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Loco for Cocoa

LEVEL: Grades 6-12
SUBJECTS: Social Studies (Geography, History), Language Arts, Family and Consumer Sciences, Mathematics
SKILLS: Applying, collaborating, communicating, comparing similarities and differences, comprehending, cooperating, creating and reading maps, describing, discussing, explaining, following directions, listening, listing, locating, mapping, measuring, observing, organizing, perceiving time, planning, public speaking, sequencing, thinking creatively, writing

MATERIALS

Writing materials; arts supplies; scissors; tape; glue; stapler; construction paper or rolls of paper; world atlases; bag(s) of chocolate candy kisses and a substitute, if needed; large index cards or brown construction paper; sugar, cocoa powder, salt, water, milk, vanilla, pepper, large pan, measuring cups and spoons; egg beater or whisk; hot plates or stove for making hot chocolate (see Getting Started for quantities); transparency of the attached **Chocolate Artwork #1** sheet; and photocopies of the attached **The History of Chocolate, Chocolate Artwork #1** and **#2, Time Line Data, Century Icons, Map Data, Mapping, Time Line Activities** and **Outline Map of the World** sheets (or use any blank world map); Internet access to *America's Heartland* Episodes. **Optional:** globes, other chocolate products for tasting.

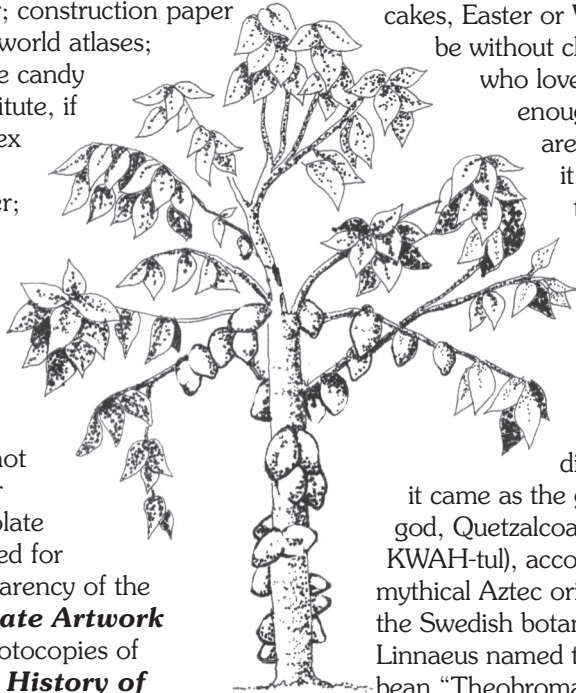
VOCABULARY

cacao bean, cacao tree, cinquain, cocoa, cocoa butter, chocolatl, fermentation, latitude, legend, nibs, pod, Quetzalcoatl, tropics

SUPPORTING INFORMATION

Imagine creamy, smooth, rich, melt-in-your-mouth chocolate...From kitchens, bakeries or candy shops, the fragrance or mention of chocolate attracts people. It's the object of

obsessions, cravings and delicious indulgences. What would birthday cakes, Easter or Valentine's Day be without chocolate? Those who love chocolate enough to say they are addicted to it, have given themselves nicknames: chocophiles or chocoholics. Perhaps chocolate lovers call this treat divine because



it came as the gift of a god, Quetzalcoatl (ket-sahl-KWAH-tul), according to its mythical Aztec origin. In 1753, the Swedish botanist Carolus Linnaeus named the cocoa bean "Theobroma cacao," from the Greek meaning "aroma of the gods." Just before it declared itself an independent country, the United States began its love affair with chocolate. In 1765, the first chocolate factory opened in the Massachusetts Bay Colony. In the many years since, chocolate captured the taste buds of America as well as the world.

Meso-American Origin of Chocolate

Cocoa is produced from the beans of the cacao (k-KAU or k-KAY-o) tree. Cacao trees were cultivated by Central and South American Indians beginning with the Mayans. It is believed that the Mayans discovered how to ferment, roast and grind the beans into powder. The actual circumstances of are a mystery. It is known that the Mayans were using this process and consuming some form of chocolate long before the Aztecs.

BRIEF DESCRIPTION

Students discover how chocolate traveled the world by creating a time line and map, preparing and tasting chocolate as an Aztec drink, and playing a traditional Mexican rhythm game. Students learn how chocolate is produced from cacao, and where cacao is grown today. Students also use language to express their thoughts, feelings and creativity about chocolate and its history.

OBJECTIVES

The student will work in a group to:

- write a cinquain poem about chocolate, based on a sensory experience;
- create a historical time line and map showing the spread of chocolate throughout the world;
- identify where cacao trees are grown today;
- sequence illustrations that depict the process to manufacture chocolate out of cacao;
- conduct the traditional version of the Mexican rhythm game 'Bate, Bate' and create a classroom version (an improvisation of) that game based on the ancient chocolate making process; and
- write a legend about the origins of chocolate based on an Aztec myth.

ESTIMATED TEACHING TIME

Seven sessions: 45 to 60 minutes each.

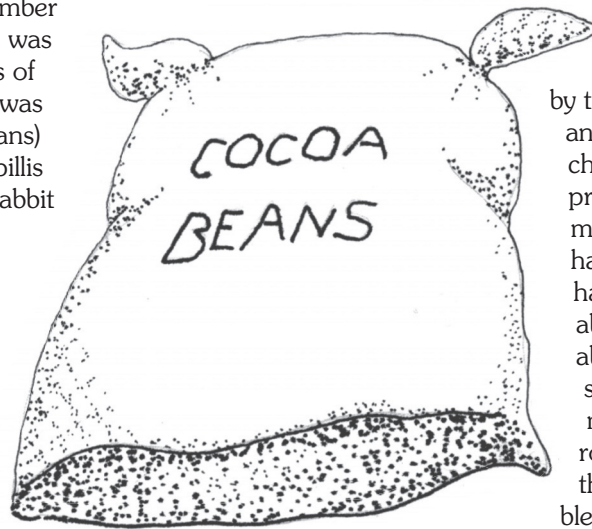
The Mythical Origin of Chocolate

An Aztec legend tells this story: Quetzalcoatl, the Aztec god of wisdom and knowledge, came down from his land of gold to teach the people how to paint, grow corn, and work with silver and wood. He gave the people their calendar and brought them the seeds of the cacao tree. He taught the Aztec people how to grow the cacao tree, harvest its seedpods, and prepare a drink called chocolatl from the seeds inside. Aztecs fermented, roasted and ground the beans into powder (choco). They mixed it with water (atl) and called the drink chocolatl (cho-ko-LAH'-tul). In addition to enjoying chocolatl as a beverage, the Aztecs so prized the beans that they used them as currency. Twenty beans were a unit of currency. Denominations of currency were based upon the number of those units. A score (20 beans) was one unit. Twenty units (20 groups of 20 beans 20 x 20) or 400 beans was a Tzontle; 20 Tzontles (8,000 beans) made a Ziquipilli; and three Ziquipillis (24,000 beans), made a load. A rabbit could be purchased for 10 cacao beans or a llama for 50 beans. A large successful household might be taxed 20 of the 50 Ziquipilli it produced in a year.

