

Milk from Cows to Kids

A Teacher's Guide to Dairy
with Student Activities



*This Supplemental Curriculum Guide to Dairy is made possible
through funding provided by the Southwest Dairy Farmers*



What Do Kids Need To Know About Milk?

Believe it or not, today when you ask a child where milk comes from, they might answer “the grocery store.” Sadly, very few children ever get to experience first-hand what life is really like on a farm.

Teaching children the importance of our food production systems and what is in the dairy foods they eat is something Southwest Dairy Farmers take very seriously. That’s why we’ve been involved with student and teacher programs for over twenty-five years. And now, through our affiliated dairy producers of Southland Dairy Farmers, we are spreading our dairy message even farther and reaching more people about the importance of dairy in a healthy lifestyle.

Our specially-developed teachers’ guides help school teachers prepare interesting, easy-to-follow lessons on the values of dairy and state-of-the-art dairy farming, as well as how agriculture impacts our lives every day. Educators use these valuable tools, along with our nutrition pamphlets, right in the classroom. They provide guidelines for teachers and students for reinforcing healthy eating habits and informing kids about the nutritional benefits of milk and dairy.

We know that well informed children are healthier children, and we want to do our part. So helping to educate them through interesting, engaging programs about dairy is a critical focus for both Southwest Dairy Farmers and Southland Dairy Farmers.

Visit southwestdairyfarmers.com to learn more about how we are spreading the dairy message.

Say "YES" To Good Nutrition

We're all concerned about making sure that our kids get healthy and stay healthy. That means having regular check-ups, getting enough exercise and sleep, and eating the right foods. Also, milk is part of any good diet, especially for young children.

A Healthy Alternative

During these formative years, children's bodies and minds are developing quickly. They need all the nutrition they can get. Plus, habits that begin now can last a lifetime. Making the right choice today can affect your child's health for the rest of his or her life. Healthy children make better students, and they have a much better chance of growing up to be healthy adults.

While soda contains things like sugar, caffeine, and sodium, milk provides the kind of nutrition children need. And studies show that 70% of elementary school girls and 60% of boys do not get enough calcium in their diets.

No matter whether you're sitting down to dinner or just having a snack, a glass of milk makes it a meal and guarantees you'll get vitamins, minerals, and protein. That's a lot of nutrition packed into one 8-ounce glass. Just think if you drank three glasses a day.

One Step Further

Kids are at home more than they are at school. So, instead of having soda or other soft drinks in the refrigerator, why not have a carton or bottle of fresh, delicious milk? Take the next step in giving your children a healthy start on a lifetime of good eating habits.

Milk. A part of everything that's good.

ONE 8-OUNCE GLASS OF MILK PROVIDES:

- 30% of the daily allowance of Calcium - to build and maintain strong bones and teeth; helps nerve function, muscle contraction, and blood clotting.
- 25% of the daily allowance of Vitamin D - helps with the absorption of calcium.
- 16% of the daily allowance of Protein - with all of the essential amino acids, it builds and repairs muscles and provides energy for endurance exercise.
- 11% of the daily allowance of Potassium - helps maintain the body's fluid balance and blood pressure. More potassium than the leading sports drink.
- 10% of the daily allowance of Vitamin A - helps maintain normal vision and skin. Regulates cell growth and supports the immune system.
- 13% of the daily allowance of Vitamin B12 - helps build the red blood cells that carry oxygen throughout the body.
- 24% of the daily allowance of Riboflavin - helps convert food into energy.
- 10% of the daily allowance of Niacin - maintains normal function of enzymes. Supports metabolism of sugars and fats.

Get Growing With Milk!

SOUTHWEST DAIRY FARMERS

Milk. A part of everything that's good.

Milk.
Food for thought.

SOUTHWEST DAIRY FARMERS

Milk. A part of everything that's good.



Milk. A part of everything that's good.

MILK FROM COWS TO KIDS

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Program Objectives

The Milk from Cows to Kids booklet has been designed to help students achieve objectives such as:

Understanding the importance of nutrition and dairy products in the diet;

Learning the steps of producing and processing milk;

Understanding the how's and why's for keeping milk fresh and clean;

And learning that cows are really interesting animals.



MILK AT THE DAIRY



1. FEEDING

Dairy cattle are fed a balanced diet of approximately 40 pounds of feed mixed into a ration consisting of such things as corn, wheat, oats, maize, cotton seed, soybeans and about 50 pounds of hay or silage a day. They are also given supplements of vitamins and minerals to balance out their diet. Cows spend an average of 6 to 7 hours a day eating. They drink an amazing 36 to 50 gallons of water a day. Part of the nutrients from the feed are used to maintain their body and part are picked up by the blood stream and carried to the udder where milk is made and stored.

Many dairy cows live in free stalls where they are kept quite comfortable. These barns are equipped with fans and water systems that mist the cows to keep them cool in the summer and windbreaks to protect them from the cold in the winter.



2. MILKING



There are 6 major breeds of dairy cattle in the United States. Today 90 percent of these are Holsteins, which are the ones with black and white spots and weigh 1,500 to 1,800 pounds. A cow (female) does not produce milk until she has had her first calf (baby). This usually takes place when she is around 2 years old. After giving birth her body begins to produce milk, which continues for approximately 300 days. She is then given a 2-month rest period before repeating the cycle.

Healthy cows produce about six to ten gallons of milk a day and are milked at least twice a day. The cow's udder is located directly in front of their hind legs, as shown in the picture. The udder has four compartments with a teat connected to each one.

The cow's teats are washed, sanitized and dried before the milker is applied. Once the milking



equipment is attached to each teat, milk is then harvested from the cow by use of a squeeze-release vacuum system. This does not hurt the cow, and in fact, she looks forward to getting rid of the milk she is carrying in her udder. It only takes five to six minutes to milk a cow. The milk flows from the cow into the milking machine, up the hose, and into a stainless steel pipeline where it is pumped into a refrigerated milk tank. After the cow is finished milking, her teats are cleaned and sanitized and she is released from the dairy barn to go back to the pasture or stall.

3. COOLING



Milking equipment, which include hoses, pipes and the milking machines (also known as claws) are washed after each milking. This equipment is sanitized just before the milking procedure begins, which keeps the milk clean and wholesome. The bulk milk tanks, pictured at below, are cleaned and sanitized prior to milk being pumped into them. A milk tank will cool the milk from 101°F when it comes out of the cow down to 34 to 36°F in a short period of time and will maintain that temperature until the milk leaves the farm. A thermometer on the tank

monitors the temperature of the milk inside. An agitator mixes the milk periodically to maintain the temperature. Milk tanks are enclosed; therefore, the milk is never exposed to outside air or airborne contaminants. Dairies are inspected by the State Health Department and must comply with strict quality regulations established by the State Health Department, United States Department of Agriculture, Federal Food & Drug Administration, as well as standards established by the milk plant that buys the milk. Milk is one of the safest foods you can buy.





