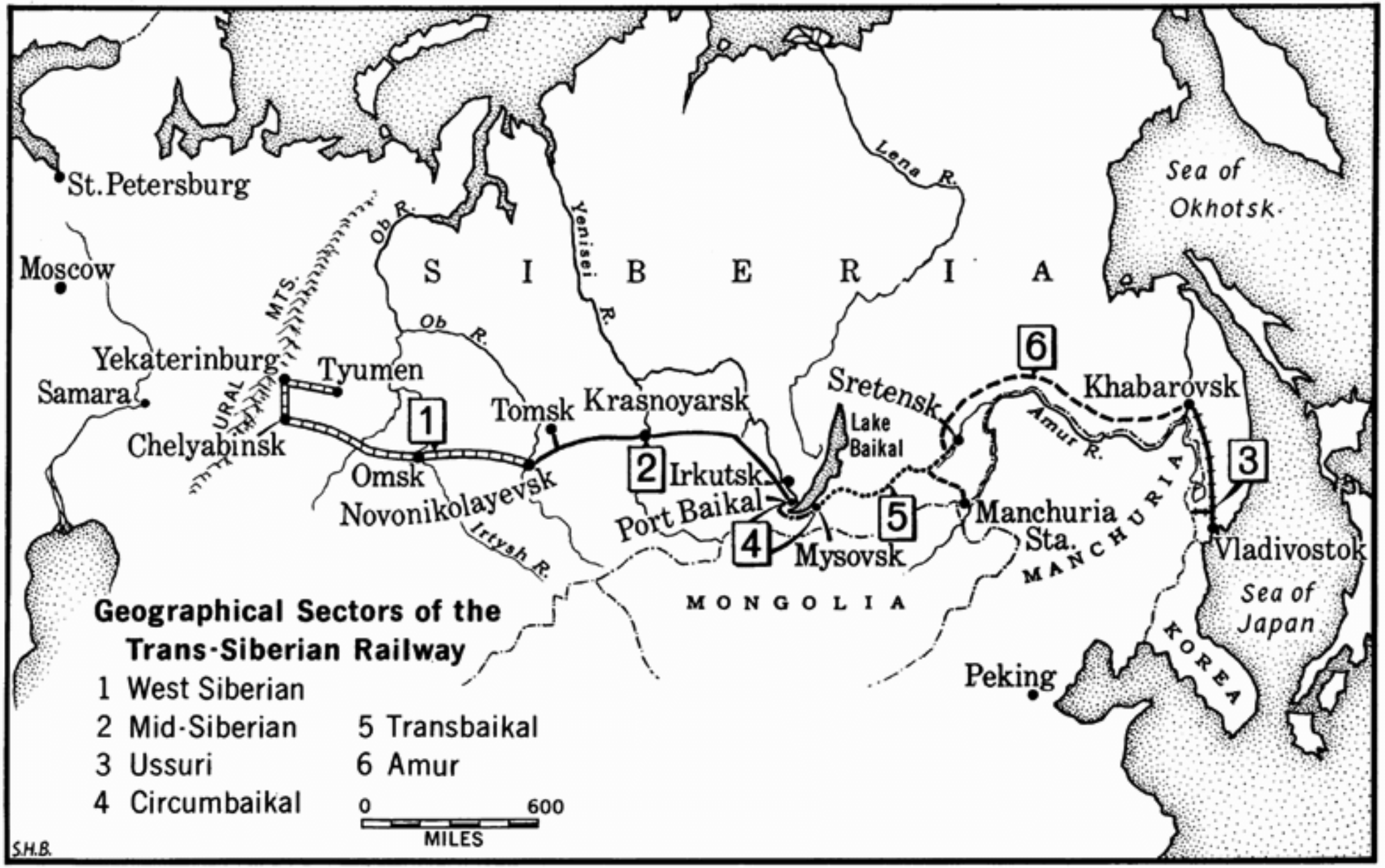
1. Have students study their Asia maps; find Siberia and Russia on their Asia maps.
2. Compare the Russia & Siberia maps with *Cartography* maps of that region.
3. Where is the Arctic Circle in relation to Russia & Siberia? What does that mean? How does that compare with Texas? What state is located on the same parallel (line of latitude) as a place in Asian Russia? (Trick question; the correct answer is none! Only Alaska.)
4. Also view the Russia & Sibera People Groups map; this map shows many indigenous people groups, still living primitively and speaking their old languages, within the Russian Federation. There are also bigger groups within Russia, not listed on this map: the Tartars, the Chechens, and the Buryats. Russia and Siberia, although on a political map are colored one big color, in reality are many different regions, kind of like how Massachusetts is really different from Louisiana, and Colorado, and California, etc., etc.
5. Notice on your Russia & Siberia Map, Russia's neighbors to the East—Finland, Estonia, Latvia, Lithuania, Belarus, etc.
6. Look at Siberia's rivers. Which way do they flow?
7. Finally, observe Siberia's mountain ranges, which they call *khrebets*.
8. Taiga: nothern forests (often permafrost soils—frozen for most of year, swampy in summers)
9. Learn more: Great article from Britannica Online

Drill:

1. Ural Mountains
2. Arctic Ocean
3. Barents Sea
4. West Siberian Plain
5. Ob River
6. Yenisey River
7. Central Siberian Plateau
8. Kara Sea
9. Lena River
10. Northeastern Siberia (Far Eastern Russia)
11. Laptev Sea
12. Altai Mountains
13. Lake Baikal (& Baikal Area)
14. East Siberian Sea
15. Amur River
16. Kamchatka Peninsula
17. Sea of Okhotsk
18. Bering Strait