The Cacao Tree

What is the source of chocolate? How does it get to us? Cacao beans are the source of chocolate and cocoa. (Cocoa is used in reference to some of the various chocolate products. It is the anglicization of the Spanish word "cacao.") Cacao beans are the seeds of the cacao tree, which grows in the humid tropics (23.5 degrees north of the equator to 23.5 degrees south of the equator) where the climate is warm yearlong and unusually high in moisture. (Note: The cacao tree is the source of chocolate. The coca bush is the source of cocaine. The coconut palm tree is the source of coconuts.) The cacao tree, when fully grown, is only about 15 feet tall. The tree is unusual because the tree's brightly colored flowers and fruits or seedpods grow directly from the main trunk and large branches. The fruits that contain the seeds may be red, yellow, gold, pale green, or a mixture of these colors, depending upon their state of maturity. Called a pod, each fruit is about 10 inches long, three to four inches around, football-shaped, and takes about five to six months to mature. The pods contain 35 to 40 seeds that look like shelled almonds and are embedded in a sweet, white pulp. Neither the flowers nor the fruit emit even a hint of the mouth-watering smell of chocolate. Each mature

cacao tree produces between 20 to 50 pods per year. That is enough to make five to 10 pounds of processed chocolate from one tree. The cacao tree requires shade and protection from wind to grow a good crop. Hence, the small cacao trees are usually grown next to taller plants, such as banana, mimosa or pine trees. The trees begin bearing fruit when they are five to six years old, continuing until nearly 40 years old. At any given time, a single tree may have blossoms, develop fruit, and grow mature fruit on its trunk. (In the United States, you can see cacao trees growing in greenhouses in the Brooklyn Botanical Gardens, Hershey's Chocolate World in Hershey, Pennsylvania, or subtropical botanical gardens in Florida and Hawaii.)



The Making of Chocolate

The ancient methods used by the Mayans and Aztecs to grow and process cacao beans into chocolate are essentially the same processes used today by chocolate manufacturers. When freshly harvested, cacao beans do not have any flavor. Each pod yields about 35 to 40 beans. It will take about 200 beans to produce a single pound of chocolate. They must still be fermented and roasted to develop the flavor of the chocolate. Beans are then blended. Blending processes are

kept secret and known only to expert chocolate makers. See *The Story of Chocolate* for all of the details.

Where in the World?

Although chocolate apparently originated in Central America, the cacao tree is now grown on four continents - North America, South America, Africa and Asia. The four West African countries leading the world's production of cacao are (in order): Ivory Coast (Cote d'Ivoire), Ghana, Cameroon, and Nigeria. In South America, Brazil, Ecuador, Columbia, and Venezuela harvest the second largest crop in conjunction with the Dominican Republic in the Caribbean. Asia's cacao producers are Malaysia, Indonesia, and Papua New Guinea. Mexico is North America's cacao producer, although it contributes only 1.5 percent of the total world crop. Hawaii is the only state in the United State that grows cacao, with a starting industry of 50 acres of cacao trees statewide. Cacao plantations also are found in Trinidad, Costa Rica, Jamaica, Haiti, Samoa, and Java, but these nations contribute only a small portion of the world's cacao.

GETTING STARTED

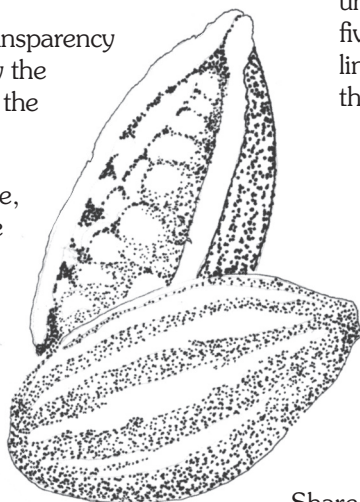
Determine if any students are diabetic or are allergic to chocolate. If so, plan for a chocolate substitute such as sugar-free chocolate or carob respectively. Gather writing materials, a regular lined sheet of paper, art supplies, scissors, large index cards or brown construction paper, bag(s) of chocolate candy kisses and a substitute, if needed; hot beverage cups (one candy kiss and cup per student), water, large pan, measuring cups and spoons, egg beater or whisk, and hot plates (if no stove). Each group of students needs a world atlas and photocopies of the **Outline Map of the World** (or any blank world map), **The History of Chocolate**, **Century Icons**, **Time Line Data**, **Mapping and Time Line Activities** and **Map Data** sheets. **Optional:** globes, other chocolate products to taste.

Have the cinquain requirements (see Step 6) written in a visible place before completing Step 5 in Session One. This can be done while students are creating their word lists.

Before Session Two, prepare the transparency **Chocolate Artwork #1** and copy the illustrations (one for each student) of the chocolate-making process.

Before Session Five, write the “Bate, Bate” chant words in a visible place so that each child may read them.

Before Session Six, give students the hot chocolate ingredients and have them calculate the quantities needed to make the recipe for the number of students in the class.



minutes to make a list of words about the unwrapped candy kiss considering both its appearance and smell.

4. Then have students eat the candy and use two minutes to make a list of words about the taste, texture and sensory experience. (Note: Students who are allergic to or dislike chocolate should not eat the candy. Perhaps a substitution may be possible, carob for example. If a substitute is used, explain that this is a different crop and produced differently.)
5. Divide the class into groups. Have students share the words on their individual lists with their group. Give the groups a few minutes to brainstorm additional words.
6. Explain to students that in their group they will use their individual lists to write a poem about the joy of eating chocolate, using the five-line cinquain (sin- KAN) as their poem format. The cinquain is an unrhymed American verse form, which consists of five structured lines (cinque is French for five.) Each line has a specific syllable or word count. Write these cinquain requirements in a visible place.

- Line one: title with two syllables or words
- Line two: title described in four syllables or words
- Line three: action described in six syllables or words
- Line four: feeling described in eight syllables or words
- Line five: another word for title, or the title repeated in two syllables or words

Share the following example:

Cocoa
Sweet, smooth, sugar
Foaming, bubbling, with cream
Savoring, delightful swallows
Cocoa

PROCEDURE

SESSION ONE

1. Give each student a chocolate candy kiss. Instruct them to keep the wrappers on the candy, and divide a sheet of paper into three columns titled “wrapped,” “unwrapped,” and “taste.” Explain that students will make individual lists of sensory words that describe their observations and taste experience. These words (adjectives and adverbs) should describe the sounds, smells, textures, size, shape, and taste they experience. There should be words under each category as they view the wrapped candy kiss, as they unwrap and observe it, and then smell and eat the chocolate.
2. Give students two minutes to make a list of words describing the wrapped chocolate candy kiss.
3. Have students remove the foil, give them two
7. After you have checked the poems for the correct number of syllables, distribute either an index card or sheet of brown construction paper to the group. Have groups draw the shape of a candy kiss, write their cinquain inside the shape, decorate it, and cut out the shape.
8. Ask a member from each group to read their cinquain to the class. Display the poems on a bulletin board with a student-created title.