4. HAULING

Every day or two, milk is taken from the dairy in an insulated tanker truck to a dairy processing plant. The tanker holds approximately 6,000 gallons of milk, which is delivered to the processing plant. This tanker is always cleaned and sanitized before milk is loaded.

Milk haulers must be certified by the State Health Department in order to haul farm milk. The hauler checks the milk to make sure it meets certain standards of freshness and collects several samples from each farm milk tank. The processing plant, State Health Department, State Animal Health Commission, Milk Market Administrator, Food and Drug Administration, and the marketer of the milk may all test these samples to account for milk components (Nonfat Solids, Protein, Butterfat, and Other Solids) and for freshness and cleanliness to ensure good quality. Dairy producers are paid based on milk components in the milk they produce.



5. LAB

Milk is transported to one of several processing plants that manufacture such products as cheese, ice cream, milk, yogurt, butter, or milk powder. Before accepting the milk, the lab performs several tests to determine the milk's quality. Once the milk is found fresh and safe, it is pumped into a tank at the plant and maintained at 35 to 36 degrees F.



6. SEPARATOR

In the plant, milk is pumped from the milk tank into a separator. This machine spins the milk, separating the cream, which is lighter, from the skim by centrifugal force. The desired amount of cream can then be added back to the skim later to obtain the milk standard needed for 1%, 2% or whole milk, which is 3.25% fat. The excess cream is used to make products like ice cream and butter.



7. HOMOGENIZER

The milk is pumped to a homogenizer that breaks up the fat globules and makes them smaller. It shatters the fat globules and causes them to stay in suspension. This makes the milk have a consistent flavor when put into the container.



8. PASTEURIZATION

The milk is then pasteurized which kills bacteria that may be harmful to health. Heating milk to 165°F for 15 seconds and then quickly cooling it down to 35°F accomplishes this. Pasteurization protects the purity and flavor of milk without having an effect on the nutrient value.

Pasteurization

- In 1856, Louis Pasteur, a French scientist discovered that heating liquids to high temperatures kills bacteria.
- Today, milk is pasteurized by quickly heating it to 165°F for 15 seconds and then rapidly cooling it.
- Pasteurization protects the purity and flavor of milk without affecting its nutrient value



9. BOTTLING

The sterile containers are fed down a conveyor belt to a filling station. The container is automatically filled with the proper amount of milk, sealed and then capped. It is transferred by conveyor to a cold storage room where it is held at 36°F. The only supplements added to complete the process are vitamins A & D. An accurate record is kept of each step in the process that milk moves through. Those records are made available to the regulatory authorities. Milk is never touched by human hands or exposed to the air until it reaches your kitchen table.



MILK AT THE GROCERY

10. GROCERY STORE DELIVERY

Milk is delivered to the grocery store in a refrigerated truck. The milkman then places it in the dairy case. The grocery store must keep the milk cold so that it does not spoil. Workers also check the expiration date on the containers to ensure the consumer gets the freshest milk possible. The milk has now made it from the cow to the consumer.



It takes about 2 days from the time milk leaves the cow until the time it reaches the grocery store. At the grocery, milk is kept refrigerated at 36°F or lower.

MILK AT HOME

11. CONSUMER

Enjoy your milk every day for development and maintenance of strong bones and teeth. You can keep milk pure and wholesome at home by following a few simple steps. Because milk is a perishable product, it should be stored in the refrigerator at around 36° F. Always keep your milk container sealed after using it and return promptly to the refrigerator.

Handling Milk at Home

Consumers can help keep milk pure and safe by following the 3C's:

- Keep Milk **Clean**
- Keep Milk **Covered**
- Keep Milk **Cold**

Store milk in its own container or in a clean pitcher. Do not touch the pouring lip of the container.

Keep milk container covered or resealed when done pouring. Milk picks up flavors of other foods in the refrigerator.

Milk is perishable. It must be refrigerated at 36°F or colder. Store milk in the coldest part of your refrigerator.



THE DAIRY INDUSTRY: PROTECTING OUR ENVIRONMENT AND FUTURE

The long-term wealth of any nation depends on the productivity of its land and how well that is nurtured and preserved over time.

Farmers are closest to the land, and depend on it for their livelihood. They have long recognized the need to take good care of their farms. Today, modern dairy farmers operate with objectives to improve the productive capacity of their land and to be good stewards of the environment.

Two basic systems of dairying exist in the United States. One involves cows grazing on pasture where the manure is returned directly to the soil. The second system involves cows being maintained in an area with feed, water, and shelter being provided for them. In the latter concept, special waste handling systems are developed. These special systems return the waste to the land as natural fertilizer for use on croplands. Some operations market the composted waste for use on gardens and lawns in urban areas thereby reducing the need for chemical fertilizers. Modern dairy farm operations recycle water used on the farm to be used in other areas of the operation.

A gallon of milk goes a long way — nothing is wasted. Today, modern milk-processing plants are able to produce a variety of products from milk, and many of those products are non-food items. The versatility and abundance of dairy products create economic value, and they do so in a way that protects the environment. Every day,

milk-processing plants receive large volumes of milk from dairy farms. Much of this milk is used to make non-fluid dairy products such as ice cream and cheese. An important part of the cheese making process creates an important by-product, a “left-over” called whey.

Years ago, whey was considered a waste product and was discarded, but today we recognize its value, and it is used in its entirety. It contains significant amounts of quality nutrients, such as protein and minerals.

Whey is used in many ways that people don't ordinarily

associate with dairy products. For example, whey proteins are used in making candy, baby food and bakery goods. It is also used to make lactic acid, an ingredient in cake mixes. It is also an important ingredient in cosmetics.

Lactose (milk sugar) is used extensively in the pharmaceutical industry. Derivatives of lactose can be used in making toothpaste and as a specific agent in hardening steel. Proteins found in cheese whey can be used to make clear film packaging materials that are both edible and readily biodegradable. Both whey and lactose are used to make specialty adhesives and paper coating. Special “high-clarity” casein (protein) has been used to manufacture television screens.

As it faces the future, the United States dairy industry is committed to produce more and better products for consumers, while it

continues to care for the environment.



Courtesy of Racine Journal Times



Curds (the solids) and Whey (the liquid) together, awaiting separation.

