

# Chuck Wagons on the Trail

## History Facts/Reading:

Power Point

Program Theme Report

## Geography Map:

No Map

## Math:

Cowboys used a chuck wagon to carry all of their cooking utensils. They had pots and pans, ladles and spoons. They cooked things like beans with cornbread and sourdough biscuits.

1. The cowboy cook, known as "Cookie" had to boil beans in a pot that held 6 gallons of water. The beans took up about 1 gallon of space. However, he knew he had to leave another gallon of space inside the pot so when he stirred the beans they wouldn't spill. How many gallons of water should he put in the pot to cook the beans?  $6 - 1 - 1 = 4$  gallons
2. If 'Cookie' had to mix 4 cups of flour, 3 cups of sugar, 8 cups of corn meal, and 6 cups of water into his pot, how many cups of ingredients would he mix all together?  $4 + 3 + 8 + 6 = 21$  cups

When the cowboys lined up at the back of the chuck wagon to fill their plates with food, 'Cookie' had to make sure he had enough food to feed the cowboys.

3. If 'Cookie' made 84 pieces of corn bread to feed 32 cowboys, and each cowboy got two pieces of cornbread, how many pieces would 'cookie' have left?  $32 \times 2 = 64$  pieces,  $84 - 64 = 20$  pieces left

## Vocabulary/Spelling:

Industry – production and sale of goods

Developed – being changed over time to be stronger or more useful

Operator – the owner or manager of a business

Hinged - A jointed or flexible device that allows the turning or pivoting of a part, such as a door or lid, on a stationary frame

Contents – something kept inside another object

Convenience – being useful, easy, or comfortable to someone

Product - Something produced by human or mechanical effort or by a natural process

Endure - To continue in existence; last

Flavor - Distinctive taste

## **Science:**

The cook that was responsible for the chuck wagon and fed the cowboys on cattle drives was often called 'Cookie'. He often made sour dough biscuits for the cowboys to eat.

Sourdough is as old as bread itself and was made simply by mixing flour and water. The mixture would ferment and turn sour and full of gas. The resulting mixture, known as starter, is thick with wild yeasts and bacteria.

### **1. What is fermentation?**

The famous scientist, Louis Pasteur discovered that fermentation was caused by living cells. Fermentation is a metabolic process in which an organism converts a carbohydrate, such as starch or a sugar, into an alcohol or an acid. For example, yeast performs fermentation to obtain energy by converting sugar into alcohol. Bacteria perform fermentation, converting carbohydrates into lactic acid.

### **2. What is yeast?**

Yeast is a fungus, a one-celled life form which digests sugars (such as those contained within the starch in flour) and produces a bit of ethanol (alcohol) and some carbon dioxide (which is what causes the bread to rise).

Sourdough is teeming with bugs—some 50 million yeasts and 5 billion lactobacilli bacteria are in every teaspoon of starter dough!

### **3. There are bacteria in my bread?**

Almost all the bacteria are lactobacilli, cousins of the bacteria that curdle milk into yogurt and cheese. In sourdough, these bacteria outnumber the yeasts by 100 to one. The bacteria are the ones that make the acids that give the sourdough its tart flavor. They also contribute to the carbon dioxide levels that make the bread smell delicious.

#### **4. More sourdough is made from the old stuff?**

A little starter is always set aside for the next batch of sourdough. It is already loaded with the “bugs” of the first batch. Those “bugs” speed up the fermentation process when more flour is added to make another batch of dough. Some bakeries have kept their sourdough batches alive for more than 100 years!

Keeping a sourdough starter mixture alive actually requires a little maintenance since the starter is actually a living ecosystem.

#### **5. Sourdough Ecosystem**

Water is mixed with flour and left to ferment.

There are swarms of yeasts and bacteria everywhere—in the flour, in the environment, and on the cook.

The “bugs” will sort themselves out, and the "bread friendly" ones will win any battles.

As lactobacilli convert sugars to lactic and acetic acid, the dough noticeably sours, going down to the pH of mayonnaise, around 3.8.

Most microorganisms drop out of competition at this point, but yeasts that tolerate acid come into their own and convert sugars into carbon dioxide and ethanol.

Gas bubbles and fruity smells signal that fermentation is under way.

#### **Fun Fact:**

The discovery of fermentation and the sourdough process led to commercial production of Baker’s Yeast. Baker’s Yeast makes the process of carbon dioxide loading into dough, which makes it rise, much faster.