The Cow's Digestive System
Fourth Grade

All living things need to take in food to function well and be healthy and strong. In animals and humans, it is the digestive system that breaks down food so it can be used by the body.

The cow is a ruminant animal. Ruminant animals are known for the unique way their digestive systems work. There are both similarities and differences in cow and human digestive systems. Both systems have the same order of parts: mouth ➜ esophagus ➜ stomach ➜ small intestines ➜ large intestines. In cows and humans, each part has the same purpose, but the structure and function of some parts are very different.

1. **Mouth:** The purpose of the mouth is to chew and swallow food.
   Cows: Cows are plant eaters. They eat hay, grass, silage (fermented corn, wheat or hay, including the stalk and leaves) and grain (corn, oats, and barley). They also eat many different agricultural by-products including cottonseed, almond hulls, beet pulp, and blemished vegetables.

   Cows have no top teeth in front. They use their tongues to help them tear the grass. Cows do have back teeth on the top and bottom to chew their food from side to side.

   When they eat, cows do not chew up the food very well before swallowing it. Later they will cough it up in small amounts called cud to chew better and swallow a second time.

   Humans: Humans eat both plants and meat. They eat some of the same grains as cows, but the grains are processed differently to help the human digestive system break down the food.

   Humans have top and bottom front teeth to help them bite and tear food. They also have back teeth on the top and bottom to help with chewing food. After chewing, humans swallow their food once.

2. **Esophagus:** The esophagus connects the mouth to the stomach. It contains muscles to help move the food along.

   Cows: In cows, it is normal for food to travel both to and from the stomach through the esophagus. First the food travels down the esophagus to the stomach. Cud then travels back up the esophagus for more chewing. Swallowing sends the food back down to the stomach for a second time.

   Humans: After humans swallow food, it travels down the esophagus to the stomach. It does not travel back up the esophagus unless people get sick and throw up.

3. **Stomach:** Most digestion takes place in the stomach.

   Cows: A cow has a stomach with four compartments. It does not have four stomachs. Each compartment in the stomach has a special role in digesting the food.

   Cows chew a lot. All of the food they eat goes through two rounds of chewing and swallowing. They spend six to seven hours a day eating and eight hours a day chewing cud.

Adapted from Dairy Council of California

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After eating, the cow rests. During rest, the eaten food is digested some more in the first two compartments of the stomach (rumen and reticulum). The rumen is large and stores the partially digested food for the next round of chewing and swallowing.

During rest, the cow will regurgitate cud from the rumen to chew some more. This time the cow chews the cud very well before swallowing it again. After the second chew and swallow, the food is digested some more in the last two compartments of the stomach (omasum and abomasums).

Humans: Humans have a stomach with no compartments. Humans only chew and swallow their food once. The stomach helps break up the food into smaller amounts.

4. **Small intestine:** The food mixture is broken down even more. This is where many nutrients are absorbed into the body.

   Cows: Digested food from the last compartment of the stomach (abomasus) moves to the small intestine where more digestion occurs and nutrients are absorbed.

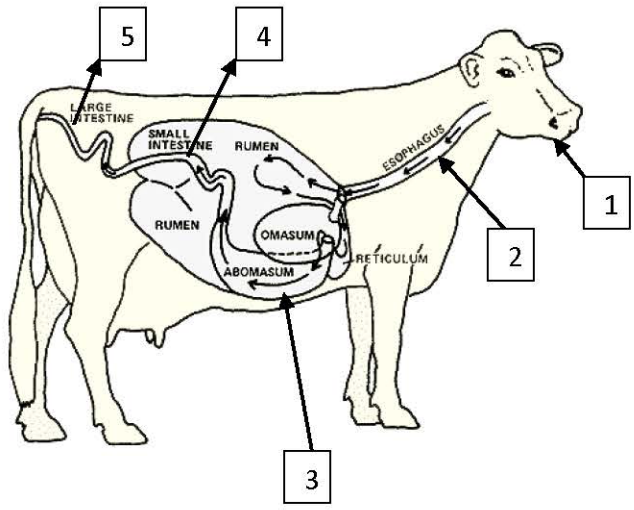
   Humans: Digested food from the stomach moves to the small intestine where more digestion occurs and nutrients are absorbed.

5. **Large intestine:** Water is primarily absorbed in the large intestine. Any part of the food that is not used will leave the body as solid or liquid waste.

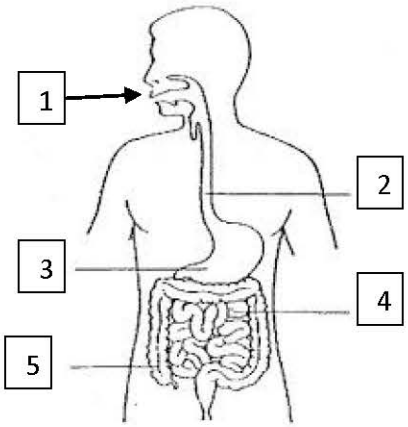
   Cows and Humans: The large intestine follows the small intestines. It serves similar purposes in both cows and humans.

Include very simple diagrams showing the 5 main parts named in this passage. Arrows are not needed.

Cow's Digestive System



Human's Digestive System



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The quality of food a dairy cow eats determines the quality of milk she produces. Cows that are fed nutritious food will produce more and better milk. Dairy farmers know what foods are best for their cows. The farmers make sure the cows are fed foods that help make them healthy and strong.

People also need to eat nutritious food. Dairy foods provide important nutrients to help children grow and stay strong and healthy. Milk and milk products such as cheese and yogurt provide calcium. Calcium is needed for strong bones and teeth. Adults need calcium, too.

Milk and dairy foods made from milk are an essential part of a nutritious diet. We depend on cows with healthy digestive systems to produce the milk we need.

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