ANIMAL CARE



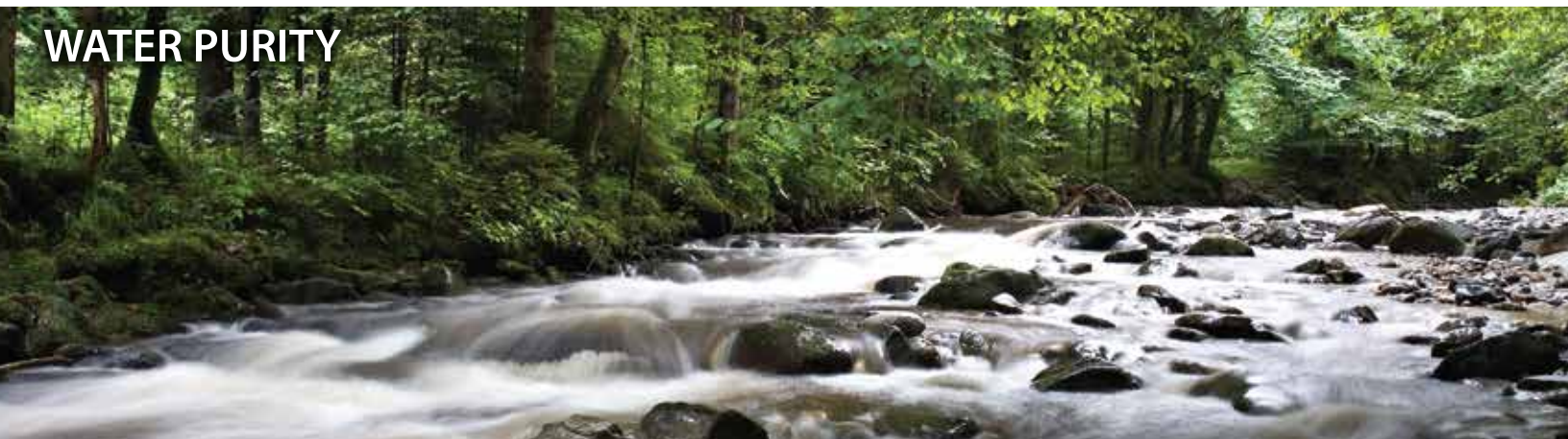
AIR QUALITY



LAND CONSERVATION



WATER PURITY



THE DAIRY INDUSTRY: A LEADER IN FOOD SAFETY

Milk and dairy products such as cheese, ice cream and butter are among the safest of foods.

It all begins on our nation's dairy farms. Dairy farmers provide extra care for their dairy animals. Starting with the baby calves, a regular program of animal health helps assure production of good quality milk. Farmers depend on their cows' ability to produce milk, and they learned years ago that healthy cows produce larger volumes of milk. Today, modern dairy farmers have replaced the old ways of milking. Each cow's udder is thoroughly washed and cleaned. Sanitized equipment is used to collect the milk from the cows. The milk then goes through clean pipelines to a refrigerated storage tank where it is immediately cooled to about 36°F. Farmers know that cooling milk to this temperature quickly protects its quality and flavor. When the milk truck arrives at the farm, the driver checks the milk's temperature, flavor and odor. Only milk that meets certain standards is placed on the tanker for delivery to a processor. Also, a sample of each farm's milk is taken for extensive laboratory testing.

When the tanker arrives at the milk processing plant, another sample is taken and additional tests are performed before the milk is pumped into the processing plant. Milk that fails to meet the standard for purity and safety is rejected. Throughout the processing plant, milk products are handled according to strict sanitary standards and laboratory tests are performed periodically during each stage of processing.

For many years, the United States dairy industry, working with various regulatory authorities, has developed an effective safety system for milk and milk products.

Implementation of the system has resulted in an abundance of dairy products whose superior quality can't be found in any other country.

Those responsible for ensuring that milk is safe and fresh for consumers are:

- **The dairy farmer** – checks cow health and operates a healthy farm
- **Veterinarian** – vaccinates for diseases and checks herd health
- **Milk hauler** – measures the volume of milk
- **State or Federal Animal Health Commission** – checks health of animals
- **State Health Department** – checks milk quality and sanitation
- **U.S. Department of Agriculture, Food and Drug Division** – checks for drug residue
- **The milk processing plant** – checks for quality, flavor, and freshness

READING COMPREHENSION QUESTIONS

1. What are two non-fluid dairy products? _____
2. What is an important by-product, "left-over" called? _____
3. What is another word for milk sugar? _____
4. What temperature is milk immediately cooled to after it goes through the refrigerated storage tank? _____
5. Where is a sample of each farm's milk taken? _____
6. What was the purpose of reading these articles? _____



**MILK IS UNIQUE
BECAUSE NO
OTHER BEVERAGE
IN THE WORLD
CONTAINS AS
MANY NATURAL
NUTRIENTS.**

**MILK IS A VERY
SAFE PRODUCT
AND RANKS HIGH
IN QUALITY AND
FRESHNESS.**

Milk and Dairy. A Quiz For Kids.



Q. How much does a dairy cow weigh?

A. Around 1,500 pounds. (compare to children's weight)



Q. What do dairy cows eat?

A. Grass, hay (dried grass), grains (feed), and silage (chopped green grasses and green corn or beans).

Q. How much does a dairy cow eat each day?

A. Around 90 lbs. of food and 25 to 50 gallons of water. If people were cows, they could eat about 360 hamburgers and drink about 400 to 800 glasses of water a day.



Q. How much milk does a dairy cow produce a day?

A. Cows that eat only grass produce about 100 glasses of milk a day or 25 quarts of milk a day. Cows that eat grass and feed or silage may produce 160 glasses of milk a day or 40 quarts of milk a day.



Q. Why do cows make milk?

A. Cows make milk for their calves, but because they are large dairy animals, they make a lot more than the calf needs.



Q. Who takes care of dairy cows and keeps them healthy?

A. The dairy farmer takes good care of his animals. He has a veterinarian care for animals when they are sick. The "vet" also gives them shots to prevent some diseases.



Q. How is milk kept clean for us to drink?

A. The cow's udder is washed before she is milked. The milking machine, walls, and floors of the milking parlor are washed before and after each milking. At the dairy plant, all processing of milk is done by machine to keep milk clean and safe.



WHOA!
90 LBS.
OF FOOD
A DAY!



RECIPES



3-4 SERVINGS OF DAIRY A DAY



VIDEOS

Q. Why is milk kept cold?

A. To taste good and to keep it fresh and help prevent it from spoiling. Milk should always be kept in the refrigerator at around 36° F. If milk is left out of the refrigerator too long, it can spoil. At home, pour your milk and then immediately return the milk carton to the refrigerator to help keep it fresh.

Q. Why do boys and girls need to drink milk or eat dairy products?

A. For proper growth and to help build strong bones and teeth.

Q. How many servings of dairy products do you need daily?

A. Three to four servings a day.

Q. Wouldn't cows be happier if they were roaming "free" with no fence or stalls?

A. It might seem that they would be, but cows need to be cared for. They need to be fed, they need to be cared for when they are sick or giving birth to a calf and they need to be milked. Farmers take good care of their cows to make sure they are healthy and comfortable.

Q. How many calves does a cow have each year?

A. Usually one, but cows sometimes have twins.

Q. How is chocolate milk made?

A. Chocolate milk is made by using pure, fresh milk and chocolate syrup or powder. Cows only give white milk!

Q. How does milk get from the dairy farm to the processing plant?

A. Tanker trucks pick up milk at each dairy farm and deliver it to the milk processing plant.

Q. What are some foods made from milk?

A. Cheese, yogurt, cream cheese, sour cream, butter, ice cream, frozen yogurt...(can you name more?)



GOWS ONLY GIVE WHITE MILK!



