

Chocolate Unit Study

prepared by Jennifer Unsell

Library List

Chocolate Fever by Robert Kimmel Smith Charlie and the Chocolate Factory by Roald Dahl The Chocolate Touch by Patrick Skene Catling Hershey Kisses Subtraction Book by Jerry Pallotta Hersheys Milk Chocolate Weights and Measurements by Jerry Pallotta Hersheys Milk Chocolate Multiplication Book by Jerry Palotta The M&M's Brand Counting Book by Barbara Barbieri The Hershey Kisses Addition Book by Jerry Pallotta Hershey's Fractions by Jerry Pallotta *Cocoa Ice* by Diana Karter Appelbaum Made in the USA - Chocolate by Samuel G. Woods (older students) *Beans to Chocolate* by Inez Snyder (younger students) How Monkeys Make Chocolate by Adrian Forsythe A Walk in the Rainforest by Kristin Joy Pratt Mercedes and The Chocolate Pilot by Margot Theis Raven *The Story of Chocolate* by C.K. Polin (DK reader) I Like Chocolate by Robin Pickering (easy reader) The Kids Book of Chocolate by Richard Ammon The Chocolate Sundae Mystery by Gertrude Chandler Warner Chocolate by Claire Llewellyn The Chocolate Train by Joanne Kornfeld The Chocolate Lovers: A Children's Story and Cookbook by Joan Van Loon Chocolate by Hershey: A Story About Milton S. Hershey by Betty Burford Smart About Chocolate: A Sweet History by Sandra Markle The Story of Chocolate by David P. Butts

Video Resources:

Milton Hershey: The Chocolate King (biography) directed by Bill Harris The Cadbury Family: The Sweet Smell of Success I Love Lucy Volume II- "Job Switching" Willy Wonka and the Chocolate Factory

<u>Sensory Details</u> (you need Hershey Kisses to complete this lesson)

Good writers include sensory details in their stories. These are words and phrases that appeal to the senses of the reader. Review the five senses with your student-sight, sound, taste, touch, smell. As you complete this exercise, encourage your student to think outside the box. Try to stay away from the easy words (such as sweet, pretty, good, etc.). Try to make actual comparisons (looks like a little silver bell, sounds like a one tap on a drum, etc.)

Give your student a few Hershey Kisses. Ask her to describe it-- What does it look like? What does it sound like when you drop it on the table? What does the foil wrapper feel like? Have her open the kiss. What does it smell like? What does it feel like now? What does it look like? What does it taste like?

Word Fun

How many words can you make from the words Chocolate Candy Bar?

Geography: Seven Continents and Mapping Where Cacao Grows

Using a map, let your student label the seven continents then choose a way to designate the cacao producers of the world (color with a brown crayon, add chocolate stickers, etc.). Most of the world's cocoa bean production comes from Africa (Ghana, Nigeria, Ivory Coast, etc.). The "cacao belt" also produces lots of cacao and includes Brazil, Venezuela, Mexico, Nicaragua, Guatemala, Colombia, the Caribbean islands, Jamaica, Malaysia, Indonesia, and Sri Lanka. Just as the geography is different, so are the beans grown in all these various countries.

We have prepared some fun pages for your student to complete using chocolate; this is the yummiest math you'll ever do! You will need some M&Ms and a Hershey Bar to complete all the lessons; however, there are some lessons that don't require eating chocolate!

Graphing

Give your student a packet of M&Ms-- peanut or regular). Using the graph, let your student chart the amount of each color M&M.

If this is too simple for your older student, teach her how to find the range, mean,

median, and mode after she completes the graph. First, have her write out the numbers (separated by commas) from smallest to largest.

Range= start with the highest number and subtract the lowest number

Median= the number in the middle

Mode= the number that appears the most times

Mean= the average (add all the numbers up and divide by the number of different colors)

If your child (or one of your children) is very young, they may simply enjoy sorting the M&Ms by color and counting the total of each color with you.

More Math Fun

You may want to include some of the Hershey math activities on this day (the books have already been mentioned at the beginning of the unit). They have a variety of math topics to choose from; you can easily pick a book that meets what your student is currently learning in his or her math program (or maybe a topic for review).

Story Problem

This is a fun story problem for you and your student (you may want to work it out on the calculator together).