SESSION TWO

- Using the transparency **Chocolate Artwork #1** identified in Getting Started, and Supporting Information about the cacao tree, cacao pod, and cacao bean, begin to discuss with the class the origin of chocolate. (Some students may think it is a synthetic substance produced in a laboratory.) Explain that cocoa is used in reference to some of the various chocolate products; it is the anglicization of cacao, which is Spanish.
- Hand out copies of the **Chocolate Artwork #1** and **#2** sheets for the chocolate making process. Read the **Story of Chocolate** and show *America's Heartland* episode #117, segment **Hawaii Cocoa** at http://www.americasheartland.org/episodes/episode_117/index.htm to depict how cocoa is grown, episode #108, segment **Raising Cane in Texas** at http://www.americasheartland.org/episodes/episode_117/index.htm and to depict sugar production from sugarcane and episode #322, segment **Sweet Beets** at http://www.americasheartland.org/episodes/episode_322/index.htm and to depict sugar production from sugar beets as appropriate during the story. Have the students create a sequential booklet of the illustrations.
- Tell students they will learn about the worldwide spread of chocolate by investigating the history of chocolate. They will discover how chocolate progressed from a product of the Americas to being a treat around the world.
- Hand out a copy of **Mapping** and **Time Line Activities** to each student. Ask the students to consider different aspects of chocolate in our world. They can do this in one of two ways:
 - The class can divide into groups and each group can work on **The History of Chocolate**, determine where chocolate is grown in the world (**Outline Map of the World** and **Map Data** sheets), or develop a time line of chocolate's movement through the world. (**Time Line Data**, and **Century Icons** artwork.) Or, they each choose one of these options to do as a class unit.
 - For the history study use the **History of Chocolate** cards, read them and record the information on the **Time Line Data** sheets and the **Map Data** sheet.
 - To do the chocolate location activity, use the data found on the completed **Map Data** sheet and locate each country on the world map. If you prefer not to use the map provided, any world map will work.
 - For the time line activity use the **Time Line Data** sheet and create a visual time line using the **Century Icons** artwork.

MAP LEGEND

Blue	1 - Guatemala
Yellow	2 - Mexico (Mayan)
Stripes	3 - Mexico (Aztec)
Green	4 - Spain (and so on)

- Once students have read all the cards and recorded the information on the **Time Line Data** and **Map Data** sheets have the students complete their respective tasks. (Note: Review the directions on the **Map Data** sheet to make sure that students use only one color code for each century and understand the special color-code needs for the six countries listed in the directions for the **Map Data** sheet: Mexico, Haiti, Trinidad, Brazil, Java, Cameroon.) All students color their maps following color-coded directions.

SESSION THREE

After students complete their time lines and maps check their answers for accuracy.

Map Data Answer Key:

1st century: Guatemala; 7th century: Mexico; 14th century: Mexico; 16th century: Spain, Haiti, Trinidad, Fernando Po; 17th century: Italy, Netherlands, France, England, Martinique, Brazil, Switzerland, Germany; 18th century: Austria, North American colonies; 19th century: Sri Lanka, Java, Sumatra, Congo, Cameroon, Madagascar, Sao Tome, Principe; 20th century: Ghana, Ivory Coast, Nigeria, Cameroon, Brazil, Colombia, Venezuela, Ecuador, Dominican Republic, Malaysia, Indonesia, Papua New Guinea, Mexico, Trinidad, Costa Rica, Jamaica, Haiti, New Guinea, Samoa, Java.

SESSION FOUR

- Display the time line(s) and map(s) describing the historic spread of chocolate.
- Summarize by asking:
 - Where did chocolate originate? (Central America.)
 - What would your life be like without chocolate?



- Do you eat it everyday? Why?
- Where is most of the world's cacao produced today?
(Four countries in West Africa lead the world in cacao production: Ghana, Ivory Coast [Cote d'Ivoire], Nigeria, and Cameroon. The South American countries Brazil, Columbia, Venuzuela, and Equador harvest the second largest crop in conjunction with the Dominican Republic in the Caribbean. Costa Rica produces cacao in Central America. Trinidad and Tobago also produce cacao in South America. Asia's cacao producers are Malaysia, Indonesia [Java], Samoa and Papua New Guinea. Mexico is North America's cacao producer, although it contributes only 2 percent of the total world crop. Cacao plantations also are found in Jamaica and Haiti.)
- What continents produce chocolate today?
(Africa, Asia, South America, and North America)
- What did you find the most interesting about the spread of chocolate?
- What did you like the most about creating the time line?
- How can time lines be used? Why are they important?
- What information on your groups' time line will you share with others about the worldwide spread of chocolate?
- What did you like the most about creating the map?
- How are map legends used? Why are they important?
- What information can you obtain from the map?
(It is easy to identify the "chocolate" continents by century; most cacao-producing countries are located between 23.5 degrees north and 23.5 degrees south of the equator. Identify this for students as the area recognized as "the Tropics.")

Ask the students to speculate whether we produce cacao commercially in the continental United States (No.) Why or why not? What does the map tell them? *(The continental United States is not in the Tropics.)* Where can cacao be commercially grown in the United States? *(Hawaii)* Why? *(It is in the Tropics.)*

SESSION FIVE

1. Introduce a traditional Mexican game called "Bate, Bate" (Ba-TAY, Ba-TAY) to students, which uses rhythm to punctuate its spoken words and motions. The two-syllable word bate means to stir very fast. The game may have originated in the days when having chocolate to consume meant one would have to beat roasted chocolate beans to create one's own chocolate. One might still see this game being played in Texas, Southern California, Mexico, or Central America. The chant tells about a chocolate sauce known as mole (mo-LAY). The sauce is served with a dish of chicken, chili peppers, rice and tomatoes. The Spanish words mean, "beat the chocolate with rice and tomatoes."
2. Write the chant in a visible place:

Bate, bate, chocolate
 Con arroz y con tomate
 Uno, dos, tres, CHO
 Uno, dos, tres, CO
 Uno, dos, tres, LA
 Uno, dos, tres, TE
 Chocolate
 Chocolate
 Chocolate
 Chocolate

3. Have the students learn the chant and correct pronunciation of the words.

Pronunciation:

Ba - ta', ba - ta',
 Cho - ko - la - ta'
 Cone - a - roz - e'
 Cone - to - ma - ta'
 U - no, dos, tra, cho'
 U - no, dos, tra, ko'
 U - no, dos, tra, la'
 U - no, dos, tra, ta'
 Cho - ko - la - ta'
 Cho - ko - la - ta'
 Cho - ko - la - ta'
 Cho - ko - la - ta'