Moo...Sterious Word Find

MILK
 BONES
 COWS
 ICE CREAM
 CHEESE
 CALCIUM
 FARM
 SOUTHWEST
 DAIRY
 FARMERS
 CEREAL
 PIZZA
 CHOCOLATE
 COOKIES
 HEALTHY
 STRONG
 VITAMINS

F	A	R	M	A	D	Y	D	S	K	D	S	A	P
C	U	O	D	S	T	R	O	N	G	G	O	V	D
H	C	U	P	G	T	J	T	P	T	T	U	I	G
O	A	O	A	C	E	R	E	A	L	Y	T	T	T
C	L	P	B	Y	U	O	U	Q	F	U	H	A	C
O	C	E	O	H	E	A	L	T	H	Y	W	M	H
L	I	W	N	J	K	M	I	L	K	I	E	I	E
A	U	F	E	S	O	K	O	B	M	O	S	N	E
T	M	G	S	D	S	U	C	O	W	S	T	S	S
E	S	K	D	P	M	I	M	K	S	D	F	B	E
U	D	U	G	A	P	A	J	G	D	P	G	M	A
O	P	T	T	Q	E	F	K	T	P	I	Z	Z	A
P	A	H	Y	R	Q	C	O	O	K	I	E	S	U
E	Q	F	C	P	U	B	E	U	Q	U	T	O	P
W	U	E	J	B	P	M	Y	D	A	I	R	Y	B
F	C	B	K	O	B	W	G	K	P	B	P	P	O
I	B	M	O	F	A	R	M	E	R	S	Y	L	P

Dairy Word Jumble

UNSCRAMBLE THE LETTERS BELOW AND PLACE THE CORRECT SPELLING IN THE BOXES AND DISCOVER THE MYSTERY WORD THAT IS SPELLED OUT IN THE BLUE BOXES.

ESCEEH

--	--	--	--	--	--	--	--	--	--	--	--	--	--

CEI MRAEC

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ACUIMLC

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KILM

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TIMANVIS

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HEOCACOLT

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RYIAD

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“AWESOME COW FACTS”

- All cows are female. The males are called bulls.
- A cow can't give milk until she has had a calf.
- Cows spend six to seven hours per day eating.
- Cows have one stomach with four compartments.
- Cows produce 90% of the milk in the world. Any warm-blooded animal such as goats, sheep, horses, reindeer, camels, and water buffalo can also produce milk.
- Dairy products supply approximately 75 percent of the available calcium in a person's diet.
- Calcium in the diet is essential for building strong bones and teeth.
- Milk contains four necessary minerals: calcium, phosphorus, magnesium, and zinc.
- It normally takes only two days for milk to get from the cow to the grocery store.
- To get enough calcium for your body you need three to four servings of dairy products daily.
- A “serving” is equal to an 8 oz. glass of milk.
- Chocolate milk is as nutritious as unflavored milk.
- A cow produces nearly 200,000 glasses of milk in her lifetime.



GET NINE ESSENTIAL NUTRIENTS WITH DAIRY PRODUCTS!

1. **Calcium:** Calcium helps build and maintain strong bones. This mineral also plays an important role in nerve function, muscle contraction and blood clotting.
2. **Potassium:** Potassium regulates the body's fluid balance and helps maintain normal blood pressure. It's also needed for muscle activity and contraction.
3. **Phosphorus:** Phosphorus helps strengthen bones and generates energy in the body's cells.
4. **Protein:** Protein builds and repairs muscle tissue, and serves as a source of energy during high-powered enduring exercise.
5. **Vitamin D:** Vitamin D aids in the development of healthy teeth. It also helps maintain adequate blood levels of calcium and phosphorus.
6. **Vitamin A:** Vitamin A helps maintain normal vision and skin. It also helps regulate cell growth and maintains the integrity of the immune system.
7. **Vitamin B12:** Vitamin B12 helps maintain healthy nerve cells and red blood cells, and is also needed to make DNA.
8. **Riboflavin:** Riboflavin or vitamin B2 helps convert food into energy - a process crucial for exercising muscles.
9. **Niacin:** Niacin is important for the normal function of many enzymes in the body, and is involved in the metabolism of sugars and fatty acids.

ACTIVITY

Write an **ALLITERATION** with the letter “D” like in Dairy (example: “Daddy Drinks Dairy During Dinner.”)

What **IDIOM** does this picture suggest?



Hint: “T _ _ _ L A _ _
G _ _ _ O T _ _
O _ _ _ S _ _



3-4 SERVINGS OF DAIRY A DAY

BREED OF COWS

There are over nine million cows in the United States today and about 90 percent of these are Holsteins. There are six major breeds.



Holsteins (black & white)

- Originated In Europe and was brought to the U.S. by Dutch settlers
- Known for the highest milk production of all dairy breeds
- The Holstein is the dominant dairy breed in the U.S.



Jerseys (yellowish-brown)

- Originated on the island of Jersey, 15 miles off the coast of France
- Jerseys produce more butterfat in their milk than other dairy breeds



Guernsey (golden-tan and white)

- Originated on an island in the English Channel, 30 miles off the coast of France
- Guernsey cows are known to be hearty and adaptable and for the yellow color of their milk



Ayrshire (white with red spots)

- Originated in Scotland
- Ayrshires are known for vigor and efficiency of milk production



Brown Swiss (brownish gray)

- Originated in the Alps Mountains
- Brown Swiss are known for being hearty and rugged, having superior feet and legs
- The breed is very quiet and docile



Milking Shorthorn (roan)

- Originated in England
- Milking Shorthorns are known to be very versatile

"VO-COW-BULARY TER-MOO-NOLOGY"