Indigenous peoples of the North, Siberia and Far East of the Russian Federation
numbering less than 50,000 each
0 250 500 1000 km
Subdivision according to language families:
Uralic-Yukagiran family
Finno-Ugric branch
Sa Saami
Ve Veps
Km Izhma-Komi
Kh Khant
Ma Mansi
Samodic branch
Ne Nenets
En Enets
Ng Nganasan
Se Selkup
Yukagiran branch
Yu Yukagir
Cv Chuvan (lang. extinct)
Altaic family
Turkic branch
Do Dolgan
Cl Chulym
Te Teleut
Ku Kumandin
Sh Shor
Tb Tuba
Tg Telengit
Cn Chelkan
Tu Tuvin-Todzhin
To Tofa
Mongolic branch
So Soyot
Tunguso-Manchurian branch
Ek Evenk
Ev Even
Nd Negidal
Or Orok
Ul Ulchi
Oc Orochi
Na Nanai
Ud Udege
Tz Taz
Chukotko-Kamchatkan family
Ck Chukchi
Ke Kerek
Ky Koryak
Al Alyutor
It Itelmen
Kd Kamchadal
Eskimo-Aleut family
Eskimo branch
Yp Yupik
Iñ Iñupiat (Alaska)
Aleut branch
At Aleut
Isolated languages:
Kt Ket
Ni Nivkh
Ai Ainu (since 1945 only in Japan)
Geographical distribution mainly from "Entsiklopediya korennykh malochislennykh narodov", RAIPON/RITC, 2005. Minor adjustments by the author. Design and drawing: W.K. Dallmann, Norwegian Polar Institute, 2012.
NORWAY
FINLAND
Murmansk Region
Karelian Rep.
Volo-godsk Reg.
Arkhangelsk Region
Nenets Auton. Okr.
Komi Republic
Yamalo-Nenets Auton. Okrug
former Taymyr Auton. Okrug
Krasnoyarsk Territory
Sakha Republic (Yakutia)
former Evenk Auton. Okrug
Chukotka Auton. Okrug
Koryak Okrug
Magadan Region
Kamchatka Territory
Khanty-Mansi Auton. Okrug
Sverdlovsk Region
Tyumen Reg.
Tomsk Region
Kemerovo Region
Altay Territory
Khakas Rep.
Altay Rep.
Tyva Republic
Irkutsk Region
Buryat Rep.
Chita Region
Amur Region
Khabarovsk Territory
Sakhalin Region
Primore Territory
KAZAKH-STAN
CHINA
MONGOLIA
CHINA
NORTH KOREA
JAPAN
ALASKA (USA)
70°N
30°E
40°
50°
60°
80°
100°
120°
140°
160°
170°
180°
170°W
70°N
60°
50°
40°
80°E
90°
100°
110°
120°
130°
140°

Svalbard
(NORWAY)
Norwegian Sea
Arctic Ocean
FRANZ JOSEF LAND
Barents Sea
NOVAYA ZEMLYA
Kara Sea
SEVERNAYA ZEMLYA
NEW SIBERIAN ISLANDS
Laptev Sea
East Siberian Sea
Wrangel Island
U.S.
Provideniya
Anadyr'
Bering Sea
Cherskiy
KOLYMSKOYE NAGOR'YE
Kolyma
NORWAY
Oslo
SWEDEN
Stockholm
FINLAND
Helsinki
Murmansk
Tallinn
EST.
Riga
LAT.
LITH.
Vilnius
Minsk
BELA.
St. Petersburg
Nov-gorod
Lake Ladoga
Lake Onega
Arkhangel'sk
Pechora
Moscow
Nizhniy Novgorod
Kazan'
Kama
Perm'
Voronezh
Kharkiv
Donets'k
Saratov
Volga
Samara
Ufa
Zlatoust
Chelya binsk
Yekaterinburg
Tobolsk
Tyumen
Irtysh
Volgograd
Rostov
Orenburg
Orsk
URAL MOUNTAINS
Ob'
Noril'sk
Arctic Circle
SIBERIA
RUSSIA
Yenisey
Angara
Lena
Vilyuy
Aldan
Tiksi
KHREBET CHERSKOGO
VERKHOYANSK KHREBET
Yakutsk
Magadan
Okhotsk
KHREBET DZHUGDZHUR
Petropavlovsk-Kamchatskiy
Sea of Okhotsk
Nikolayevsk na Amure
KURIL ISLANDS
administered by Russia, claimed by Japan.
Sakhalin
Amur
Khabarovsk
SIKHOTE-ALIN'
Sapporo
Vladivostok
Harbin
Changchun
Omsk
Tomsk
Krazno-yarsk
Bratsk
Novosibirsk
Novokuzneck
Irkutsk
Lake Baikal
Ulan-Ude
Chita
YABLONOVYY KHREBET
Ulaanbaatar
ALTAY
Atyraū
(Atyrau)
Astana
Qaraghandy
(Karaganda)
KAZAKHSTAN
Lake Balkhash
Caspian Sea
Aral Sea
AZERBAIJAN
Baku
QIZILQUM
0
20
40
60
80
100
120
140
160
180


St. Petersburg
Moscow
Yekaterinburg
Samara
Chelyabinsk
Tyumen
Omsk
Novonikolayevsk
Tomsk
Krasnoyarsk
Irkutsk
Port Baikal
Mysovsk
Lake Baikal
Sretensk
Khabarovsk
Manchuria Sta.
Vladivostok
Peking
URAL MTS.
Ob R.
Ob R.
Yenisei R.
Lena R.
Amur R.
Irtysh R.
SIBERIA
MONGOLIA
MANCHURIA
KOREA
Sea of Okhotsk
Sea of Japan
1
2
3
4
5
6
Geographical Sectors of the Trans-Siberian Railway
1 West Siberian
2 Mid-Siberian
3 Ussuri
4 Circumbaikal
5 Transbaikal
6 Amur
0
600
MILES
S.H.B.


1.- European plain
2.- Fennoscandia
3.- Caucasus Mountains
4.- West Siberian plain
5.- Central Siberian plateau
6.
7. Far East and Yakutia
ARCTIC OCEAN
BARENTS SEA
KARSKOYE MORE (KARA SEA)
MORE LAPTEVYKH (LAPTEV SEA)
VOSTOCHNO-SIBIRSKOYE MORE (EAST SIBERIAN SEA)
BERING SEA
CHUKCHI SEA
OKHOTSKOYE MORE (SEA OF OKHOTSK)
BALTIC SEA
Svalbard (Norway)
Zemlya Frantsa-Iosifa (Franz Josef Land)
Novaya Zemlya (New Zemlya)
Severnaya Zemlya (North Land)
Novosibirskiye Ostrova (New Siberian Islands)
ALASKA (U.S.A.)
NORWAY
SWEDEN
FINLAND
BELARUS
UKRAINE
KAZAKHSTAN
CHINA
JAPAN
St Petersburg
MOSCOW
NORTH-WESTERN
CENTRAL
VOLGA
SOUTHERN
URAL
SIBERIAN
FAR-EASTERN
Nizhniy Novgorod
Yekaterinburg
Samara
Omsk
Novosibirsk
Krasnoyarsk
Irkutsk
Yakutsk
Khabarovsk
Vladivostok
Magadan
Zapadno-Sibirskaya Ravnina
West Siberian Plain
Sredne-Sibirskoye Ploskogor'ye
(Central Siberian Plateau)
Ural Khrebet (Ural Mountains)
Poluostrov Kamchatka (Kamchatka Peninsula)
Sakhalin
Ozero Baykal (Lake Baikal)
Aral Sea
1
2
3
4
5
6
7
RUSSIAN FEDERATION
0 km 275 550 825 km
© 2009 Ezilon.com All Right Reserved
Edited by Alex T.