- Once students know the chant, have them stand in a circle. Repeat the chant with the following movement.*

“Ba-te, Ba-te” (*pat sides of thighs*)
 “Cho-co-la-te” (*clap*)
 “Con - ar - roz y” (*rub hands as if mixing*)
 “Con - to - ma - te” (*flip hands and rub as if mixing*)
 “U - no, dos tres” (*bend and tap knees*)
 “Cho” (*stand straight and clap*)
 “Uno, dos, tres” (*bend and tap knees*)
 “Co” (*stand straight and clap*)
 “Uno, dos, tres” (*bend and tap knees*)
 “La” (*stand straight and clap*)
 “Uno, dos, tres” (*bend and tap knees*)
 “Te” (*stand straight and clap*)
 “Cho - co - la - te” (*All join hands and side step faster and faster and faster with each repetition.*)
 “Cho - co - la - te”
 “Cho - co - la - te”
 “Cho - co - la - te”

Alternative: repeat same pattern until the last four chocolates.

“Cho - co - la - te” (*each child steps in place, faster and faster until the last cho - co - la - te, then child spins.*)

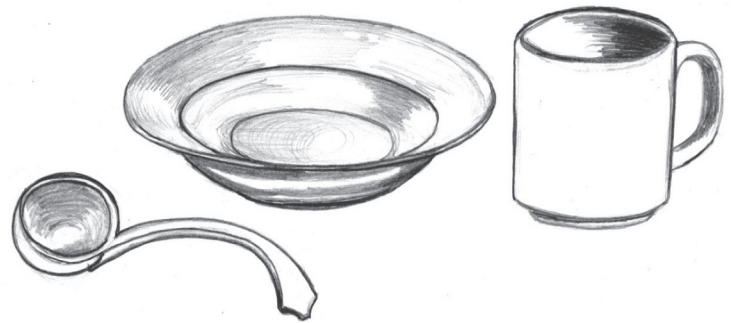
- Have students speculate as to how this game may have begun. What other variations of the rhythmic hand motions can the class suggest? Are there other examples of rhythmic chants that the students know of that teams of workers used to create a rhythm for working? (Railroad workers pounding spikes into railroad ties, military step-time chants for marching.)

SESSION SIX

- You and/or the students prepare cocoa according to the following recipe, which makes 6 cups of cocoa; adjust the recipe to meet your class size.
 - Mix 1/3 cup sugar, 1/3 cup cocoa powder, and 1/4 teaspoon salt in a saucepan.
 - Add 1 1/2 cups water.
 - Stir as it comes to a boil. Boil and stir for two more minutes.
 - Stir in 4 1/2 cups milk.
 - Heat thoroughly.
 - Add 1/4 teaspoon vanilla.
 - Whip with an egg beater or whisk before serving.

- As students drink the hot chocolate, explain that the ancient people of Central America, the Mayans and Aztecs had many myths about the feathered serpent god, Quetzalcoatl (ket-sahl-KWAH-tul). This figure is one of the oldest and most important gods in the Mayan and Aztec cultures. He was the god of chocolate as well as the god of the wind.
- Read aloud the following legend about Quetzalcoatl.

An Aztec legend tells this story: Quetzalcoatl (ketsahl- KWAH'-tul), the Aztec god of wisdom



and knowledge, came down from his land of gold to teach the people how to paint, grow corn, and work with silver and wood. He gave the people their calendar and brought them the seeds of the cacao tree. He taught the Aztec people how to grow the cacao tree, harvest its seedpods, and prepare a drink called chocolatl (cho-ko-LAH'-tul) from the seeds inside. Aztecs fermented, roasted and ground the beans into powder (choco). They mixed it with water (atl) and called the drink chocolatl.

- Tell students they are going to have the opportunity to taste chocolate as prepared by the Aztecs. Prepare the recipe that might taste somewhat like “chocolatl.” Mix the following ingredients in a sauce pan:
 - 1/2 cup cocoa powder
 - pinch red pepper
 - 1 teaspoon vanilla
 - 2 cups water.
 Bring to a boil while stirring.

Have students sample a small amount of the chocolatl. What similarities and/or differences do students notice about the taste compared with their cup of hot chocolate?

* Contributed by Beverly Bruns

5. Divide the class into groups (minimum four students per group.) Explain that each group will write a legend about the discovery of chocolate or about some other aspect of the history of chocolate. If they choose to write a legend about the discovery of chocolate, they can use the feathered serpent god, Quetzalcoatl, as one of the main characters. Other options include listing possible events that led to the discovery of chocolate (how the actual discovery took place), possible events that occurred after the discovery, or why the pods grow on the main trunk of the cacao tree.

A. One group member is the recorder while others take turns contributing to the legend. One student begins by offering two sentences. The next student provides two more sentences; the next provides two more sentences. Continue the story building in this round-robin way until students have a beginning, middle and end.

B. After all groups are finished, ask one member from every group to read his or her legend to the class.

6. Summarize the lesson by asking:

- What is the most interesting thing you learned about chocolate?
- What will you think about the next time you eat chocolate?
- What will you share with family and friends about chocolate?



EVALUATION OPTIONS

1. Ask students to write a letter from Hernan Cortes, dated May 15, 1528, to King Charles I, the ruler of Spain. Cortes explains his discovery of the drink, chocolatl. He describes the strange tree it comes from, and how the Aztec people prepare the drink. Cortes also might explain how the drink could be changed to suit the taste of the people in Spain. Also, Cortes should explain the history of cacao as he understood it. Collect the letters for your assessment.
2. Have students write a cinquain about the god, Quetzalcoatl. Tell about what he gave to the Aztec people.
3. Have students prepare an advertisement for their favorite chocolate product. The advertisement

should be designed to sell the product as well as educate people about where chocolate comes from and its history.

4. Develop a historical excursion for students. Take these travelers along the route chocolate took to become a world commodity. Design a brochure and include a map that shows the route travelers will take.

EXTENSIONS AND VARIATIONS

1. Have students research and graph the economic importance of cacao, cocoa or chocolate production to their economy.
2. Invite groups of students to imagine they are members of a task force of a large snack food company. They are charged with developing a unique healthy snack made partially of chocolate. Granola bars and chocolate-covered strawberries are examples of snacks that are made with chocolate, yet have greater nutritional value than a chocolate candy bar. How many snack inventions can they create? What creative names can they supply? Create a display complete with advertising posters and packaging designs.
3. Have students research interesting stories about chocolate, such as the use of chocolate as emergency rations for soldiers during World War I and World War II and the development of M&Ms as a candy for soldiers.

