

Chew It Twice

Objective

The student will trace the path a cow's food follows through its body. Students will ask and answer questions to clarify comprehension. Students will listen to and follow directions given by the teacher.

Background

Have you ever noticed, whenever you see a cow, it always seems to be chewing something? That is because the cow has to chew its food twice. What you are watching is the cow "chewing its cud." Bovine animals, both cows and bulls, are unique, because they have four parts to their stomachs. (Human stomachs have only one part.) After the cow takes a bite of grass or hay, the first place the food moves is to the rumen (roo' mihn). Here the food is partly digested by the bacteria that live in the rumen. The food is then passed to the reticulum (reh tik' yu lum), which is a membrane with "honey-combed" ridges. These ridges break the food down into smaller pieces. Then the cow regurgitates those pieces so it can chew them again.

The partly-digested food that comes back into the cow's mouth is called cud. The cow rechews the food with its powerful back teeth to break it down even more. This is what the cow is doing when it "chews its cud." As the cow swallows, and saliva washes the cud back into the cow's system, the food now flows into the omasum (oh mah' sum), the third section of the stomach. During this process the food breaks down into vitamins and nutrients that the cow's body absorbs to meet its daily nutritional needs.

The fourth division of a cow's stomach is the abomasum (a bo man' sum). The final digestive process takes place here. In the abomasum the cow's system gets all the remaining good value it needs from the food before letting it pass to the intestines. The intestines store the unused food portions and continue to absorb some nutrients from them until there is enough to push out the back side of the cow as waste material, or cow manure.

Some experts think a cow's digestive system developed as it did for survival. Since bovine animals are hunted animals in the wild, it must eat quickly and eat as much as possible. The grasses the animal eats are stored in the second stomach until it finds a safe place to eat. Then the animal brings up the food, the cud, to chew.

Science

1. Hand out student worksheets.
 - Students will trace the path of the cow's food with their fingers as you read the background.
 - Read the directions from the student worksheet to your students before allowing them to complete the color work.

Oklahoma C3 Standards

PREKINDERGARTEN

Oral Language—1.1,2
Small Motor—2.1,2
Life Science—3.1

KINDERGARTEN

Small Motor—1.1
Life Science—2.1

COMMON CORE

Language Arts—K.RIT.1;
K.SL.1, 2, 5

GRADE 1

Science Process—4.1
Life Science—2.1

COMMON CORE

Language Arts—1.SL.1c, 2,
3

GRADE 2

Science Process—4.1

COMMON CORE

Language Arts—2.SL.1c, 2,
3

GRADE 3

Science Process—4.1

Life Science—2.2,3

COMMON CORE

Language Arts—
3.SL.1c,2,3

Materials

green, yellow and blue
crayons

Ag in Your Community

1. Invite a veterinarian to class to explain the types of vegetation a cow eats. Ask the veterinarian to bring a cow skull so students can see what kind of teeth and jaw a cow has.
2. Invite a dietitian to the classroom to discuss the importance of chewing food before it enters the digestive tract.
3. Invite a dentist to class to talk about the importance of keeping teeth clean.

Vocabulary

abomasum—the fourth compartment of the ruminant stomach that follows the omasum and has a true digestive function

bovine—any of a group of ruminant mammals including the oxen, bison, and buffalo that have hollow horns and are related to the sheep and goats

cud—food brought up into the mouth by some animals (as a cow) from the rumen to be chewed again

intestine—the part of the alimentary canal that is a long tube composed of the small intestine and the large intestine, that extends from the stomach to the anus, that helps to digest food and absorb nutrients and water, and that carries waste matter to be discharged

manure—material that fertilizes land; especially : bodily waste from birds and animals in stables and barnyards with or without litter

omasum—the third chamber of the ruminant stomach that is situated between the reticulum and the abomasum

reticulum—the second compartment of the stomach of a ruminant in which folds of the mucous membrane form hexagonal cells

rumen—the large first compartment of the stomach of a ruminant in which cellulose is broken down by the action of symbiotic micro

Extra Reading

Cronin, Doreen, and Betsy Lewin, *Click, Clack, Moo: Cows That Type*, Little Simon, 2011.

Murphy, Andy, *Out and About at the Dairy Farm*, Picture Window, 2004.

Ray, Hannah, *Cows (Down on the Farm)*, Crabtree, 2008.