Siberia

region, Asia

Siberia, Russian **Sibir**, vast region of Russia and northern Kazakhstan, constituting all of northern Asia. Siberia extends from the Ural Mountains in the west to the Pacific Ocean in the east and southward from the Arctic Ocean to the hills of north-central Kazakhstan and the borders of Mongolia and China.

Siberia
Siberia.
Encyclopædia Britannica, Inc.

Land

All but the extreme southwestern area of Siberia lies in Russia. In Russian usage the administrative areas on the eastern flank of the Urals, along the Pacific seaboard, and within Kazakhstan are excluded from Siberia. The total area of Siberia in the wider sense is about 5,207,900 square miles (13,488,500 square km); in the narrower Russian definition the area is 2,529,000 square miles (6,550,000 square km), consisting of two economic planning regions, Eastern and Western Siberia. Siberia also contains the (Russian) republics of Sakha (Yakutia), Buryatia, Altay, Khakasiya, and Tyva (Tuva).

Siberia falls into four major geographic regions, all of great extent. In the west, abutting the Ural Mountains, is the huge West Siberian Plain, drained by the Ob and Yenisey rivers, varying little in relief, and containing wide tracts of swampland. East of the Yenisey River is central Siberia, a vast area that consists mainly of plains and the Central Siberian Plateau. Farther east the basin of the Lena River separates central Siberia from the complex series of mountain ranges, upland massifs, and intervening basins that make up northeastern Siberia (i.e., the Russian Far East). The smallest of the four regions is the Baikal area, which is centred on Lake Baikal in the south-central part of Siberia.

Bolshiye Koty on Lake Baikal
Harbour of Bolshiye Koty on Lake Baikal, southeastern Siberia.

Siberia, its name derived from the Tatar term for “sleeping land,” is notorious for the length and severity of its almost snowless winters: in Sakha, minimum temperatures of −90 °F (−68 °C) have been recorded. The climate becomes increasingly harsh eastward, while precipitation also diminishes. Major vegetation zones extend east-west across the whole area—tundra in the north; swampy forest, or taiga, over most of Siberia; and forest-steppe and steppe in southwestern Siberia and in the intermontane basins of the south.

Siberia: tundra
Tundra and lakes during summer, Yamal Peninsula, Siberia, Russia. Underlying permafrost limits drainage and provides moisture for plant growth.
Bryan and Cherry Alexander

The mineral resources of Siberia are enormous; particularly notable are its deposits of coal, petroleum, natural gas, diamonds, iron ore, and gold. Both mining and manufacturing underwent rapid development in Siberia in the second half of the 20th century, and steel, aluminum, and machinery are now among the chief products. Agriculture is confined to the more southerly portions of Siberia and produces wheat, rye, oats, and sunflowers.

Siberia, Russia: oil well
Crude oil is pumped from a well in western Siberia, Russia.

History

Prehistory and early Russian settlement

It is still uncertain whether humans first came to Siberia from Europe or from central and eastern Asia. Evidence of Paleolithic settlement is abundant in southern Siberia, which, after participating in the Bronze Age, came under Chinese (from 1000 BCE) and then under Turkic-Mongol (3rd century BCE) influence. Southern Siberia was part of the Mongols' khanate of the Golden Horde from the 10th to the mid-15th century.

Sakha (Yakut) reindeer herders. *Contunico © ZDF Enterprises GmbH, Mainz*

The Sakha (Yakut) herding reindeer. *Contunico © ZDF Enterprises GmbH, Mainz*

Before Russian colonization began in the late 16th century, Siberia was inhabited by a large number of small ethnic groups whose members subsisted either as hunter-gatherers or as pastoral nomads relying on domestic reindeer. The largest of these groups, however, the Sakha (Yakut), raised cattle and horses. The various groups belonged to different linguistic stocks: Turkic (Sakha, Siberian Tatars), Manchu-Tungus (Evenk [Evenki], Even), Finno-Ugric (Khanty, Mansi), and Mongolic (Buryat), among others.

The Russian occupation began in 1581 with a Cossack expedition that overthrew the small khanate of Sibir (from which is derived the name of the entire area). During the late 16th and 17th centuries, Russian trappers and fur traders and Cossack explorers penetrated throughout Siberia to the Bering Sea. They built fortified towns in strategic locations, among them Tyumen (1586), Tomsk (1604), Krasnoyarsk (1628), and Irkutsk (1652). Most of Siberia thus gradually came under the rule of Russia between the early 17th century and the mid-18th century, although the Treaty of Nerchinsk (1689) with China halted the Russian advance into the Amur River basin until the 1860s. The impact of Russian expansion upon the indigenous peoples was twofold; the smaller and more primitive tribes succumbed to exploitation and imported diseases, while larger groups such as the Sakha and Buryat adjusted better and began to profit from the material benefits of colonization. The Russians generally did not interfere with their internal institutions and way of life, and most of the native inhabitants eventually became nominal Christians.

At first the area's Russian rulers collected tribute, which was paid by the native inhabitants in furs as it had been paid to the Mongols. Later Russian agricultural colonists arrived to feed the local Russian administrative personnel. With the decline of the fur trade, the mining of silver and other metals became the main economic activity in Siberia in the 18th century.