Share the following as an example: In 1920, Otto Schnering, owner of the Curtiss Candy Company, introduced a candy bar he called Baby Ruth in honor of President Grover Cleveland's daughter. As a publicity stunt, he hired a plane to fly over Pittsburgh and drop thousands of Baby Ruth bars, each gently floating to the ground under its own parachute!

4. Visit a chocolate factory in your area or write to a chocolate factory such as Mars, Hershey, Nestle, Ghirardelli, Godiva, Cadbury or other chocolate companies for information about their products and the nutritional content. Compare findings. Have students make a mural showing the process of chocolate production and processing.
5. Have students keep a chocolate journal with the types and ways they consume chocolate.
6. Card #2 from *The History of Chocolate* stated that the Aztecs used cacao beans as currency. For example, a rabbit may have cost 10 beans or a

pumpkin, four beans. Their accounting system went like this (write the following units in a visible place).

- a score = 20 beans
- a Tzontle = a score x a score or 400 beans
- a Ziquipilli = 20 Tzontles or 8,000 beans
- a load = 3 Ziquipillis or 24,000 beans

Have students brainstorm a list of everyday products they use and enjoy (e.g., bicycle, skateboard, compact disk, basketball, candy bar, package of gum, box of cereal, t-shirt with a screen print, paperback book, magazine, a fast-food super burger, and more). Write the list in a visible place. Divide the class into groups of four students. Ask each group to copy the list, rank them in cost from lowest to highest, and identify how many cacao beans they might have had to spend if they were Aztec Indians going shopping for these items after taxes were deducted. Have each group share their list with the class. Develop a tax rate and tax accordingly.

7. Have students write a limerick about what they learned about chocolate. A limerick is a short, amusing poem in which lines one, two, and five rhyme and have eight to 10 syllables. Lines three and four rhyme and have five to seven syllables. Share the following example:

A man eating while running a race,
Got chocolate all over his face,
The sweat on his head
Made the chocolate turn red,
Creating a very strange case.

8. Have students research and/or give them other important historical time periods or events to display on their time lines and/or maps. For example, the Middle Ages, the Renaissance, the Industrial Revolution, and more. Another example would be the planting of cacao trees by the Spanish as they conquered countries around the Caribbean. Challenge students to identify the countries and the dates.
9. To depict the additional ingredients added to chocolate to produce flavorful products, show *America's Heartland* episode #117, segment **Vanilla** at http://www.americasheartland.org/episodes/episode_117/index.htm, episode #112, segment **Walnuts: Harvesting Good Health** at http://www.americasheartland.org/episodes/episode_112/index.htm, and episode #305, segment **The Shell Game** at http://www.americasheartland.org/episodes/episode_305/index.htm.

CREDIT

America's Heartland episode #108, segment **Raising Cane in Texas**, episode #112, segment **Walnuts: Harvesting Good Health**, episode #117, segment **Hawaii Cocoa**, episode #117, segment **Vanilla** and episode #322, segment **Sweet Beets**. KVIE, Inc., 2005. <http://www.americasheartland.org>

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ADDITIONAL RESOURCES

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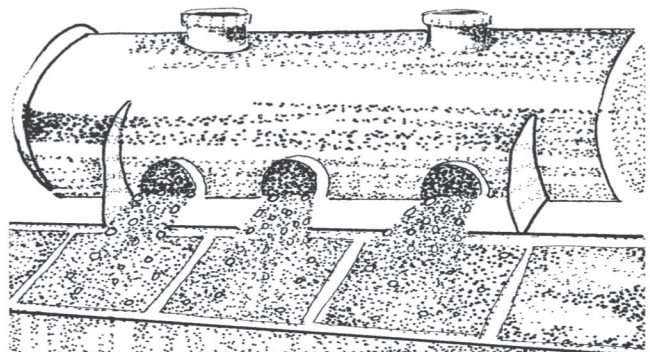
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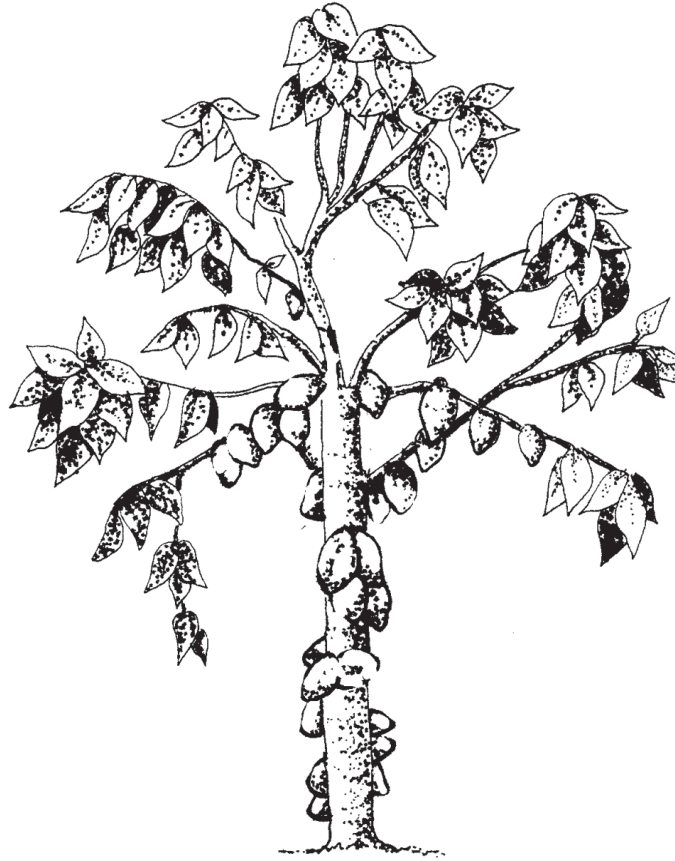
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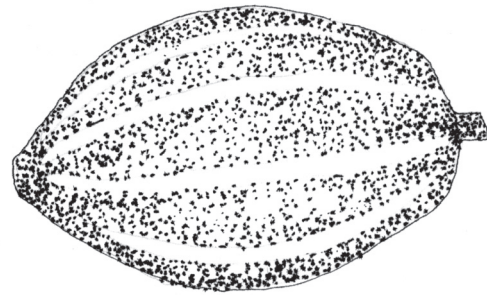
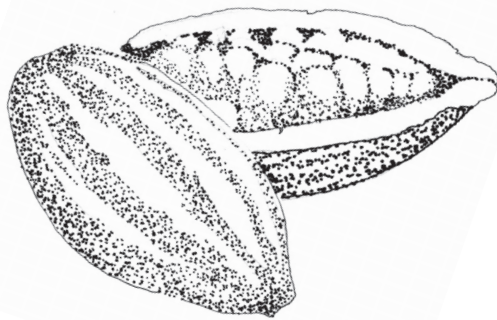
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CHOCOLATE ARTWORK #1

