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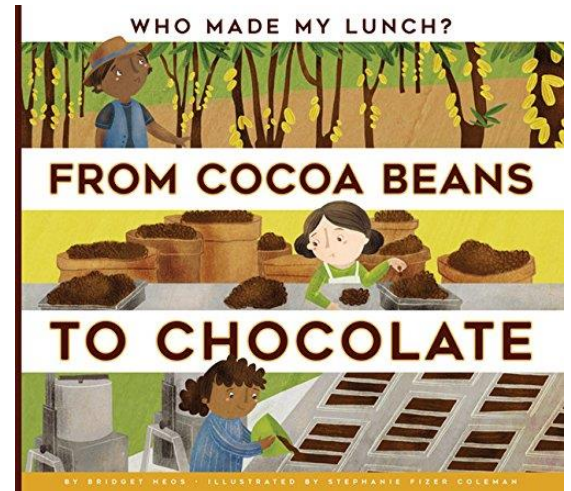
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*From Cocoa Beans to Chocolate (Who Made My Lunch? Series)*

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**Mmm...chocolate! We all love a little bite here and there, but where does it come from? In this narrative nonfiction, a child has that exact wondering and, through exploration, learns all about cocoa farmers, how cocoa beans are harvested, and how chocolate makers use cocoa beans to make chocolate at their factories. Included in the story are a map of where cocoa trees are grown, a glossary, and resources that can extend students' learning.<sup>1</sup>**



**Did You Know? (Ag Facts)**

- The Snickers bar, from MARS Inc., is the best selling candy bar in the world.
- The scientific name of the cacao tree (*Theobroma cacao*) means "food of the gods."
- George and Martha Washington were big fans of chocolate! Martha even had a special recipe for her own chocolate that was easier on her stomach.
- More than 400 million M&M's milk chocolate candies are produced every day in the US.

**Discussion Questions**

- Why do we not grow cacao trees in the United States?
- What is a Fair Trade farm?
- What surprised you the most in how chocolate is produced?

**Grade Level(s):** 2-5

**Purpose:** Students will explore how chocolate is produced, compare the price and taste of chocolate, and identify on a map where cacao trees are farmed.

**Vocabulary:**

- **cocoa bean:** the seed of a cocoa plant
- **dark chocolate:** candy made from the ground beans and sugar
- **Fair Trade farm:** a farm on which workers are paid a price for their crops and treated fairly (ex. child labor is NOT allowed)
- **husk:** the outer layer of a cocoa bean
- **milk chocolate:** candy made from ground cocoa beans, sugar, and milk
- **nib:** the inner portion of a cocoa bean
- **pulp:** the soft and juicy part of a fruit
- **tempering:** the process of heating and cooling chocolate to make it smoother

**Background Agricultural Connections: <sup>2</sup>**

Cocoa beans are the seeds found inside cacao (ka-kow) pods which grow on cacao trees all over the world. Cacao trees grow in a small area of the world spanning 20 degrees north and south of the equator. The trees grow melon-like fruit called cacao pods. These cacao pods are harvested by hand, and inside each pod are 20-40 seeds. These seeds inside are the cocoa beans that give chocolate its unique and special flavor.

There are approximately 3.5 million cacao farms worldwide. Africa is the leading cacao producing continent generating 70% of the world's cacao. Cacao trees are also grown on the continents of North America, South America, and Asia. Major cacao growing countries include Mexico, Brazil, Ecuador, and Indonesia.

Chocolate's first appearance in North America may have happened by accident. In 1641, a Spanish ship, the Nuestra Senora del Rosario del Carmen, was on its way from Puerto Rico to Spain when a bad storm forced it to take refuge in the port of St. Augustine, Florida (left). On board were crates of cacao beans and equipment for making chocolate. It is not known what became of this shipment of chocolate goods.

### Chocolate's Journey <sup>2</sup>

Materials:

- *From Cocoa Beans to Chocolate* book
- ["Chocolate – How It's Made" video](#)

Procedures:

1. Write "chocolate" in the middle of the board and build a word web around it by asking students what words come to mind when they think of chocolate. Encourage them to consider all of their senses as they think of different descriptive words and words associated

with this treat. If necessary, suggest they include products that contain chocolate, such as candy bars, cookies, cakes, ice cream, syrup, and sauces.