The Soviet period and after

Although Siberia was used as a place of exile for criminals and political prisoners, Russian settlement (by state peasants and runaway serfs) remained insignificant until the building of the Trans-Siberian Railroad (1891–1905), after which large-scale in-migration occurred. Modern farming methods were introduced into southern Siberia to grow cereal grains and produce dairy products, and coal mining was also started in several locations. During the Russian Civil War (1918–20) an anti-Bolshevik government headed by Adm. Aleksandr Kolchak held much of Siberia until 1920; virtually all of Siberia was reincorporated into the new Soviet state by 1922, however.

Trans-Siberian Railroad
Trans-Siberian Railroad.
Encyclopædia Britannica, Inc.

From the first Soviet Five-Year Plan (1928–32), industrial growth was considerable, with coal-mining and iron-and-steel complexes begun in the Kuznetsk Coal Basin and along the line of the Trans-Siberian Railroad, partly through the use of forced labour. Forced-labour camps spread throughout Siberia during the 1930s, the most important being the camp complexes in the extreme northeast and along the lower Yenisey River, whose inmates were used mostly in mining operations. During World War II, because of the evacuation of many factories from the western portions of the Soviet Union, Siberia (together with the Urals) became the industrial backbone of the Soviet war effort for a few years. Agriculture, by contrast, suffered greatly from collectivization in 1930–33 and was neglected until the Virgin Lands Campaign of 1954–56, when southwestern Siberia (including northern Kazakhstan) was the principal area to be opened to cultivation.

The late 1950s and ’60s saw major industrial development take place, notably the opening up of large oil and natural gas fields in western Siberia and the construction of giant hydroelectric stations at locations along the Angara, Yenisey, and Ob rivers. A network of oil and gas pipelines was built between the new fields and the Urals, and new industries were also established, such as aluminum refining and cellulose pulp making. The construction of the BAM (Baikal-Amur Magistral) railroad between Ust-Kut, on the Lena River,

and Komsomolsk-na-Amure, on the Amur, a distance of 2,000 miles (3,200 km), was completed in 1980.

Baikal-Amur railway
The Baikal-Amur railway running through Siberia, Russia.

Despite industrialization, migration out of Siberia was considerable in the late 20th century, and population growth was slow, in part because of the unmitigatedly harsh climate. The population of Siberia remains sparse, is chiefly concentrated in the west and south, is more than half urban, and is overwhelmingly Russian in ethnic character. The largest cities are Novosibirsk, Omsk, and Krasnoyarsk.

Chinese Characters and Genesis

on March 6, 1998

Here are seven Chinese Characters that show that the ancient Chinese knew the Gospel message found in the book of Genesis. In the book *God's Promise to the Chinese* by Ethel R. Nelson and Richard E. Broadberry, hundreds more are revealed.

Find out:

- Do the mysterious, ancient Chinese characters have a biblical meaning little understood before?
- What was the meaning of the 4,000-year-old Border Sacrifice that the Chinese emperors observed annually?
- Who was Shang Ti, worshiped in the Border Sacrifice?

Painstaking analysis of the most ancient forms of Chinese writing reveals the original thoughts and beliefs of their inventor.

Using many examples, the authors show that the inventor of the original Chinese characters knew and believed the account of creation as well as the promise of the Savior to come. Shang Ti, worshiped at the Border Sacrifice, was the Triune God.

船

boat

舟 八 口

vessel eight people

The Discovery of Genesis, C.H. Kang and Ethel Nelson, p. 55

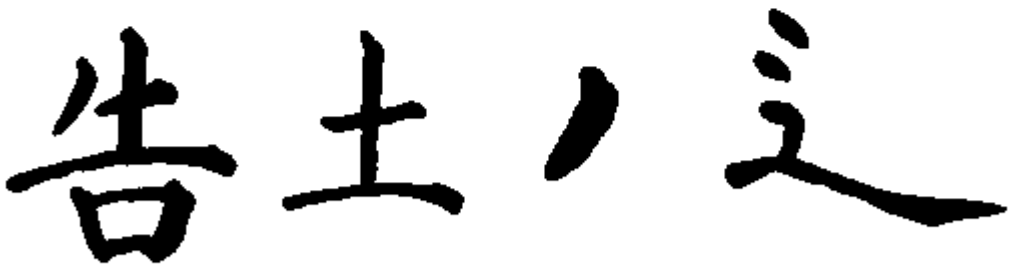
婪

to covet,
desire

two trees | women | to covet, desire

The Discovery of Genesis, C.H. Kang and Ethel Nelson, p. 59

to create



speak dust, life walk
mud

The Discovery of Genesis, C.H. Kang and Ethel Nelson, p. xiii

完

complete,
finish

二 + 儿 = 元

two person first

元 + 宀 = 完

first home complete

The Discovery of Genesis, C.H. Kang and Ethel Nelson, p. 49

禁

forbidden,
to warn

林 — *two trees*

示 — *God*
(abbreviated form)

The Discovery of Genesis, C.H. Kang and Ethel Nelson, p. 59

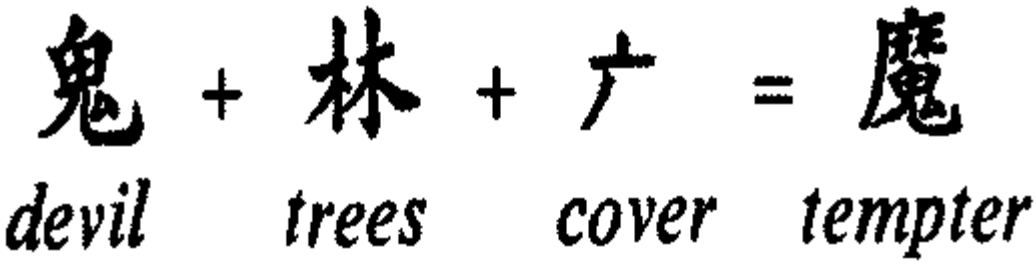
garden

土 + 口 + 亻 + 口 = 園

dust breath two enclosure garden
persons

The Discovery of Genesis, C.H. Kang and Ethel Nelson, p. 54

tempter



The Discovery of Genesis, C.H. Kang and Ethel Nelson, p. 4

There are also many more examples found in *Genesis and the Mystery Confucius Couldn't Solve*.