1. First of all, pick the number of times a week that you would like to have chocolate (more than once but less than 10)

2. Multiply this number by 2

3. Add 5

4. Multiply it by 50.

5. If you have already had your birthday this year add 1756; If you haven't, add 1755

6. Now subtract the four digit year that you were born

You should have a three digit number

The first digit of this was your original number (how many times you would like to have chocolate each week)

The next two numbers equal your age!

Design Your Own Chocolate Bar

After you decide your secret recipe, name your concoction, and draw your label, you may want to add in some extra math lessons with this. On the sheet your student is asked to decide how much he will sell each bar for. Once he decides, you can invent a few story problems. If he is going to sell each bar for \$1, and it costs him .50 to produce a bar, how much profit does he make on each bar? How much profit would he make if he sold 100 bars? 150 bars? 200 bars?

Nutrition

Is chocolate good for you? What's in that candy bar you ate after you did your math lesson?

Chocolate bars are a combination of sugars, protein, and fat as well as antioxidants and minerals.

Sugars

Sugars are carbohydrates. Carbohydrates serve as fuel for the body-- the main energy source; carbs are also essential to help your brain function. Starchy foods such as cereal, rice, and potatoes are also carbohydrates. Sugars and starches both provide the same amount of energy. The main sugar in milk and dark chocolates is sucrose. Milk chocolate also contains lactose, another form of sugar. Your older student may want to do some research about carbohydrates. Why are starches more nutritious than sugars? What happens when we depend on sugar for our energy? Also, what form of sugars are the best? (fructose, sucrose, etc.)

Protein

Protein is composed of amino acids that promote the growth and repair of body tissue such as skin, muscle and hair. Protein is most often found in meat and animal products such as milk and eggs, but can also be found in plant foods like nuts and beans. A small amount of protein can also be found in cocoa. A chocolate bar usually has between two and three grams of protein.

Fat

Chocolate bars include cocoa butter which is a fat. Fats are essential to life and provide a useful source of energy while insulating the body and its organs against the cold. They also build and maintain body tissue while assisting in the transport

of fat-soluble vitamins throughout the body.

Antioxidants (Flavonoids)

Scientists have discovered that cocoa contains compounds called flavonoids. These are found in plant-based foods and may have certain

health benefits. Flavonoids also have antioxidant properties that help the body's cells resist damage by free radicals, which are formed when the body's cells utilize oxygen for energy (they are also formed in other ways). High amounts of flavonoids may also positively affect the maintenance of a healthy heart.

Essential Minerals

Chocolate also contains a variety of minerals that are essential to good nutrition. These include calcium, phosphorous, magnesium, iron, zinc and copper. Each of these minerals plays important roles in a variety of biological functions, including growth, bone formation, metabolism and oxygen transport within the blood.

Cocoa itself is very good for you! However, a chocolate bar is mixed with other ingredients and provides more sugar and fat than one probably needs in a regular snack. Teach your student to enjoy chocolate in moderation. (You may want to get some dark chocolate bars and compare nutrition facts as well as taste-test. You can buy different percentages of dark cocoa; maybe you could buy a few and sample. How high can you go? How much dark chocolate do you like in your candy bar before it becomes too bitter?)

<u>The Cacao Tree</u>

Ask your student to imagine what a plant that grows chocolate looks like. Would the plant be a flower? Look like a tree? A bush? Would it grow under the ground (like a potato or a carrot)? Which part of the plant would the chocolate come from? What does the chocolate look like as it grows on the plant? Would they be able to grow this plant in their backyard?

After your discussion, let your student draw what he thinks the plant looks like. Then show your student a picture of a Cacao Tree. Compare his drawing to the real plant.



Cacao is a small evergreen tree native to tropical Mexico, but now cultivated throughout the tropics. Its seeds are used to make cocoa and chocolate.

The bush grows naturally in tropical regions such as in the low foothills of the Andes in the Amazon and Orinoco river basins. It requires a humid climate with regular rainfall and good soil. It is an understory tree, growing best with some overhead shade.

Fascinating Cacao Facts

1. The seed pods of the cacao tree grow not on the end of its branches, but directly off the branches and the trunk.

2 Each pod is about the size of a pineapple and holds thirty to fifty seeds-enough to make about seven milk chocolate or two dark chocolate bars.