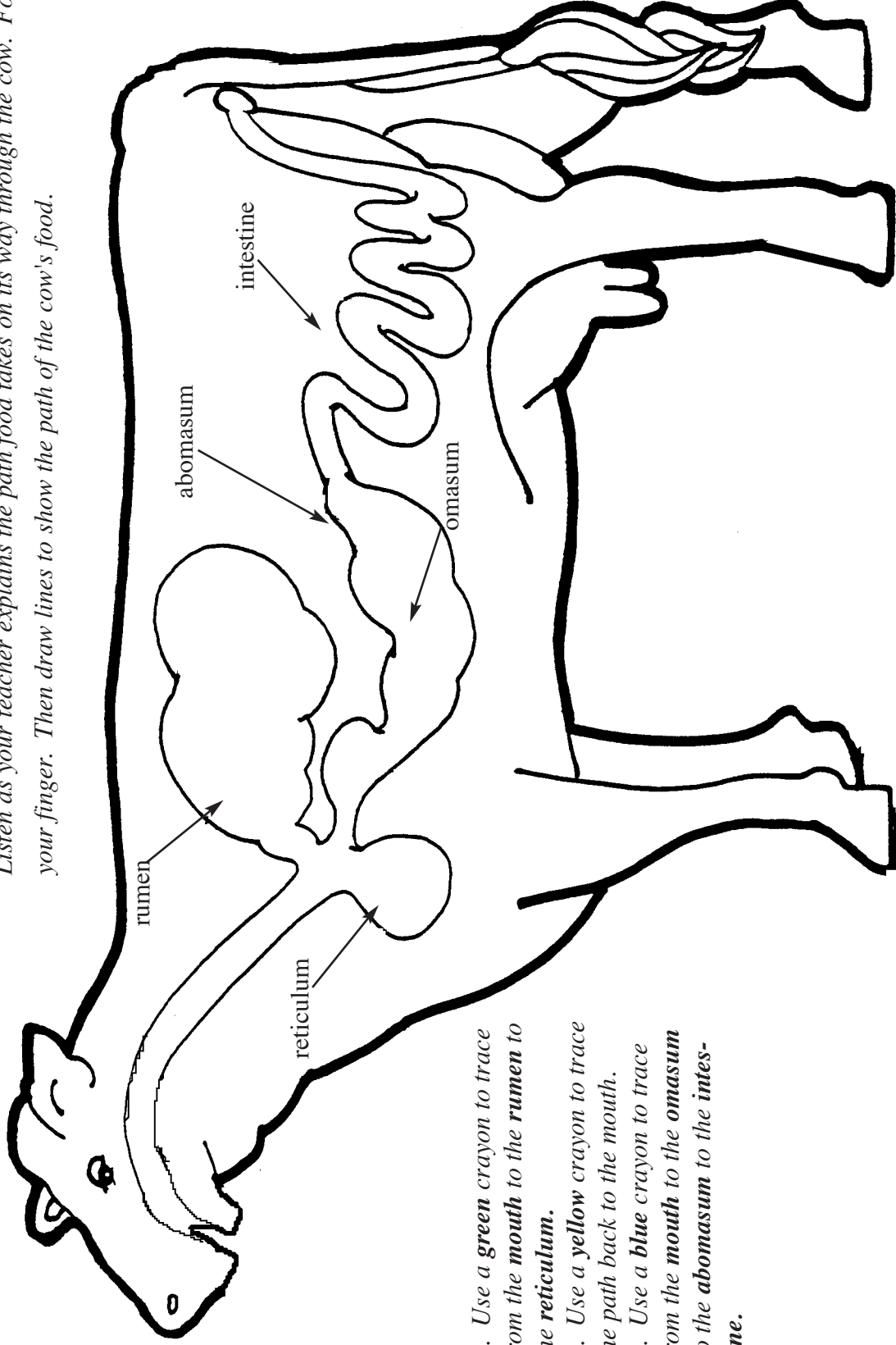
Townsend, Una Belle, Bob Artley and Yolanda Powell, *Grady's in the Silo*, Pelican, 2003.

Wolfman, Judy, and David Lorenz Winston, *Life on a Cattle Farm*, Lerner, 2002.

Name _____

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Listen as your teacher explains the path food takes on its way through the cow. Follow the path with your finger. Then draw lines to show the path of the cow's food.



1. Use a **green** crayon to trace from the **mouth** to the **rumen** to the **reticulum**.
2. Use a **yellow** crayon to trace the path back to the **mouth**.
3. Use a **blue** crayon to trace from the **mouth** to the **omasum** to the **abomasum** to the **intestine**.