GEOGRAPHY

ASIA
EAST ASIA (CHINA)

Cycle 2, Week 28

Key Verse:
The earth *is* the Lord's, and all that therein is; the world and they that dwell therein.
Psalm 24:1

Getting Ready

1. Have children sit around their mothers, so they can look at the pictures in *Exploring the World Through Cartography* with her.

2. Pass out map handouts, colored pencils.

   - Asia Physical Map (from Week 25)
   - East Asia Physical Map (not to color)
   - East Asia Blackline Map (children may trace)
   - The Steppes Map (not to color)
   - Chinese Characters and Genesis article (1 per family)

To Start

1. Explain Key Verse.

2. GEOG'RAPHY, noun [Gr. the earth, and to write, to describe.] Properly, a description of the earth or terrestrial globe, particularly of the divisions of its surface, natural and artificial, and of the position of the several countries, kingdoms, states, cities, etc. As a science, geography includes the doctrine or knowledge of the astronomical circles or divisions of the sphere, by which the relative position of places on the globe may be ascertained, and usually treatises of geography contain some account of the inhabitants of the earth, of their government, manners, etc., and an account of the principal animals, plants and minerals. (Noah Webster's 1828)

3. CARTOGRAPHY is the science or art of making maps. (M-W.com) Cartographers are mapmakers.

Geography

Today's Lesson

1. The Eurasian Steppes: The Steppe, belt of grassland that extends some 5,000 miles (8,000 km) from Hungary in the west through Ukraine and Central Asia to Manchuria in the east. Mountain ranges interrupt the steppe, dividing it into distinct segments; but horsemen could cross such barriers easily, so that steppe peoples could and did interact across the entire breadth of the Eurasian grassland throughout most of recorded history. (Britannica online)
2. Cartography p. 111—notice places like Hunan Province, Nanking Province, Peking Province, Canton Province, Quicheu—that's the original Qi region of China, that China gets its name from
3. China is the land that is most similar to the United States, as far as climate and geography go.
4. Discuss Chinese characters & Genesis article

Review:

1. Altai Mountains
2. Lake Baikal
3. Kazakhstan (& other –stans)

Drill:

1. Gobi Desert
2. Yellow Sea
3. East China Sea
4. Korean Peninsula
5. Japan
6. Manchuria
7. Yellow River
8. Yangtze River
9. Xi River
10. Tibetan Plateau
11. Himalayas
12. Taiwan (Formosa)
13. North China Plain


KAZAKHSTAN
RUSSIA
Altai Mountains
MONGOLIA
ian Shan
Gobi desert
Manchurian Plain
Sea of Japan (East Sea)
Taklamakan Desert
Yellow R.
NORTH KOREA
Altun Shan
Kunlun Shan
SOUTH KOREA
JAPAN
North China Plain
Yellow Sea
Himalayas
Plateau of Tibet
CHINA
Brahmaputra
Yangtze
East China Sea
Pacific Ocean
Sichuan Basin
INDIA
Mekong
WWW.FREEWORLDMAPS.NET
Xi river
BURMA
TAIWAN
South China Sea
LAOS
VIETNAM
Hainan


3
U. S. S. R.
LAKE BAIKAL
Irkutsk
TRANS-SIBERIAN R.R.
Amur R.
Sergiopol
Khabarovsk
Namonhan
Tsitsihar
OUTER MONGOLIA
MANCHURIA (MANCHUKUO)
Harbin
CARAVAN AND MOTOR ROUTE
Urumchi
GOBI DESERT
Hsinking
Vladivostok
CHAHAR
JEHOL
Mukden
SUIYAN
SINKIANG
INNER MONGOLIA
Ansi
Paotow
Kalgan
Tatung
Peking
GREAT WALL
Tientsin
LIAOTUNG PENINSULA
Yalu R.
Port Arthur
KOREA (CHOSEN)
SHANTUNG PENINSULA
Tsinan
Tsingtao
STRAIT
JAPAN
HONSHU
TSUSHIMA
Lanchow
Taierhchwang
Haichow
Chengchow
Suchow
Yellow River
TIBET
CHINA
Sian
Pukow
Nanking
Shanghai
KYUSHU
Ankang
Laohokow
Chengtu
Yangtze River
Hankow
LAKE TAI
Hangchow
NEPAL
Ichang
Chungking
TUNGTING LAKE
LAKE POYANG
BHUTAN
Sadiya
Ledo
Chihkiang
Changteh
Changsha
Nanchang
Wenchow
Ganges River
ASSAM
Brahmaputra R.
Kweiyang
Tuyun
Ling-ling
Hengyang
Sui-chuan
Faochow
RYUKYU ISLANDS
OKINAWA
INDIA
Myitkyina
Burma Road
Kunming
Remgarh
Kwelin
Peh R.
Nan-hsiung
Amoy
Hungshui R.
Liuchow
Si R.
Swatow
FORMOSA (TAIWAN)
Calcutta
Lashio
Nanning
Canton
PESCADORE ISLANDS
Hong Kong
Mandalay
BURMA
FRENCH INDO CHINA
Hanoi
Haiphong
Pakhoi
Kwangchowan
BAY OF BENGAL
Akyab
Irrawaddy R.
HAINAN
SOUTH CHINA SEA
Salween R.
Mekong R.
THAILAND
Rangoon
Moulmein
SPRATLY ISLAND
PHILIPPINE ISLANDS
Note: Most railroads in Manchuria and Korea not shown.
CHINA, 1941
N
0 100 200 300 400 500
SCALE OF MILES


EXTENT OF THE EURASIAN STEPPES
Ancient site
Steppes
0 1000 mi
0 1500 km
© Encyclopædia Britannica, Inc.
Western Steppe
Eastern Steppe
SWEDEN
UKRAINE
KAZAKHSTAN
MONGOLIA
HUNGARY
ROMANIA
TURKEY
SYRIA
IRAN
AFGHANISTAN
CHINA
TIBET
INDIA
MYANMAR
VIETNAM
JAPAN
AFRICA
ARABIA
SIBERIA
Moscow
Karakorum
Beijing
Malazgirt
Dzungarian Gate
KYZYLKUM
KARAKUM
TIEN SHAN
XINJIANG
TARIM BASIN
TAKLA MAKAN
GOBI
MANCHURIA
YUNNAN
URAL MOUNTAINS
ALTAI MOUNTAINS
HINDU KUSH
HIMALAYAS
CARPATHIAN MTS.
CAUCASUS MTS.
GREATER KHINGAN RANGE
Black Sea
Caspian Sea
Aral Sea
Lake Balkhash
Lake Baikal
Sea of Okhotsk
Mediterranean Sea
Red Sea
Arabian Sea
Bay of Bengal
South China Sea
East China Sea
Yellow Sea
Volga
Dnieper
Don
Ural
Ob
Irtysh
Yenisey
Angara
Lena
Vilyuy
Aldan
Amur
Rhine
Danube
Tigris
Euphrates
Nile
Indus
Ganges
Yangtze
Huang He
Amu Darya
Syr Darya
Ili
20°
40°
60°
80°
100°
120°
140°
160°