3 Cacao flowers are pollinated by midges, tiny flies that live in the rotting leaves and other debris that fall to the forest floor at the base of the tree. Those midges have the fastest wing beats in the world: 1,000 times per second! 4 Cacao seeds are not sweet. They contain the chemicals caffeine and theobromine, which give them a bitter taste.

5 Africa is now the source of more than half the world's cacao, while Mexico today provides only 1.5 percent.

Cacao Tree Connections

Give your student the cards. Help your student place the cards in a line so that each card somehow relates to the next card. Your student should discuss the connections with you. With your younger student, use the cards as a teaching tool to teach the connections. Can he put them back in order?

Here is an example for the order of cards.

The sun----- cacao seed: the sun will provide energy for the seed to sprout and grow

The cacao seed -----canopy tree: the seed needs the shade in order to sprout

The canopy trees -----monkey: monkeys live in the canopy trees

The monkey -----cacao pod: monkeys eat the pulp in the pods

The cacao pod ------flower: pods grow from pollinated flowers

The flower -----midge: flowers are pollinated by the midge

The midge------ leaflitter: leaflitter provides ideal living conditions for the midge to live and breed

Leaf litter----- canopy trees: the leaf litter provides nutrients for the canopy trees The canopy trees----- bird: birds inhabit the branches of the trees

The Process of Chocolate Making

Read *Cocoa Ice* with your student. When you finish, make a list (from the book) of how cacao beans are grown, harvested, etc. in order to turn them into (hot) chocolate.

- 1. Plant a cacao tree in the shade
- 2. It grows pink flowers
- 3. Papa splits the pods open with his machete
- 4. We spread slippery beans and sticky sweet pulp on a carpet of banana leaves
- 5. They sit in the sun for a few hot days and begin to change color
- 6. We pick beans out of the smelly pulp
- 7. We spread the beans in the sun until they turn dark brown
- 8. We turn the beans every day until they are dry

9. Mama roasts them over a hot fire
10. She puts them in a mortar and they are crushed
11. We add water and sugar and cook it in a pot
Read *Beans to Chocolate* by Inez Snyder with your student. After you read, use the sequence cards to help your student review the chocolate making process. Have her try to put them in order.

With your older student, you may prefer to read *Made in the USA - Chocolate* by Samuel G. Woods. After reading, tell your student he is going to create sequence cards of how chocolate is made. Let your student go back through the text and take notes deciding which points are the most important; then, let him make his cards writing a few sentences of text to go along with a hand-drawn illustration (or you could allow him to look for clip-art).

Biomes: Rainforest

Read some of these books about the Rainforest, the home of the cacao tree:

How Monkeys Make Chocolate by Adrian Forsythe The Great Kapok Tree by Lynne Cherry Nature's Green Umbrella by Gail Gibbons A Walk in the Rainforest by Kristin Joy Pratt Rainforest Colors by Susan Canizares

As you read the books together, write down new or fascinating words/places/topics/animals, etc. you encounter (i.e. vines, Brazil, Ghana, bitter, leaf litter, toucan, monkeys, tropics, pods, plantation, etc.). Print each word on an index card (one per card). Discuss the terms after you read and let your student illustrate each card. After you are finished, ask your student to think of categories to group the cards in (you may want to just give your younger students the categories). Some categories may include: animals, rainforest plants, and words related to growing chocolate (cacao tree, seed, pod, etc.). Let them paste the words and matching pictures to a poster board, booklet, or construction paper with the title written above. You could even use the cards to make a mini book for your lapbook. Your older student may want to choose a few card topics to do further research.

Cooking

Hazelnut-Chocolate Soup

4 cups half & half 6 ounces semi-sweet or bittersweet chocolate 1/2 cup sugar 1/2 cup Nutella (chocolate-hazelnut spread) 4 egg yolks 1/2 cup whipping cream 1/2 cup chopped hazelnuts (toasted)

In a saucepan, combine first four ingredients. Place over medium-low heat and stir frequently until the chocolate melts. Beat egg yolks in a small bowl, then whisk in about 1/2 cup of the chocolate mixture. Whisk the egg mixture into the soup and simmer, stirring frequently, until the soup thickens, about five minutes. Remove from heat and stir in the liqueur. To serve-- ladle into warm bowls, add a dollop of whipped cream and a sprinkling of hazelnuts. Serve immediately. for the liqueurs.