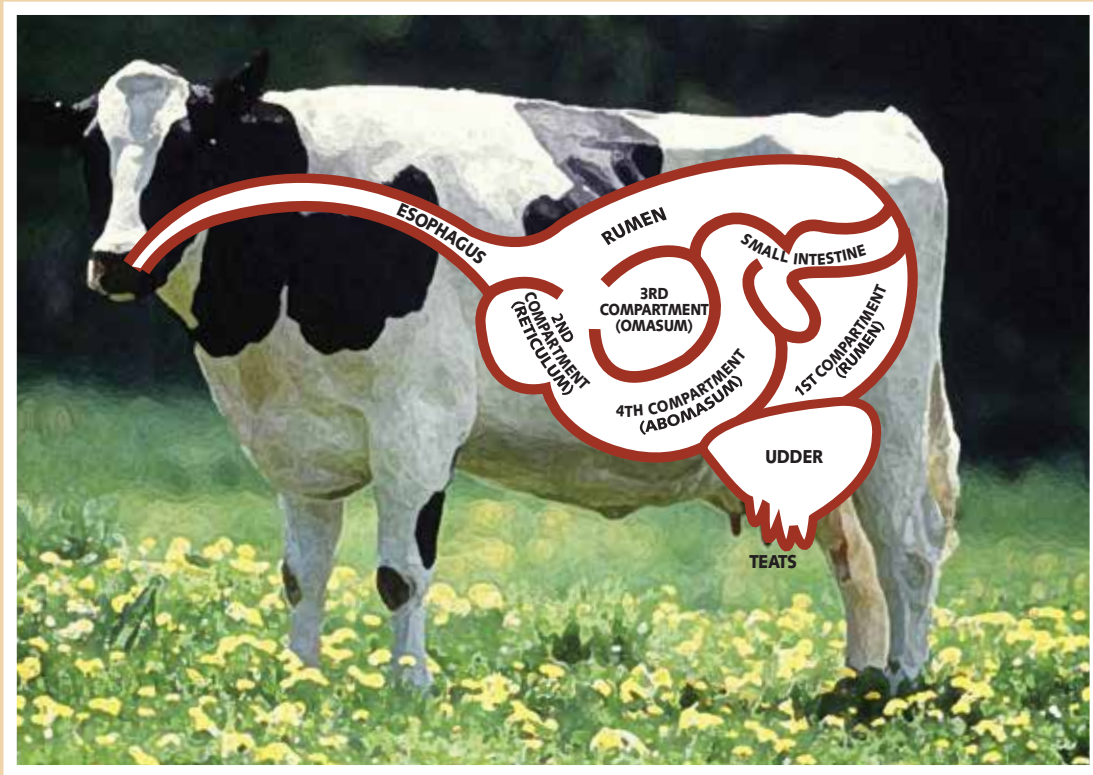
- **Cow** – Female
- **Bull** – Male
- **Heifer** – A cow that has never had a calf
- **Dry Off** – Period when a cow is not milked
- **Udder** – Where milk is stored by the cow
- **Teat** – One of the four nipples of the cow's udder where milk is stored
- **Let Down** – Condition when a cow is ready to be milked
- **Cud** – Food "burped up" by a ruminating animal
- **Ruminate** – A mammal with a four-chambered stomach
- **Homogenize** – To change milk so that butterfat particles are evenly distributed throughout the liquid
- **Pasteurize** – To heat milk at a high temperature for a short time in order to protect its purity
- **Silage** – A chopped mixture of green corn, grass, and legumes stored in a silo



- **Gender** – Female
- **Height** – 5 to 5 1/2 feet
- **Weight** – 1,500 to 1,800 pounds
- **Body Temperature** – 101° F
- **Amount of milk held in udder** – 25 to 50 pounds

HOW A COW MAKES MILK

3-4 SERVINGS OF DAIRY A DAY



3-4 SERVINGS OF DAIRY A DAY

COWS HAVE A UNIQUE DIGESTIVE SYSTEM:

- Cows have large stomachs with four separate compartments
 - Cows swallow food without chewing it.
- The food goes into the first and second compartments – the rumen and the reticulum.
 - After a cow has eaten, she burps up a small amount of food (cud) to chew again.
 - After chewing her cud, she swallows again and her cud goes into the third compartment – the omasum.
 - From there it moves to the fourth compartment – the abomasum – where digestion actually occurs.
 - Cows spend about six to seven hours a day eating.
 - A cow's body uses part of the food to grow and stay healthy and the other part of the food to make milk.
 - It takes the cow's body only about two days to process her food into milk.

CAN YOU
DO THIS?

LOCATE THE
DIFFERENT
PARTS OF A
COW'S
STOMACH



In the picture above:

1. Color the Esophagus blue.
2. Color the Rumen red.
3. Color the Reticulum orange.
4. Color the Omasum yellow.
5. Color the Abomasum green.
6. Color the Udder pink.



Watch the
"Buttercup Story"

DAIRY: THE MILK STORY

HOW MILK GETS TO MY GLASS

Activity 1

You have learned that a dairy farm is a business. The farmer has many responsibilities to run a successful dairy farm. The cows are important in the dairy business because they produce milk...The product which the farmer sells. It is essential that the cows are properly cared for and well-fed in order to be healthy and produce a lot of milk. Use your knowledge to complete the following story:

Heather is having fun visiting her cousins for a week on their dairy farm. She is surprised by the many things she has learned about the dairy farm business in the past few days. She has watched her aunt and uncle do their work on the farm and she has even helped her cousins with their chores. She is writing her best friend a letter and decides to tell her about her adventures on the farm.

...the days here are busy and full. I am learning lots of interesting things. Did you know that dairy farmers

THE RULES OF A CINQUAIN

1. Cinquains are five lines long.
2. They have 2 syllables in the first line, 4 in the second, 6 in the third, 8 in the fourth line, and just 2 in the last line.
3. Cinquains do not need to rhyme, but you can include rhymes if you want.

That's it. Just three simple rules. Now, write your own dairy cinquain:

MY DAIRY CINQUAIN

(2 Syllables)

(4 Syllables)

(6 Syllables)

(8 Syllables)

(2 Syllables)

Activity 2

You need to eat at least three to four servings of dairy products each day. Dairy products are important because they help build strong bones and teeth.

Look at the meals and snacks below. Choose a dairy food from those shown to complete each menu. Write the name of the dairy product you choose in the box next to each menu.

MORNING MEAL: EGG, MUFFIN,
SAUSAGE
ORANGE JUICE
I CHOOSE:

NOON MEAL: TUNA SANDWICH WITH
LETTUCE, TOMATO
POTATO CHIPS
APPLE
I CHOOSE:

SNACK: COOKIES
I CHOOSE:

EVENING MEAL: SPAGHETTI,
MEAT SAUCE
BROCCOLI
GREEN SALAD
I CHOOSE:



CHEESE



MILK



YOGURT



CHOCOLATE MILK



ICE CREAM

Sequencing

The following statements are about milk, how it is processed and how to properly care for it. The statements are out of order. Put numbers in the blanks to show the correct order.

- ___ A. Milk is cooled in a holding tank to keep it fresh and good tasting.
- ___ B. Milk and dairy products are delivered to many places for people to eat and enjoy.
- ___ C. Milk is stored in your refrigerator at home to help keep it fresh. Only remove milk container long enough to pour your milk and immediately return it to the refrigerator.
- ___ D. The cow's udder is washed.
- ___ E. Milk is pasteurized.
- ___ F. Milk is delivered to a processing plant.
- ___ G. Cows are milked by milking machines.