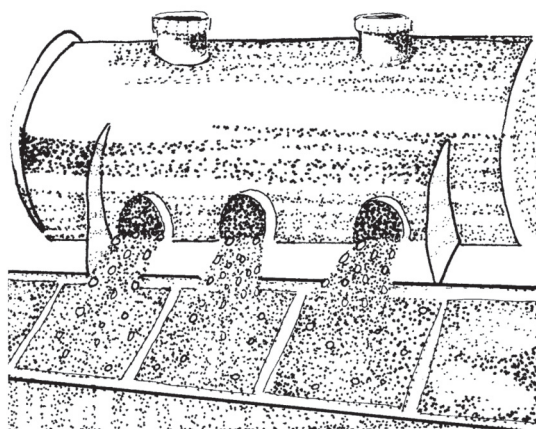


CACAO TREE

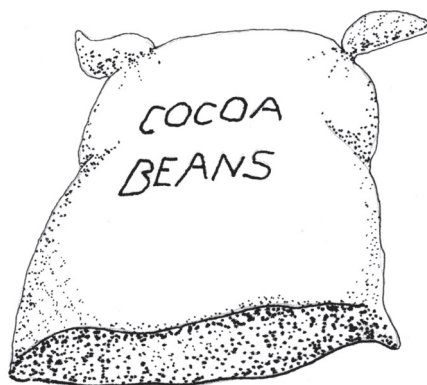
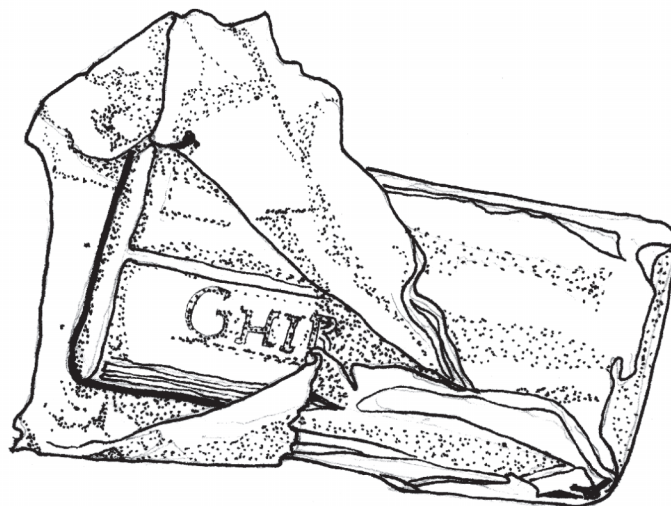


CACAO PODS

CHOCOLATE ARTWORK #2



ROASTER



THE STORY OF CHOCOLATE

The first step in making chocolate is harvesting the cacao pods. Workers cut ripe pods from the tree trunk with a large knife. The tough pods, which weigh about a pound each, are split open with a stick or knife. The fresh pulp is a sweet treat often eaten by people in cacao-raising areas.

The moist beans and pulp are heaped into wooden boxes, covered with lids, and laid in the hot sun to ferment for five to seven days. The heat causes the beans to swell and the pulp to ferment. The sticky pulp liquefies and drains away in about a day. Meanwhile, the rising heat in the mound of fermenting cacao beans gets so high, reaching about 122 degrees Fahrenheit (50 degrees Celsius), that the seeds die. They have changed color from white to lavender to dark brown. The outside coat hardens and the taste of the beans mellow.

After fermentation comes curing. If cacao beans are not cured or dried properly, they will never develop the rich flavor and aroma we know as chocolate. When the beans are dry enough they are packed in sacks and shipped throughout the world as cacao beans.

Once the beans arrive at their destination, the cacao beans are cleaned and sorted according to size. The next step is roasting the beans. The time and temperature of the roasting is the most important step in the processing of cacao beans into chocolate. This is when the enticing chocolate flavor and smell develop fully.

After roasting, the beans become dry and brittle and are now known as cocoa beans. Next, the beans are cracked open and seed coats removed. The seed coats, which are by-products of the process, are recycled into fertilizers, garden mulch, and feed for cattle as cocoa shells. The seeds themselves, now referred to as nibs, are ready to be ground. The nibs are the basis for chocolate and cocoa products.

When the nibs are ground, cocoa butter is released from the cells of the cocoa beans. The grinding generates enough heat so the fat, called cocoa butter, melts and turns into a rich brown liquid known as chocolate liquid or liquor. This only means that it is liquid, it does not contain alcohol. Chocolate liquor is the basic material from which other chocolate products are made.

If chocolate liquor is poured into molds to cool and harden, you'll have baking chocolate, also known as unsweetened chocolate or bitter chocolate. But there are two other things you can do with chocolate liquor - turn it into eating chocolate or separate it into two ingredients: cocoa and cocoa butter. To make cocoa, the cocoa butter is squeezed from the chocolate liquid and drained off. The remaining hard brown cake is pulverized, sometimes mixed with additional ingredients, and sifted and packaged as cocoa. The melt-in-your-mouth chocolate you eat as candy starts by combining melted chocolate liquor with cocoa butter, sugar and flavorings. Milk or cream is added at this stage to make milk chocolate. The mixture is ground and kneaded to develop a smooth texture and pleasant chocolate flavor. The mixture is tempered before it is poured into molds of various sizes and shapes. If you do not use any chocolate liquor at all, but just mix cocoa butter with milk and sugar, you get a true "white chocolate." (Many candies appearing as white chocolate contain no cocoa butter and are artificially flavored confections known as pastelle.)

Why do various brands of chocolate taste different? The actual details of processing and combination of ingredients used are closely guarded secrets and alter the taste and quality of chocolate produced. No company wants anyone to know how their special brand of chocolate is made.

Chocolate contains a small amount of theobromine, a substance similar to caffeine. Theobromine has stimulant properties and can create the same effects as caffeine for some people - alertness, elevated mood, appetite depression, and increased mental and physical energy. Too much chocolate may cause insomnia and nervousness, as well as contribute to weight problems. Theobromine can be extracted from the beans and used in medicinal preparations as stimulant drugs.

Every part of the cocoa bean can be used. In addition to the uses described above, cacao beans are used for the manufacture of cocoa butter for the preparation of salves and moisturizers for the drug and cosmetic industries.

