

## **How is Milk Made? READING- COMPREHENSION 5<sup>th</sup> and 6<sup>th</sup> Grade**

**Standard:** 5R-S1-C4-PO4, 6R-S1-C4-PO4

**Objective:** TSW use graphic organizers in order to clarify the meaning of the text.

**Materials:** “How Does a Cow Produce Milk” Article

### **Procedures:**

1. Display or read out loud a short story or and model for students how to use a flow chart to help them sequence text in what they are reading either on the overhead projector or on the board. (Possibilities include well-known stories such as Goldilocks and the Three Bears or current stories that you are covering in the Reading textbook.
2. Give students copies of “How Does a Cow Produce Milk?” and have them read it either individually or in partners.
3. When students are finished, bring them back together as a group and fill in the first part and the last parts of the charts for them and have them copy it in.
4. Have students re-read the article and discuss the missing parts on their own that show the steps in how milk gets from the cow to their table.

### **Assessment:**

Teacher observation

## **How does a cow produce milk ? How does milk get from the cow to the store?**

article reprinted from Newton's Apple, <http://www.tpt.org/newtons/11/dairyfrm.html>

You may have heard milk described as "nature's most perfect food." That's because it contains three main nutrients--protein, calcium, and riboflavin--essential for bones and teeth to grow, body tissues to repair themselves, and antibodies to form.

Milking techniques and milk processing have changed a lot since Christopher Columbus brought the first cattle to the Western Hemisphere in 1493. Advancements such as automatic milking machines and computers have improved milk production, safety, and availability.

Milk production begins with the cow. A mature cow eats, on average, 50 pounds of silage and drinks 25 to 50 gallons of water a day. A cow initially chews just enough to swallow. The food goes into the first chamber (called the rumen) of its four-part stomach. Later, the cow burps up small amounts of food and chews it again. The food then goes into the next chamber (reticulum) before passing through the final two chambers (abomasum and omasum), where bacteria and stomach acids work on it. Food provides cows with protein, energy, vitamins, minerals, and bulk. It is also the raw material that makes milk. However, to begin producing milk, a cow must first give birth. The hormones released at birth and the sucking of the calf stimulate the cow to lactate (produce milk) for her calf. Cows produce the greatest amount of milk right after they give birth. If a cow is not milked, she will stop producing milk.

Milk is made and stored in the cow's udder, which is divided into four separate quarters, each having its own milk supply. When laden with milk, each section can be drained through one udder. First the farmer spray-washes the cow with a warm iodine solution to control diseases. The milking machine cups are then attached and draw the milk from the udder into a system of pipes that transports the warm milk to a large storage tank for cooling. This milk is known as raw milk.

A trucker comes to the farm to collect and transport the raw milk to a processing plant. At the plant, milk is tested for acceptable levels of bacteria, and pasteurized by heating it to 77°C (170°F), then cooling it. This kills any harmful bacteria that may be in the milk.

During processing, butterfat is skimmed from the milk. The butterfat is then forced through small holes. This breaks it up into very tiny globules which will stay mixed evenly with the milk. Butterfat is then added back into the milk in proper proportions to produce skim, 2%, whole, and other types of milk. This process is called homogenization.

Once homogenization is completed, the milk goes into big storage tanks where it is cooled. It is agitated and then put into bottles or cartons for delivery. The total time from cow to shelf is 48 to 96 hours!