I NEED

**SERVINGS OF DAIRY
EACH DAY.**

9 ESSENTIAL NUTRIENTS

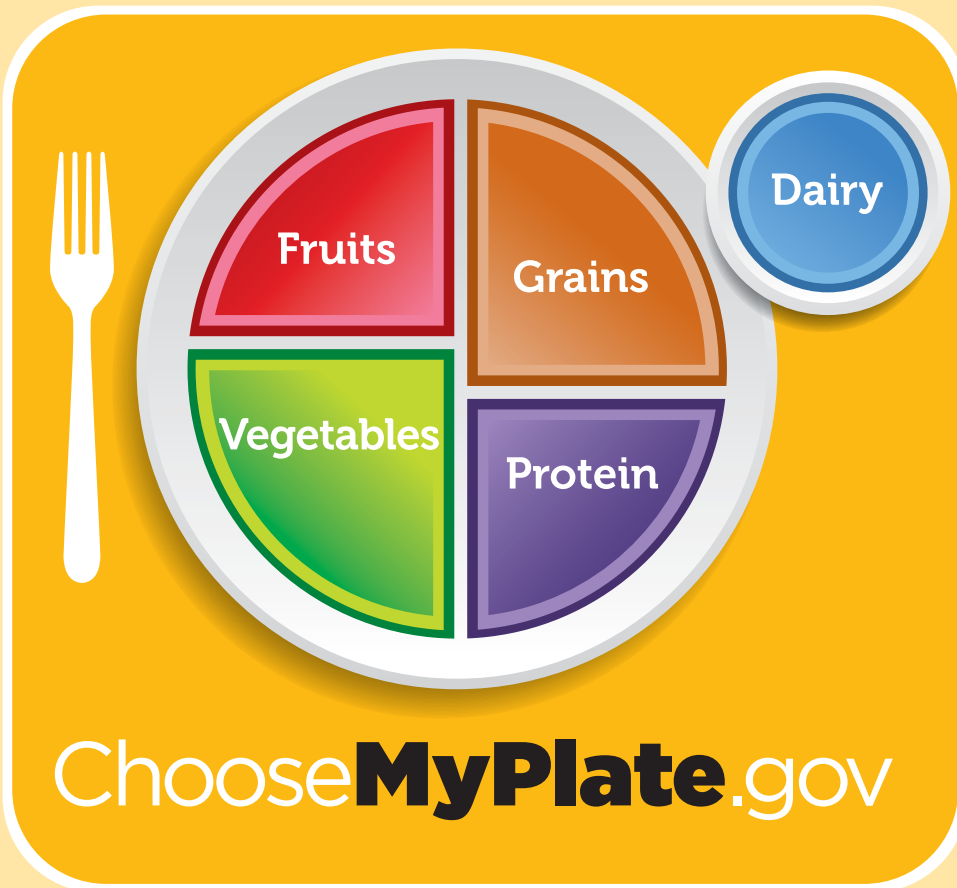
MATCHING GAME



1. Match each of the nine essential nutrients with their benefit to your growth and development.

_____ Calcium	→	Converts food into energy
_____ Potassium		Builds and maintains strong teeth
_____ Phosphorus		Maintains a healthy blood pressure
_____ Protein		Maintains healthy vision
_____ Vitamin D		Maintains an active metabolism
_____ Vitamin A		Builds and maintains strong bones
_____ Vitamin B12		Builds and repairs muscle tissue
_____ Riboflavin		Generates energy in the body's cells
_____ Niacin		Builds healthy red blood cells

2. Now, place the Nutrients in alphabetical order by numbering them 1 through 9, indicating their numerical position on an alphabetized list. Place their numbered position on that list in the blank line beside the Nutrients name.



Dear Parents and Guardians:

You can reinforce what your child has been learning in school about healthy eating.

- Serve food from all five food groups in your home.
- Model good eating. Select a healthy diet for yourself that includes all the food groups.
- Encourage your child to eat foods from all five food groups every day.

Help your children develop healthy eating habits now. It's a gift you give to them for a lifetime.

Vegetables	Fruits	Grains	Protein	Dairy
<p>Vary your veggies.</p> <p>Any vegetable or 100% vegetable juice counts as a member of the Vegetable Group.</p> <p>Fill half your plate with fruits and vegetables.</p>	<p>Focus on fruits.</p> <p>Whole fruit is preferable to juice but any fruit counts: fresh, frozen, canned, 100% juice or dried.</p> <p>Fill half your plate with fruits and vegetables.</p>	<p>Make at least half your grains whole.</p> <p>Read labels to find more whole grain foods.</p> <p>Whole wheat, oatmeal and brown rice are all good.</p>	<p>Go lean with protein.</p> <p>Keep portions to 1/4 of the plate.</p> <p>Nuts, beans/peas, seeds, poultry, lean meat, seafood, soy and eggs are in this group.</p>	<p>Get your calcium-rich foods.</p> <p>Remember to buy skim milk or 1% milk.</p> <p>Go easy on cheese.</p> <p>Skim yogurt is a good choice, too.</p>

CUT AND PASTE THESE PICTURES OF FOOD ON THE CORRECT SECTIONS OF THE PLATE ABOVE.



Pronunciation -

The word is separated into syllables and tells you how to pronounce the entry word. The ˙ tells you which syllable is stressed.

Definition -

This explains the meaning of the word. If there is more than one meaning, the definition is divided by numbers. An example sentence may be used to make the meaning more clear.

Entry Word -

The • separates the syllables.

Part of Speech -

The abbreviation tells you what part of speech the word is.

con·sum·er

[kən˙sūmər] *n.* **1** A person who purchases goods and services for personal use. **2** A person or thing that eats or uses something.

pl. consumers, n. — **Syn.** **1.** user, purchaser, customer.

Plural Form -

Shows how the word is written in plural form.

Synonym Words -

Identifies other words having the same or nearly the same meaning as the entry word.

DICTIONARY SKILLS

1. What is the entry word? _____

2. What are the synonyms for consumer?

3. What is the 1st definition for consumer?

4. Write the pronunciation.

5. Write the plural form of consumer.



























6. Write the part of speech. _____

7. Use consumer in a sentence using the 2nd definition.

















SOLVE THE PICTURE CODE

Discover what the secret messages on the left say by using the code below. The pictures help spell out the answer.

A = 	N = 
B = 	O = 
C = 	P = 
D = 	Q = 
E = 	R = 
F = 	S = 
G = 	T = 
H = 	U = 
I = 	V = 
J = 	W = 
K = 	X = 
L = 	Y = 
M = 	Z = 

1. _____
               

2. _____
             

3. _____
               

ARTIFACTS

1. What reference book would you use to write a report on dairy cows?

2. What reference book would you use to find a map of Sulphur Springs, Texas?

3. What reference book would you use to find the best time to plant corn, wheat, oats, maize, or soybeans?

4. What reference book would you use to find the meaning of the word “pasteurization”?

5. What reference book would you use to find the antonym for “consumer”?

JUST THE FACTS



Nutrition Facts

Serving Size 8 fl oz (244g)

Servings Per Container 16

Amount Per Serving

Calories 100 **Calories from Fat** 25

%Daily Value*

Total Fat	2.5g	4%
Saturated Fat	1.5g	8%
<i>Trans</i> Fat	0g	
Cholesterol	10mg	3%
Sodium	125mg	5%
Total Carbohydrate	12g	4%
Dietary Fiber	0g	0%
Sugars	11g	
Protein	8g	17%

Vitamin A 10% • Vitamin C 4%

Calcium 30% • Iron 0%

* Percent Daily Values are based on a 2,000 calorie diet.