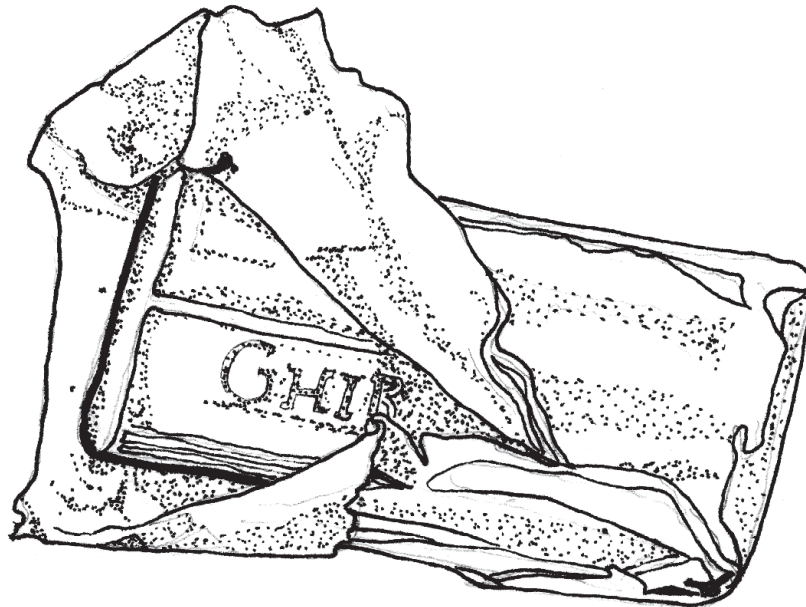
MAPPING AND TIME LINE ACTIVITIES

Directions:

1. Decide within your group which two students are responsible for reading and understanding the information, which two will be creating the time line, and which two for creating the map.

Note: Countries may appear more than once: be sure to list them each time.

2. Two students take turns reading the cards on the following pages. As one student reads a card, beginning with Card #1, the others record information on their specific data sheet. These two students also select the Century Icon for each card. The student not reading confirms everyone's information and icon choice.
3. Time line students (two) record information on the **Time Line Data** sheet.
4. Mapping students record information on the **Map Data** sheet.
5. Once the **Data** sheets are completed and the decisions made, use the following directions to complete the **Outline Map of the World** sheet.
6. Use the information from **The History of Chocolate** cards to trace the routes that chocolate took as it became a global treat.
7. Color and attach the **Century Icons** to the time line and countries.
8. Write the names of the continents on the map.
9. Use the **Map Data** sheet to create a map legend on a separate piece of paper. Use a different color to represent each century. Write the name of the country next to the number of the country.



THE HISTORY OF CHOCOLATE

(Cut cards apart.)



Card #1 Chocolate in the Mayan World

The cacao tree is a curious sight, with its large pods protruding from the branches and trunk. The cacao tree must have attracted the curiosity of the Mayan inhabitants of the rain forests of Central America around the 1st century A.D. The Mayans may have raised the tree on plantations as early as 500 (6th century). Mayans first planted cacao seeds in the Yucatan, Mexico, in 600 (7th century) when they moved from their original home in Guatemala. Chocolate remains from Mayan pottery have been found in Guatemala. The Mayans fermented, roasted and crushed the beans to bring out the chocolate flavor. Then they added them to water with spices to make a chocolate drink. It was flavored with red pepper and vanilla, but no sugar, and it was very spicy.



Card #2 Chocolate in the Aztec World

The Aztecs arrived in Mexico in the 1300s (14th century) and controlled the area during the 1400s (15th century) and early 1500s (16th century). Like the Mayans, they also crushed and roasted cacao beans to prepare a peppery drink without sugar. Called chocolatl (chock-oh-LAH'-tul), this drink was consumed by wealthy people and royalty. Common people used cacao as a flavoring in a food prepared from corn meal. Besides being used as food, cacao beans were so valuable to the Aztecs that they used them as currency (money).

For hundreds of years chocolate had been enjoyed only as a drink. The very bitter chocolatl was the royal drink, and Emperor Montezuma served it to his Spanish guests. The Aztec emperor was said to be so fond of chocolate that 50 pitchers were prepared each day for his personal consumption and 2,000 more for his court. Montezuma built up massive amounts of cacao in various forms as required payment from the tribes he conquered. When Cortes arrived in Tenochtitlan (present-day Mexico City), one of his men estimated that Montezuma had 2 million pounds of cacao beans in one of his warehouses.



Card #3 The Cacao Bean Leaves Mexico

Led by Hernan Cortes, Spanish invaders in Mexico discovered the pleasures of the Aztec drink chocolatl (chock-oh-LAH'-tul) in the early 1500s (16th century). In 1528, Cortes returned to Spain and took with him cacao beans and the Aztec recipe. The Spaniards did not like the new drink until someone added sugar. Charles V planted a cacao plantation in Spain. Cortes took beans with him to plant when he sailed to Haiti and Trinidad in the West Indies and Fernando Po, an island off Africa's west coast. For many years, the Spanish tried to keep the recipe secret. The secret was finally discovered from the Spanish monks who were entrusted with the task of fermenting, roasting and grinding the precious cacao beans and shaping the chocolate into little tablets to be used by royal chocolatiers (chocolate makers).



Card #4 Chocolate Travels To Europe

Chocolate traveled Europe in the 17th century. In 1606, an Italian merchant named Antonio Carletti brought chocolate from Spain to Italy. The drink made its way from Italy to Holland (Netherlands), and at sometime during the 1600s Amsterdam became involved in the cacao trade. When the Spanish Princess Maria Theresa married King Louis XIII of France in 1615, she brought chocolate as a gift for her young husband and introduced the beverage to the French court at Versailles. French shopkeepers exported chocolate to England in the mid-1600s. In 1657, the first of the famous English Chocolate Houses opened in England, serving the delicious beverage to wealthy citizens with food, gambling, and lively conversation. The French began cacao cultivation on the West Indian island of Martinique in 1660 and in Brazil in 1677. (Martinique is part of the Lesser Antilles in the West Indies.) Chocolate appeared in Switzerland and Germany in 1697 and in Austria in 1711 (18th century). The English added milk to chocolate in 1700.



THE HISTORY OF CHOCOLATE (continued)

(Cut cards apart.)



Card #5 Chocolate Arrives in the American Colonies

The North American colonies were slower to adopt the new food. The chocolate imported from Europe was outrageously expensive. Although a Boston apothecary (drug store) was advertising chocolate for sale in 1712 (18th century), it was not until 1755 that colonists went into the chocolate business for themselves. In 1765, John Hannon, an Irish chocolate maker, started a business with Dr. James Baker of Massachusetts to import cacao beans to the American colonies directly from the Caribbean islands. From then on chocolate grew in popularity and economic importance. When Hannon was lost at sea in 1770, Baker took over the company, which still bears his name and produces chocolate products used in baking.



Card #6 Chocolate Takes on New Forms

In 1828 (19th century), a Dutch firm manufactured the first chocolate powder. This powder consisted of cacao with two-thirds of the fat removed. Fry and Sons, an English firm, developed the first chocolate in solid form in 1847. Daniel Peter and Henri Nestle, both Swiss, improved the Fry and Sons method of chocolate production by adding concentrated milk to sweet chocolate and created milk chocolate in 1875. Both companies made bars of the cocoa butter removed from the cacao beans to make powdered chocolate. These bars were the forerunners of today's chocolate bars.