GEOGRAPHY

ASIA
SOUTHEAST ASIA

Cycle 2, Week 29

Key Verse:
The earth *is* the Lord's, and all that therein is; the world and they that dwell therein.
Psalm 24:1

Getting Ready

1. Have children sit around their mothers, so they can look at the pictures in *Exploring the World Through Cartography* with her.

2. Pass out map handouts, colored pencils.

   - Asia Physical Map (from Week 25)
   - Southeast Asia Physical Map (not to color)
   - Southeast Asia Historic Map (not to color)
   - Southeast Asia Blackline Map (children may trace)

To Start

1. Explain Key Verse.

2. GEOG'RAPHY, noun [Gr. the earth, and to write, to describe.] Properly, a description of the earth or terrestrial globe, particularly of the divisions of its surface, natural and artificial, and of the position of the several countries, kingdoms, states, cities, etc. As a science, geography includes the doctrine or knowledge of the astronomical circles or divisions of the sphere, by which the relative position of places on the globe may be ascertained, and usually treatises of geography contain some account of the inhabitants of the earth, of their government, manners, etc., and an account of the principal animals, plants and minerals. (Noah Webster's 1828)

3. CARTOGRAPHY is the science or art of making maps. (M-W.com) Cartographers are mapmakers.

Geography

Today's Lesson

1. Start by compaing our Asia maps with our Southest Asia Physical Maps.

2. Notice the topography of Southeast Asia; what kind of terrain do you see?

3. Notice all of the seas between the many islands of this region:

    a. South China Sea
    b. Gulf of Tonkin
    c. Philippine Sea
    d. Celebes Sea
    e. Banda Sea
    f. Arafura Sea
    g. Timor Sea
    h. Flores Sea
    i. Java Sea
    j. Strait of Malacca
    k. Gulf of Thailand
    l. Andaman Sea

4. Explore the Southeast Asia Physical and 20th Century Maps.

    a. Notice especially Burma, Siam, Indochina, and Cambodia. (And National Geographic labeled Bangladesh wrong!!! Pakistan is West of India.)

Drill:

1. Pacific Ocean
2. Indian Ocean
3. Myanmar/Burma
4. Thailand/Siam
5. Cambodia
6. Laos
7. The Philippines
8. Singapore
9. Malaysia
10. Indonesia
11. Sumatra
12. Java
13. Borneo
14. New Guinea

THE FAR EAST

Compiled and Drawn in the Cartographic Section of the National Geographic Society *for*