2. Show students an almond or object of similar size and say that all of these products, sensations, and ideas are the result of the cacao bean that looks similar to the object you are holding.
3. To get a better understand of how chocolate is produced, read *From Cocoa Beans to Chocolate* and allow students to watch the short video “Chocolate – How It’s Made”.
4. Have students answer the following prompt in their journal: If you could design the ultimate candy bar, what would it be made out of? What would it look like? Taste like? Use as many adjectives as you can!

### **Chocolate Taste-Testing <sup>2</sup>**

Materials:

- 4 types of milk chocolate bars (small sample for each student)
- 4 types of dark chocolate bars (small sample for each student)
- Paper plates (dispenser for milk chocolate samples and dark chocolate samples)
- *Chocolate Taste-Testing Worksheet*, 1 per student

Preparation:

1. Obtain enough milk chocolate and dark chocolate for each student to sample a small piece. Keep the chocolate bar wrappers—you may need these later to determine cocoa or sugar content or to view nutritional data.
2. Open bars and use a knife to scrape off any identifying logo or words (e.g., Hershey). Cut samples (a half-inch square from each bar is enough) from large bars.
3. Use a marker to draw four quadrants on each paper plate. Label one quadrant M1 (for milk chocolate sample 1), M2 (for milk chocolate sample 2), M3 (for milk chocolate sample 3), M4 (for milk chocolate sample 4). Mark the second plate in the same manner but label the quadrants D1, D2, D3, D4.
4. Use your receipt to calculate the price per ounce for each chocolate sample.

#### **Sample Chocolate Cost Calculations**

	<b>Milk Chocolate</b>		<b>Bar Size</b>	<b>Price</b>	<b>Price/Oz</b>
M1	Lindt Milk		4.4 oz	\$2.00	\$0.45/oz
M2	Symphony		4.25 oz	\$1.25	\$0.29/oz
M3	Hershey’s Milk		4.4 oz	\$1.25	\$0.28/oz
M4	Ghiradelli		3.0 oz	\$1.98	\$0.66/oz
<b>Dark Chocolate</b>					
D1	Hershey’s Special Dark		4.25 oz	\$1.25	\$0.29/oz
D2	Ghiradelli Twilight		3.5 oz	\$2.28	\$0.65/oz
D3	Lindt Dark		4.4 oz	\$2.00	\$0.45/oz
D4	Costa Rica		3.5 oz	\$2.28	\$0.65/oz

Procedures:

1. Review the *Chocolate Taste-Testing Worksheet* with students, explaining that they should use it to take notes as they sample the different types of chocolate.
2. Ask students to begin tasting. You may want to have cups of water for students to drink between samples.
3. Share the names, ingredients, and costs of the chocolate bars with students, and ask them to complete their worksheets.
4. Explain to students that the ingredient list notes what is in the chocolate from largest to smallest quantity. If sugar is before cocoa that means the chocolate has more sugar. The chocolates' ingredients determine taste and texture. Use the following questions to explore students' observations:
  - a. Does the chocolate have a waxy texture?
  - b. Does it cost more or less compared to the other chocolates?
  - c. Does chocolate with a strong "chocolate" flavor cost more?
  - d. Do you like sweeter chocolate?
  - e. What costs more—chocolate with more sugar or chocolate with more cocoa?
  - f. Do you prefer dark chocolate or prefer milk chocolate?

### **Cacao Tree Geography**<sup>3</sup>

Materials:

- World Map (included below) for each student
- Crayons/colored pencils

Procedures:

1. Discuss with your students that cacao trees are what produces cocoa beans. Show students pictures of the cacao tree and cacao pods while sharing with them the information on where cacao trees are located throughout the world.
2. Help students find the Equator and trace the line in blue. Point out to students the 20 degrees N and S lines to show the main region where cacao trees grow.
3. Discuss that Africa is the world's leading cacao producer. Find Africa on the map and have the students color it brown (for chocolate). Have students also color the island of Madagascar (off the southeastern side of Africa) brown as well. The countries in Africa that produce cacao are Cote d'Ivoire, Ghana, Sao Tome, Principe, Madagascar, Nigeria, and Cameroon.
4. South America is another continent that produces cacao. Have students locate South America and color it red. The countries in South America that produce cacao are Brazil, Peru, Ecuador, Venezuela, and Columbia.
5. Cacao trees are also found in Central America – the southern portion of the continent of North America. Find Central America on the map and color it green. The countries that produce cacao in Central America are Mexico, Costa Rica, and Panama.
6. Find the Caribbean islands on the map and color them purple. The islands that produce cacao are the Dominican Republic, Jamaica, Trinidad, and Tobago.
7. Have students locate Indonesia on the map. Indonesia is part of the continent of Asia and is located off the southeastern corner. Color Indonesia yellow.