Vitamins & Minerals: Food manufacturers are required to list the amount of nutrients and other chemical ingredients that appear in significant amounts in the composition of the food product.

Calories: This is the amount of calories in one serving, some of which will come from the fat content in the food product. A calorie is a measure of the fuel you get from the food you eat.

Amount Per Serving: This section tells you 1) the number of calories per serving and 2) the number of calories that come from fat.

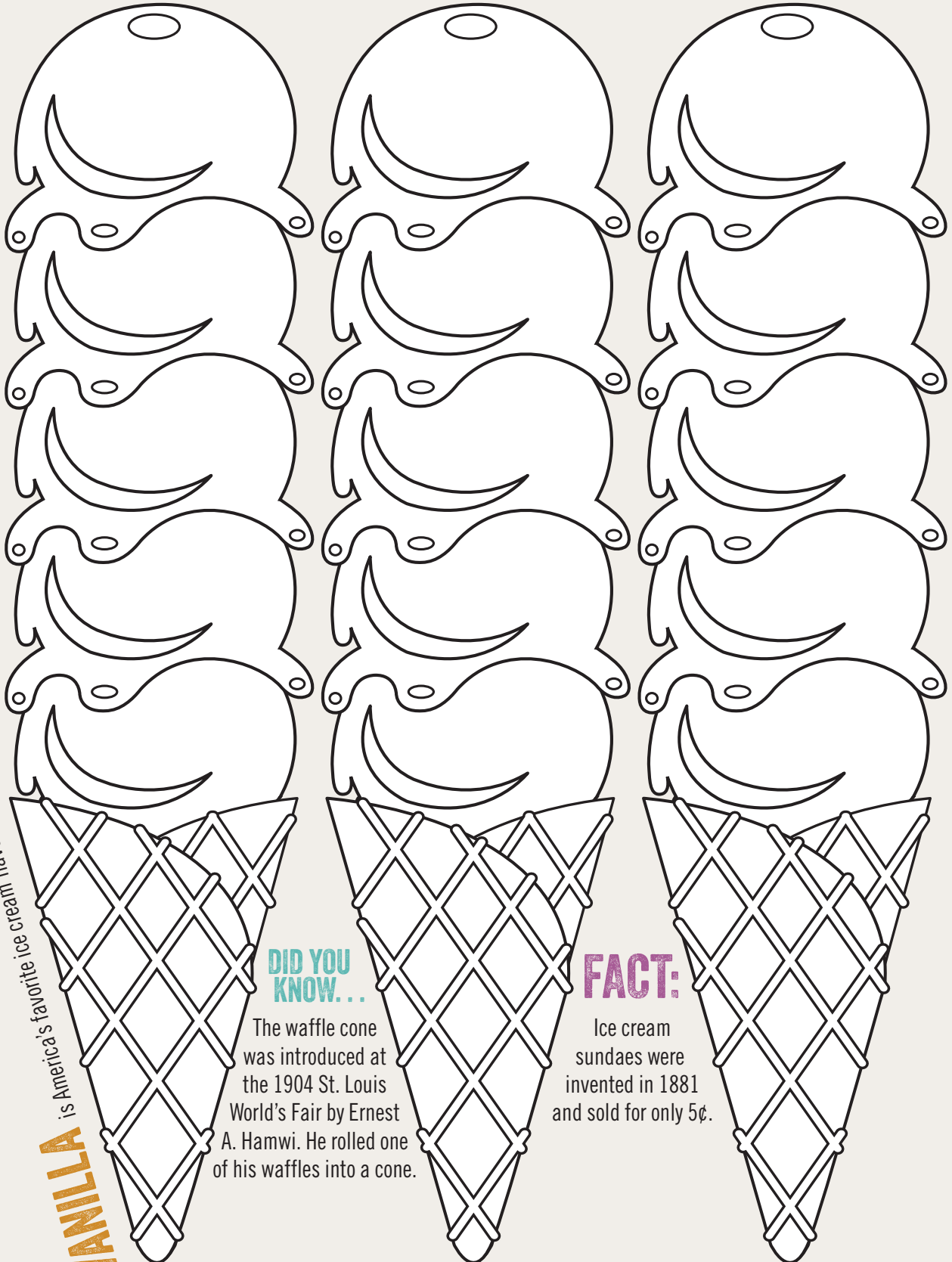
Serving Per Container: This lets you know how many servings are in the package. This number is very important and must be taken into account whenever you buy something that contains more than one serving.

Serving Size: The first place to look when you look at the Nutrition Facts is the serving size. All the information on the label on the container is based on a single serving.

ICE CREAM CHALLENGE

Can you name and color in 15 different flavors of ice cream? What's your favorite?

It takes **12 POUNDS** of whole milk to make one gallon of ice cream.



VANILLA

DID YOU KNOW...

The waffle cone was introduced at the 1904 St. Louis World's Fair by Ernest A. Hamwi. He rolled one of his waffles into a cone.

FACT:

Ice cream sundaes were invented in 1881 and sold for only 5¢.

Large ice cream producing states include **CALIFORNIA, INDIANA, TEXAS, PENNSYLVANIA, ILLINOIS, AND MINNESOTA.**

DAIRY INFORMATION RESOURCES

Web Sites to Bookmark

<http://www.southwestdairyfarmers.com>

<http://www.nationaldairyCouncil.org>

<http://www.ilovecheese.com>

<http://www.butterisbest.com>

<http://www.eatright.org>

<http://www.dairyCouncilofca.org>

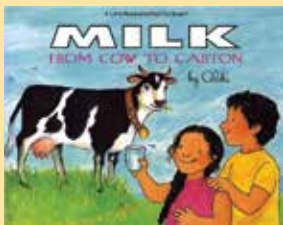
<http://www.dairyinfo.com>

<http://www.dairyfarmingtoday.org>

<http://www.moomilk.com>

<http://www.agclassroom.org/ok>

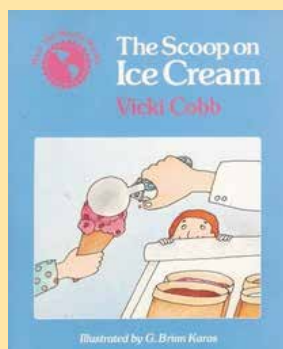
Children's Books About Cows And Dairy Farming



Brandenburg, Aliko. Milk, from Cow to Carton. Harper Collins Publishers; 1992.



Carrick, Donald, Milk. New York, NY: Greenwillow Books; 1985.

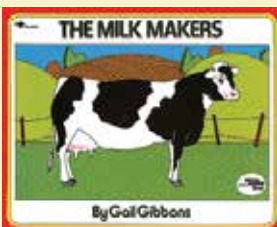


Cobb, Vicki. The Scoop on Ice Cream. Boston, MA: Little, Brown and Company; 1985.