Fudge

2 1/2 cup sugar
3/4 tsp. salt
1/2 stick butter
1 can (3/4 cup) evaporated milk
1 jar (7.5 oz.) marshmallow fluff
3/4 tsp. vanilla
12 oz. package semi-sweet chocolate chips
1/2 cup chopped walnuts

Grease a 9 inch baking pan and set aside. In a large saucepan combine first five ingredients. Stir over low heat until ingredients are blended. Heat to a full, rolling boil. Boil slowly, stirring constantly for five minutes. Remove from heat. Stir in vanilla and chocolate chips. Add nuts. Pour into prepared pan. Cool, cut, and enjoy!

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Color in one-half of the chocolate bar. Write one-half as a fraction (two different ways):

Color in one-third of the chocolate bar. Write one-third as a fraction (two different ways):

chocolate bar





Color in one-fourth of the chocolate bar. Write one-fourth as a fraction (two different ways):

Color in three-fourths of the chocolate bar. Write threefourths.

Color in two-thirds of the chocolate bar. Write two-thirds as a fraction (two different ways):

Color in one-fourth plus threefourths of the chocolate bar.

Color which fraction of the chocolate bar you'd like to eat: 1/12 or 11/12.

If you were to divide the bar equally between two people, how much would each one get? Color one person's share red and the other person's share blue.

If you were to divide the bar equally between three people, how much would each one get? Color one person's share red, one person's share green, and the other person's share orange.

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favorite chocolate

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9		
8		
7		
6		
5		
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1		
	milk chocolate 😂	dark chocolate 😂



ao facts Where do cacao pods grow? How large is a pod? How many seeds are in a pod? Are cacao seeds sweet?

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Cut out shapes on solid black lines. Fold on dotted lines like an accordion (back and forth, back and forth).

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В	G	F	F	Ρ	D	Κ	S	F	S
A	F	L	0	W	Ε	R	Х	A	Q
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C	Α	С	A	0	0	Ρ	S	G	Y

cacao beans are cooked in ovens

a machine grinds the beans into a thick paste

the paste is mixed with milk and sugar

the mixture cools in pipes and thickens

put into molds to make candy

the chocolate cools and hardens

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create your own chocolate bar

If you could concoct your very own candy bar, what would it be? Circle the ingredients below that you would add to make your secret recipe! Two spots have been left blank for you to add other ingredients (in case you want to add something that has been left off the chart).

Coconut	Marshmallow	Peanut Butter	Rice Krispies
Strawberry	White Chocolate	Macadamia Nuts	Cookie Pieces
Pineapple	Caramel	Almonds	Chocolate Chips
Orange	Butterscotch	Pecans	Cookie Bar
Raspberry	Nougat	Peanuts	
Raisins	Peppermint Pieces	Cashews	

Think of a name for your candy bar:

How much would it sell for?

Sketch a wrapper design for your candy bar creation.

How many ounces are in your Hershey Chocolate Bar?
How many ounces are in one pound?
How many Hershey bars would you need if you wanted a pound of chocolate?
How much did your chocolate bar cost?

How much would it cost to buy a pound of chocolate bars?

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Before you take off the wrapper, guess how many pieces of chocolate are in your candy bar.

Open it. How many rows are there? How many columns?

Multiply the rows and the columns together

Count the pieces. Is your answer correct?

Write the pieces in fraction form equal to one whole.

Break off the first column. How many pieces did you take?

What fraction of the candy bar did you take?

Break off another column. How many pieces have you taken all together?

What fraction of the candy bar is gone?

Can you think of another way to write that?

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Using the letters above, make as many words as you can.

Sight
Think of words to de
scribe chocolate. Use
all five of your sense
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chocoldte nutrition

- 1. List the ingredients found in your chocolate bar
- a. How many grams of sugar?
- 3. How many grams of fat?
- 4. How many mg of sodium?
- 5. Sodium is another name for ____

chocolate? (Every meal? Every day? As a special treat? 6. Research sugar, fat, and sodium. Are these things good for you? How often should you consume

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