8. As you finish the class exploration, you may have students journal about something they discovered while looking at the map. An extension of this activity could be for students to research identified growing regions for cacao trees and write about one of their choice.

### Extension Activities:

- Have students depict the life cycle of a cacao tree, and explain how farmers harvest the beans.
- Explore Milton Hershey's life and take a look inside the Hershey, Pennsylvania, plant by watching this video. ([https://www.youtube.com/watch?v=b6c\\_NlyrvNI](https://www.youtube.com/watch?v=b6c_NlyrvNI))
- Dissect a typical meal in the United States, exploring the origins of the meal's content.
- Hold a discussion on the roles that transportation and infrastructure play in food availability for different countries or different communities in the United States.
- Read Issue 4 of [Ag Today](#) titled *Agriculture in Society*. This reader can be printed or accessed digitally. Students will learn how agriculture plays a significant role in different geographic areas such as small towns, large cities, and local, state, and federal government. It also places a focus on where food comes from and why different foods are grown in different states.

### Suggested Companion Resources:

- [Grandpa Cacao: A Tale of Chocolate, From Farm to Family](#) (book)
- [The Book of Chocolate](#) (book)
- [Who Was Milton Hershey?](#) (book)
- [Cadbury: How Chocolate Is Made](#) (website)

### Sources/Credits:

1. Heos, Bridget. *From Cocoa Beans to Chocolate*, Amicus, 2017.
2. Utah Ag in the Classroom
3. The Hershey Story

### Suggested SC Standards Met:

#### English/Language Arts:

- 2.RI.5.1 Ask and answer literal and inferential questions to demonstrate understanding of a text; use specific details to make inferences and draw conclusions in texts heard or read.
- 2.RI.5.2 Make predictions before and during reading; confirm or modify thinking.
- 2.RI.6.1 Retell the central idea and key details from multi-paragraph texts; summarize the text by stating the topic of each paragraph heard, read, or viewed.
- 2.RI.7.1 Compare and contrast topics, ideas, or concepts across texts in a thematic, author, or genre study heard, read, or viewed.
- 3.RI.5.1 Ask and answer literal and inferential questions to determine meaning; refer explicitly to the text to support inferences and conclusions.
- 3.RI.6.1 Summarize multi-paragraph texts using key details to support the central idea.
- 3.RI.7.1 Compare and contrast diverse texts on the same topic, idea, or concept.
- 4.RI.5.1 Ask and answer inferential questions to analyze meaning beyond the text; refer to details and examples within a text to support inferences and conclusions.
- 4.RI.9.1 Use definitions, examples, and restatements to determine the meaning of words or phrases.

- 5.RI. 5.1 Quote accurately from a text to analyze meaning in and beyond the text.
- 5.RI. 8.1 Analyze how the author uses words and phrases to shape and clarify meaning.

Social Studies:

- 2.G.1 Identify the geographic location of the U. S. in relation to the rest of the world.
- 3.1.2.AG Locate the world's four hemispheres (i.e., northern, southern, eastern, and western) by using the major components of latitude and longitude (i.e., the Equator, the Prime Meridian, lines of latitude (i.e., parallels), lines of longitude (i.e., meridians), and the International Date Line).

Science:

- 3.L.5A.1 Analyze and interpret data about the characteristics of environments (including salt and fresh water, deserts, grasslands, forests, rain forests, and polar lands) to describe how the environment supports a variety of organisms.

Math:

- 4.ATO.2 Solve real-world problems using multiplication (product unknown) and division (group size unknown, number of groups unknown).
- 5.NSF.8 Solve real-world problems involving division of unit fractions and whole numbers, using visual fraction models and equations.

# Chocolate Taste-Testing Worksheet

Name: \_\_\_\_\_

Rank 1-8: 1 = best tasting or most expensive

<b>Sample Number</b> (add name after taste-testing is complete)	<b>Tasting comments</b> (texture, sweetness, chocolate flavor)	<b>My Favorite</b> (Rank 1-8)	<b>Cost</b> (add after taste-testing is complete)	<b>Rank Cost</b> (add after taste-testing is complete)
M1 _____				
M2 _____				
M3 _____				
M4 _____				
D1 _____				
D2 _____				
D3 _____				
D4 _____				