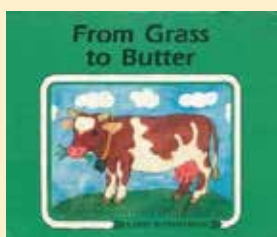
Children's Books About Cows And Dairy Farming (cont.)



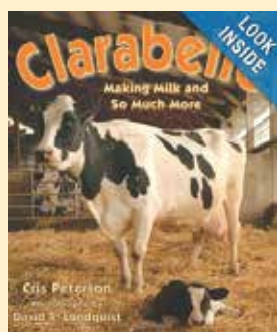
Gibbons, Gail. Farming. New York, NY: Holiday House; 1988.



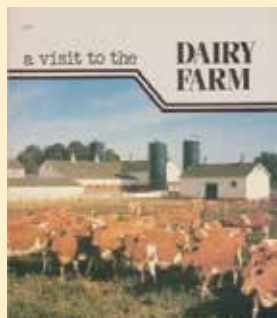
Gibbons, Gail. The Milk Makers. New York, NY: Simon & Schuster; 1985.



Mitgutsch, Ali. From Grass to Butter. Minneapolis, MN: Carolrhoda Books, Ins.; 1981.



Peterson, Chris. Clarabelle: Making Milk and So Much More. Honesdale, PA: Boyds Mills Press; 2007.



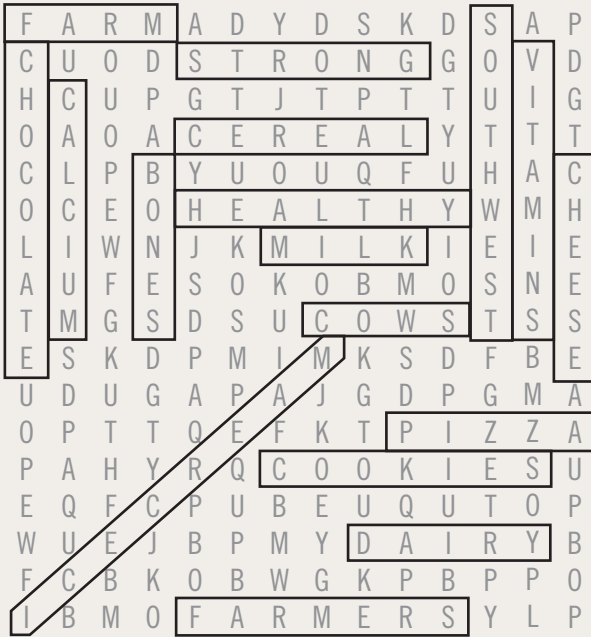
Ziegler, Sandra. A Visit to the Dairy Farm. Chicago, IL: Children's Press; 1987

ANSWER PAGE

Page 9: Reading Comprehension Questions

1. Ice Cream, Cheese, Butter
2. Whey
3. Lactose
4. 36°F
5. To a lab for testing
6. To **inform** how dairy farmers care for their animals, their land, and their food products

Page 13: Moo-sterious Word Find



Page 13: Dairy Word Jumble

- CHEESE
- ICE CREAM
- CALCIUM
- MILK
- VITAMINS
- CHOCOLATE
- DAIRY

Page 14: What idiom does this picture suggest?
The grass is always greener on the other side.

Page 18: Sequencing

- 3-A 1-D 2-G
- 6-B 5-E
- 7-C 4-F

Page 18:

I need **3-4** servings of dairy each day.

Page 19: 9 Essential Nutrients Matching Game

- | | | |
|---|-------------|--------------------------------------|
| 1 | Calcium | Converts food into energy |
| 4 | Potassium | Builds and maintains strong teeth |
| 3 | Phosphorus | Maintains a healthy blood pressure |
| 5 | Protein | Maintains healthy vision |
| 9 | Vitamin D | Maintains an active metabolism |
| 7 | Vitamin A | Builds and maintains strong bones |
| 8 | Vitamin B12 | Builds and repairs muscle tissue |
| 6 | Riboflavin | Generates energy in the body's cells |
| 2 | Niacin | Builds healthy red blood cells |

Page 21: Dictionary Skills

1. consumer
2. user, purchaser, customer
3. A person who purchases goods and services for personal use.
4. kən' sōmər
5. consumers
6. noun

Page 22: Solve The Picture Code

1. Three servings of dairy a day.
2. Vitamin D builds strong bones.
3. We all scream for ice cream.

Page 22: Artifacts

- 1. Encyclopedia
- 2. Atlas
- 3. Farmer's Almanac
- 4. Dictionary
- 5. Thesaurus

Milk is rich in a lot of good things, including history.



Educators will tell you that hands-on learning is one of the most effective ways to teach kids (and adults) about any subject. So a big part of the educational efforts of the Southwest Dairy Farmers is the Southwest Dairy Museum, located in Sulphur Springs, Texas.

The 10,000 square foot building, opened in 1991, highlights the history of the dairy industry in the Southwest, along with a large hands-on museum, meeting hall, and a five-story silo with conference room. Also inside the facility is The Creamery, an old-fashioned ice cream parlor. The Museum also serves as headquarters for the staff and outreach programs of the Southwest Dairy Farmers.

By far one of the most visually exciting areas of the Museum is the Children's Interactive Room. There, four larger-than-life milk jugs welcome kids to use iMac computers to get a true interactive experience while learning how milk really is a part of everything that's good.

The Museum is open to the public from 9 AM to 4 PM, Monday through Friday. General admission is free.



Milk. A part of everything that's good.

THE SOUTHWEST DAIRY FARMERS'
Mobile Dairy Classroom.
It's a dairy farm on wheels.



The Mobile Dairy Classrooms are part of a dynamic educational program sponsored by the Southwest Dairy Museum, Inc. The 32-foot classrooms feature a fully operational milking parlor. Each classroom carries a live cow to schools, fairs, and festivals throughout the Southwest.

The Mobile Dairy Classrooms are enjoyed by all ages, but targeted toward first through sixth grade.

Instructors can teach 100-200 children per presentation and give up to five demonstrations a day.

The Mobile Dairy Classroom is literally an educational exhibit on wheels. Trained instructors demonstrate how to milk a cow, and describe how milk goes from the farm to the kitchen table. There is no charge for the Mobile Dairy Classroom program. Request a visit at southwestdairyfarmers.com.



The Mobile Dairy Classrooms are available year-round. Plan to schedule in advance due to the popularity of this free program.

**TO SCHEDULE
A MOBILE DAIRY CLASSROOM,
PLEASE CONTACT:**

Mobile Dairy Classroom
P.O. Box 936
Sulphur Springs, Texas 75483
(903) 439-6455 (MILK)
(903) 439-1125 Fax
or online at southwestdairyfarmers.com



**Milk. A part of everything
that's good.**