THE NATIONAL GEOGRAPHIC MAGAZINE

Gilbert Grosvenor, Editor

Oblique Mercator Projection

SCALE 1:3,500,000 OR 55.4 MILES TO THE INCH

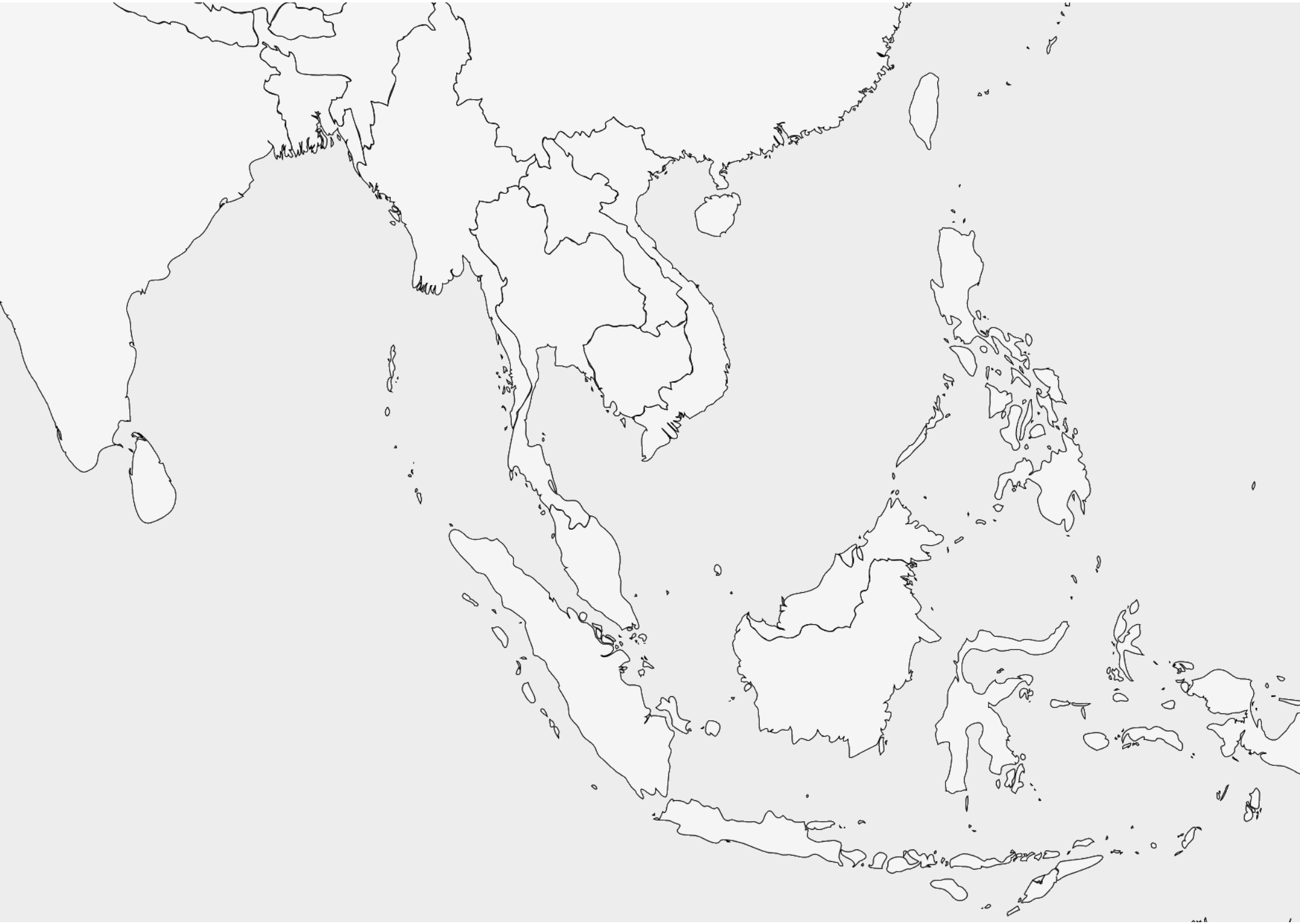
WASHINGTON · SEPTEMBER 1953

James M. Darley, chief cartographer.
Compiled by H.C. Bryan, R.W. Collins, R.A. Darley, A.D. Grassini, R.E. McAfee, W.T. Peele and C.C. Zorn. Physiography by J.J. Brehm and A.J. Holdstock. Transportation by W. Chamberlin. Typography by C.E. Riddiford.

Members of the National Geographic Society are urged to preserve carefully all maps published in their National Geographic Magazine as each map is one of a series.

SOUTHEAST ASIA

803409AI (G00834) 6-09



GEOGRAPHY

ASIA
SOUTH ASIA (INDIA)

Cycle 2, Week 30

Key Verse:
The earth *is* the Lord's, and all that therein is; the world and they that dwell therein.
Psalm 24:1

Getting Ready

1. Have children sit around their mothers, so they can look at the pictures in *Exploring the World Through Cartography* with her.

2. Pass out map handouts, colored pencils.

   - Asia Physical Map (from Week 25)
   - South Asia Physical Map (not to color)
   - South Asia Blackline Map (children may trace)
   - East Asia Physical Map (from Week 28)

To Start

1. Explain Key Verse.

2. GEOG'RAPHY, noun [Gr. the earth, and to write, to describe.] Properly, a description of the earth or terrestrial globe, particularly of the divisions of its surface, natural and artificial, and of the position of the several countries, kingdoms, states, cities, etc. As a science, geography includes the doctrine or knowledge of the astronomical circles or divisions of the sphere, by which the relative position of places on the globe may be ascertained, and usually treatises of geography contain some account of the inhabitants of the earth, of their government, manners, etc., and an account of the principal animals, plants and minerals. (Noah Webster's 1828)

3. CARTOGRAPHY is the science or art of making maps. (M-W.com) Cartographers are mapmakers.

Geography

Today's Lesson

1. Hindustan—India used to be called Hindustan, the land of the Hindus. All of these names—Hindu, Hindustan, India—come from the Indus River.

    a. History: Alexander the Great's final conquests were in the Indus River Valley civilization.

2. Himalayan Mountians—Compare South Asia Map with East Asia Map; see how these two regions come together. Highest mountain range in the world.

    a. North of the Himalayas, the Tibetan Plateau is cold, high, and the people are closely related to the Chinese.
    b. South of the Himalayas, the land is warm, low, and the people are Indian.
    c. The Himalayas are a *massive* divider, *very* difficult to cross. It's been done; Genghis Khan and his mongolian hordes conquered India (and the rest of the world, for that matter); but it is very rare. So the people groups are very different, similar to how people groups separated by an ocean are different from one another.

3. To the West, notice the Middle East—Persia, the Arabian Sea, Arabian Penninsula, Africa. Notice to the Northwest—Central Asia. And to the East, Myanmar, Thoiland, Malaysia, and Singapore.

4. The Caste System

    a. Swastika is symbol of highest caste.
    b. Evil, racist system, designed to make 90% of the population lifetime slaves to the few in the highest castes.
    c. Rooted in Hindu religion.
    d. William Carey and the practice of suttee.