Card #7 Establishment of Non-Spanish Cacao Plantations

Spain controlled the supply of cacao beans until about 1700. It was not until the 1800s (19th century), as demand for chocolate increased across Europe, that other countries began to establish cacao plantations to meet the demand. The Dutch started operations in Ceylon (now Sri Lanka), Java, and Sumatra; the Belgians in the Congo; the Germans in Cameroon; the French in Madagascar; the Portuguese in Sao Tome and Principe, twin islands off the west coast of Africa; and the English in the areas of the West Indies. Note: Do not list West Indies as a country on your **Map Data** sheet; it is not a country.)



Card #8 Cacao Production Today

At the close of the 20th century (1900s) four countries in West Africa led the world in cacao production: Ghana, Ivory Coast (Cote d'Ivoire), Nigeria, and Cameroon. South American countries such as Brazil, Colombia, Venezuela, and Ecuador, and the Dominican Republic in the Caribbean harvest the second-largest crop. Malaysia, Indonesia, and Papua New Guinea are also significant producers. Cacao plantations can also be found in Mexico, Trinidad, Costa Rica, Jamaica, Haiti, Samoa, and Java. Mexico contributes only about 2 percent of the total world crop.

MAP DATA

Directions: Be sure to use only one color code for each country. There may be numerous countries in some centuries. Use light colors (such as yellow, gray, orange, pink) to color code the following countries as you come across them: Mexico, Haiti, Trinidad, Brazil, Java, Cameroon. Since these six countries occur two or more times on ***The History of Chocolate*** cards, they will have two different country numbers, and you will need to add a design (like strips [in different directions], wavy lines, dots) to the original color representing each country.

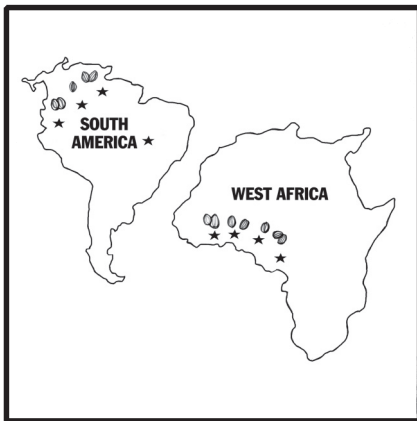
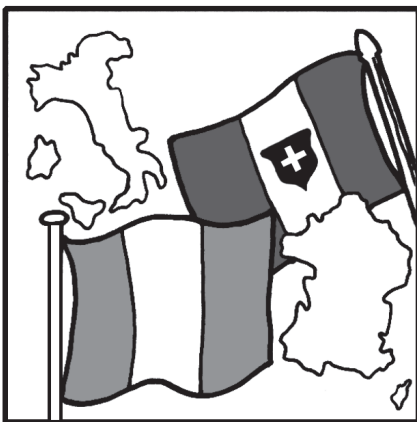
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TIME LINE DATA

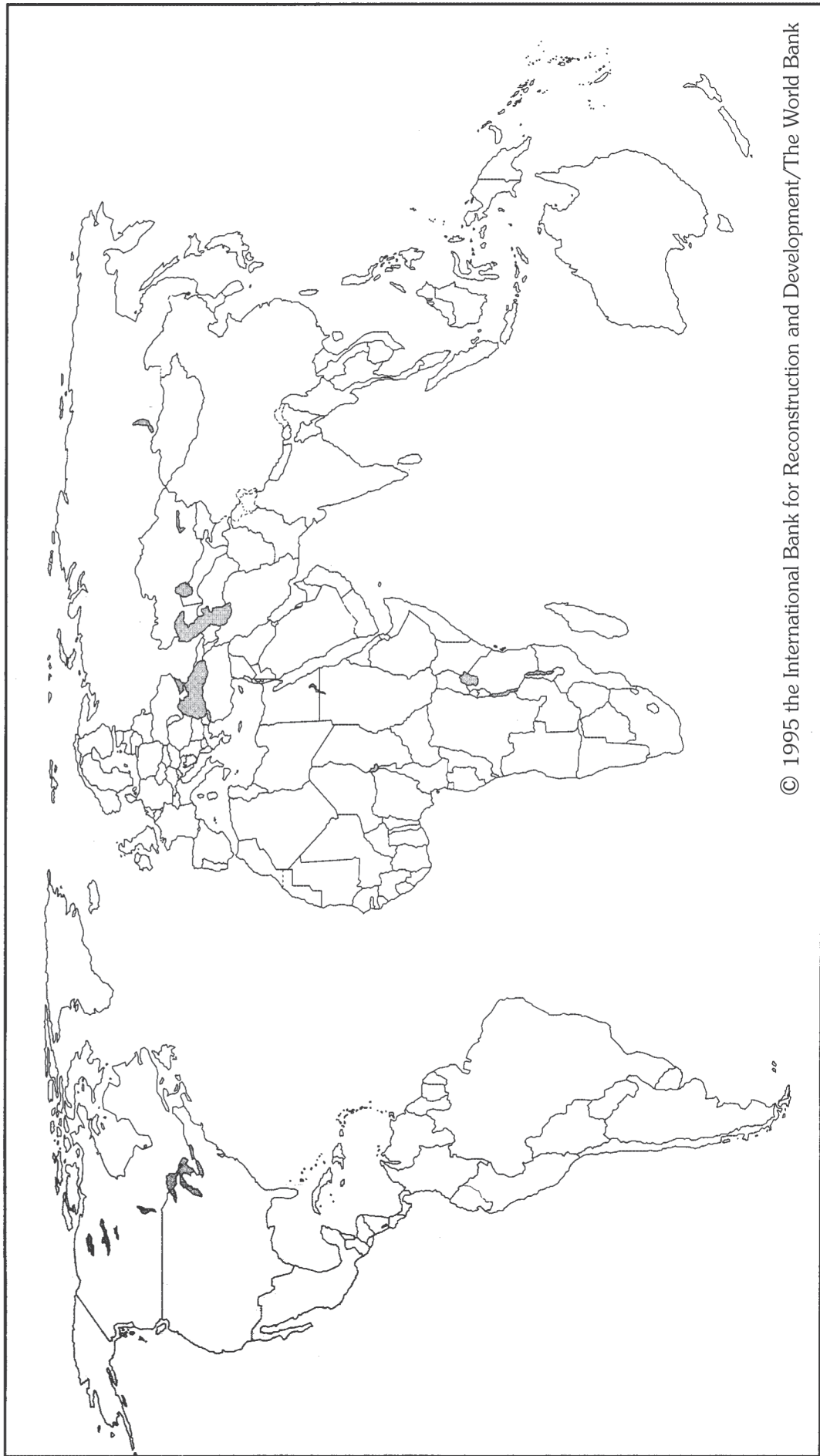
Directions: Use this sheet to record the card number, years, countries, and special events (e.g., first chocolate powder, first solid, and so on).

Card #	Year (in order)	Country	Special event

CENTURY ICONS



OUTLINE MAP OF THE WORLD



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