Name: _____ Date: _____

Why Bread Dough Rises

Circle group

A lump of dough starts out thick and flat. After an hour in a warm kitchen, it can double in size. Nothing is added from outside the bowl. The change comes from a tiny living thing called yeast.

Yeast is a fungus. It is so small that one gram of baker's yeast holds billions of cells. When it is dry, it sleeps. A baker adds warm water and a little sugar or flour. The cells wake up and start to eat. As yeast eats sugar, it gives off carbon dioxide, which is a gas. It also makes a small amount of alcohol. Scientists call this fermentation.

The gas needs somewhere to go. When bakers knead dough, two proteins in wheat flour join up. They make a stretchy net called gluten. Gluten works like thousands of tiny balloons. It traps the carbon dioxide inside the dough. As more gas builds up, the dough puffs up and grows.

Heat finishes the job. In a hot oven, the gas bubbles grow one last time. The yeast cells die, and the alcohol bakes away. The proteins and starches get firm. The bubbles are frozen in place. They become the holes you see in a slice of bread.

Temperature matters a lot. Yeast works slowly in a cold room. It works faster in a warm one. But if the water is too hot, the yeast can die before it does any work. Then the loaf stays flat. Good bakers are patient. They keep the dough warm, not hot.

Questions

1. What tiny living thing makes bread dough rise?

_____

_____

2. What gas does yeast give off when it eats sugar?

_____

_____

3. What is gluten, and what does it do in dough?

_____

_____

4. What happens to the yeast in a hot oven?

_____

_____

5. What are the holes in a slice of bread?

_____

_____

6. Why should a baker not use water that is too hot?

_____

_____

Words to know

yeast: a tiny fungus used to make bread rise
fermentation: the change that happens when yeast eats sugar and makes gas
knead: to press and fold dough with your hands
gluten: a stretchy protein network in wheat dough

Talk together (every group has these)

1. Find one fact that every group read. How did your sheet say it?
2. What did your sheet tell you that you think another group's did not? Ask them.
3. What is one question about this topic that none of the sheets answered?

Name: _____ Date: _____

Why Bread Dough Rises

Triangle group

A lump of dough starts out dense and flat, yet after an hour in a warm kitchen it can double in size. Nothing is being added from outside the bowl. The change comes from a microscopic living organism called yeast.

Yeast is a type of fungus so small that a single gram of baker's yeast contains billions of cells. While it is dry, it remains dormant. When a baker adds warm water and a little sugar or flour, the cells wake up and begin to feed. As the yeast digests sugar, it releases carbon dioxide, which is a gas, along with a small amount of alcohol. Scientists call this process fermentation.

The gas needs somewhere to go. As bakers knead the dough, two proteins in wheat flour join together and form a stretchy network called gluten. Gluten behaves like thousands of tiny balloons, trapping the carbon dioxide inside the dough, so that as more gas collects, the dough gradually puffs up and expands.

Heat completes the transformation. When the dough enters a hot oven, the gas bubbles expand one final time and the yeast cells die, while the alcohol bakes away. The proteins and starches harden into a firm structure, and the bubbles are frozen in place as the holes you can see inside a slice of bread.

Temperature matters a great deal. Yeast works slowly in a cold room and much faster in a warm one. If the water is too hot, however, the yeast can be killed before it accomplishes anything, and the loaf will stay flat. Experienced bakers learn to be patient and to keep the dough comfortably warm instead of hot.

Questions

1. What tiny living thing makes bread dough rise?

_____

_____

2. What gas does yeast give off as it eats sugar?

_____

_____

3. What is gluten, and what does it do in the dough?

_____

_____

4. What happens to the yeast in a hot oven?

_____

_____

5. What are the holes inside a slice of bread?

_____

_____

6. Why would a baker be careful not to use water that is too hot?

_____

_____

Words to know

yeast: a tiny fungus used to make bread rise
fermentation: the change that happens when yeast eats sugar and makes gas
knead: to press and fold dough with your hands
gluten: a stretchy protein network in wheat dough
structure: the way the parts of something are put together

Talk together (every group has these)

1. Find one fact that every group read. How did your sheet say it?
2. What did your sheet tell you that you think another group's did not? Ask them.
3. What is one question about this topic that none of the sheets answered?