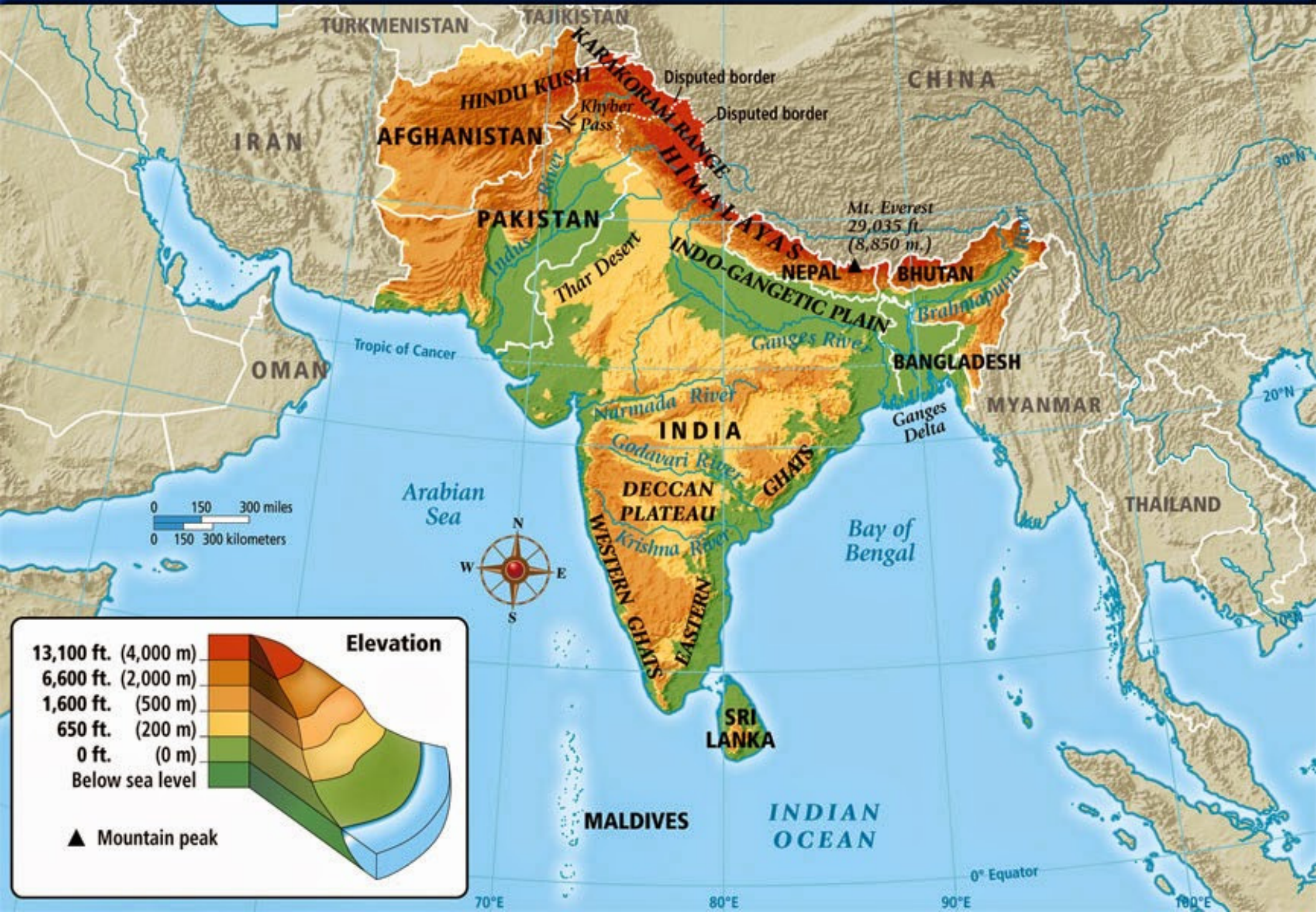
5. Holy Cow and thousands of gods

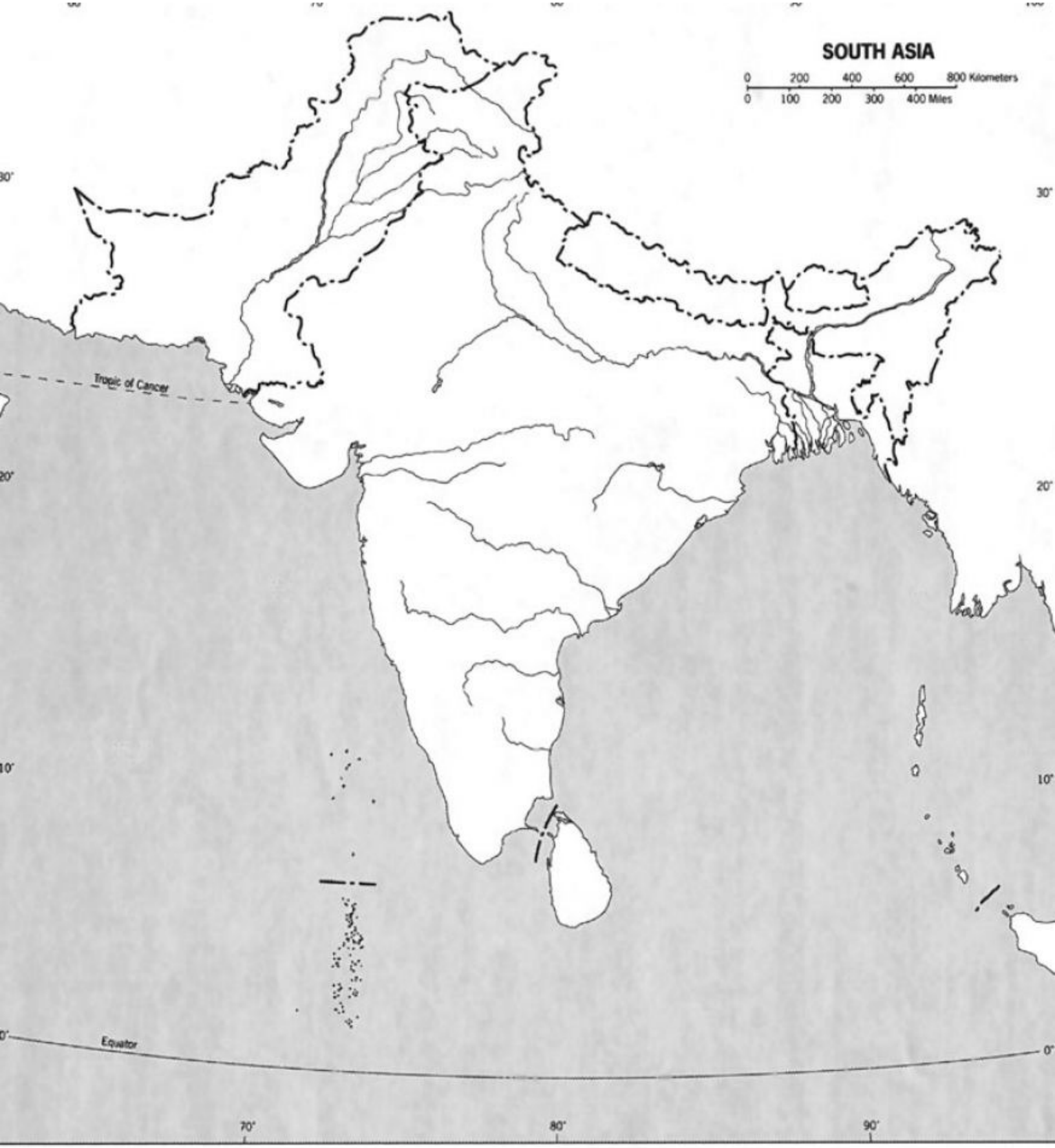
6. Ganges River—holy and filth

Drill:

1. Indus River
2. Ganges River
3. Deccan Plateau
4. Eastern Ghats
5. Western Ghats
6. Sri Lanka
7. Mt. Everest
8. Pakistan
9. Afghanistan
10. Nepal
11. Bhutan
12. Bangladesh
13. The Maldives
14. Indian Ocean

Physical Geography of South Asia




SOUTH ASIA
0 200 400 600 800 Kilometers
0 100 200 300 400 Miles
Tropic of Cancer
Equator
30°
20°
10°
0°
70°
80°
90°