Name: _____ Date: _____

Why Bread Dough Rises

Square group

A lump of dough begins as a dense, flat mass, yet after an hour in a warm kitchen it can double in volume. Nothing has been introduced from outside the bowl. The transformation is caused by a microscopic living organism called yeast, which bakers have relied upon for thousands of years.

Yeast is a type of fungus so minute that a single gram of baker's yeast contains billions of individual cells. While dry, it remains dormant. When a baker adds warm water along with a little sugar or flour, the cells awaken and begin to feed. As the yeast digests sugar, it releases carbon dioxide, a gas, together with a small quantity of alcohol, and scientists refer to this process as fermentation.

The gas must be contained somewhere. As bakers knead the dough, two proteins found in wheat flour bond together and form an elastic network called gluten. Gluten behaves like thousands of miniature balloons, capturing the carbon dioxide within the dough, so that as additional gas accumulates, the dough gradually swells and expands.

Heat completes the transformation. When the dough enters a hot oven, the gas bubbles expand one final time, the yeast cells perish, and the alcohol evaporates. The proteins and starches harden into a rigid structure, and the bubbles become permanently fixed as the holes visible inside a slice of bread.

Temperature is enormously important. Yeast works sluggishly in a cold room and considerably faster in a warm one. If the water is excessively hot, however, the yeast may be destroyed before accomplishing anything, and the loaf will remain flat. Experienced bakers therefore learn to be patient and to keep the dough comfortably warm rather than hot.

Questions

1. What microscopic organism causes bread dough to rise?

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_____

2. Which gas does yeast release as it digests sugar?

_____

_____

3. What is gluten, and what role does it play in the dough?

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_____

4. What becomes of the yeast cells in a hot oven?

_____

_____

5. What are the holes visible inside a slice of bread?

_____

_____

6. Why would a careful baker avoid using excessively hot water?

_____

_____

Words to know

yeast: a tiny fungus used to make bread rise
fermentation: the change that happens when yeast eats sugar and makes gas
knead: to press and fold dough with your hands
gluten: a stretchy protein network in wheat dough
structure: the way the parts of something are put together

Talk together (every group has these)

1. Find one fact that every group read. How did your sheet say it?
2. What did your sheet tell you that you think another group's did not? Ask them.
3. What is one question about this topic that none of the sheets answered?

For the teacher: Why Bread Dough Rises

Each student sheet carries a shape, not a level. The same topic and facts, written three ways.

Circle: Why Bread Dough Rises

Easier · 253 words · Flesch-Kincaid grade 2.4

1. Yeast.
2. Carbon dioxide.
3. A stretchy net of proteins that traps the gas so the dough puffs up.
4. The yeast cells die.
5. Gas bubbles that were frozen in place when the bread baked.
6. Very hot water can kill the yeast, so the dough would not rise.

Triangle: Why Bread Dough Rises

This passage · 275 words · Flesch-Kincaid grade 7

1. Yeast.
2. Carbon dioxide.
3. A stretchy network of proteins that traps the gas so the dough puffs up.
4. The yeast cells die.
5. Gas bubbles that were frozen in place when the bread baked.
6. Very hot water can kill the yeast, so the dough would not rise.

Square: Why Bread Dough Rises

Harder · 280 words · Flesch-Kincaid grade 9.8

1. Yeast.
2. Carbon dioxide.
3. An elastic network of proteins that captures the gas so the dough swells.
4. They perish.
5. Gas bubbles that became permanently fixed in place when the bread baked.
6. It can destroy the yeast, so the dough would never rise.