

Why does a Halloween pumpkin get mushy?



You carve a pumpkin with a big happy smile. But a few days later, it is soft, saggy and mushy. Why does that happen?



Why?

1. A whole pumpkin wears a suit of armor.

Its thick, tough skin keeps the water in, and it keeps tiny visitors out. So a whole pumpkin can sit on the porch for weeks and weeks. But when you carve it, you cut doors and windows in the armor!

2. Tiny travelers land on the soft, wet inside.

The air is full of tiny travelers, much too small to see. Some are mold seeds, called spores. Some are bacteria. A carved pumpkin is perfect for them. It is wet, it is full of food, and nothing is in the way. So they land, and they start to grow.

3. They turn the pumpkin into mush.

Molds do not have mouths! They let out special juices that turn the firm pumpkin into soft mush, and then they soak it up. The walls get softer and softer, the smile droops, and fuzzy spots show up.

Try it! Fridge or counter?

You need: two small pieces of pumpkin, two clear bags, and a grown-up to do the cutting

1. Ask a grown-up to cut two small pieces of pumpkin and seal each one in a clear bag.
2. Put one in the refrigerator, and leave one on the counter.
3. Look every day, but keep the bags closed. Which piece gets fuzzy first?

What happened? Mold grows fastest when it is warm and wet. When it is cold, it grows very slowly. That is why food stays fresh longer in the refrigerator.

Video + more questions:
whywhywhykids.com/pumpkin

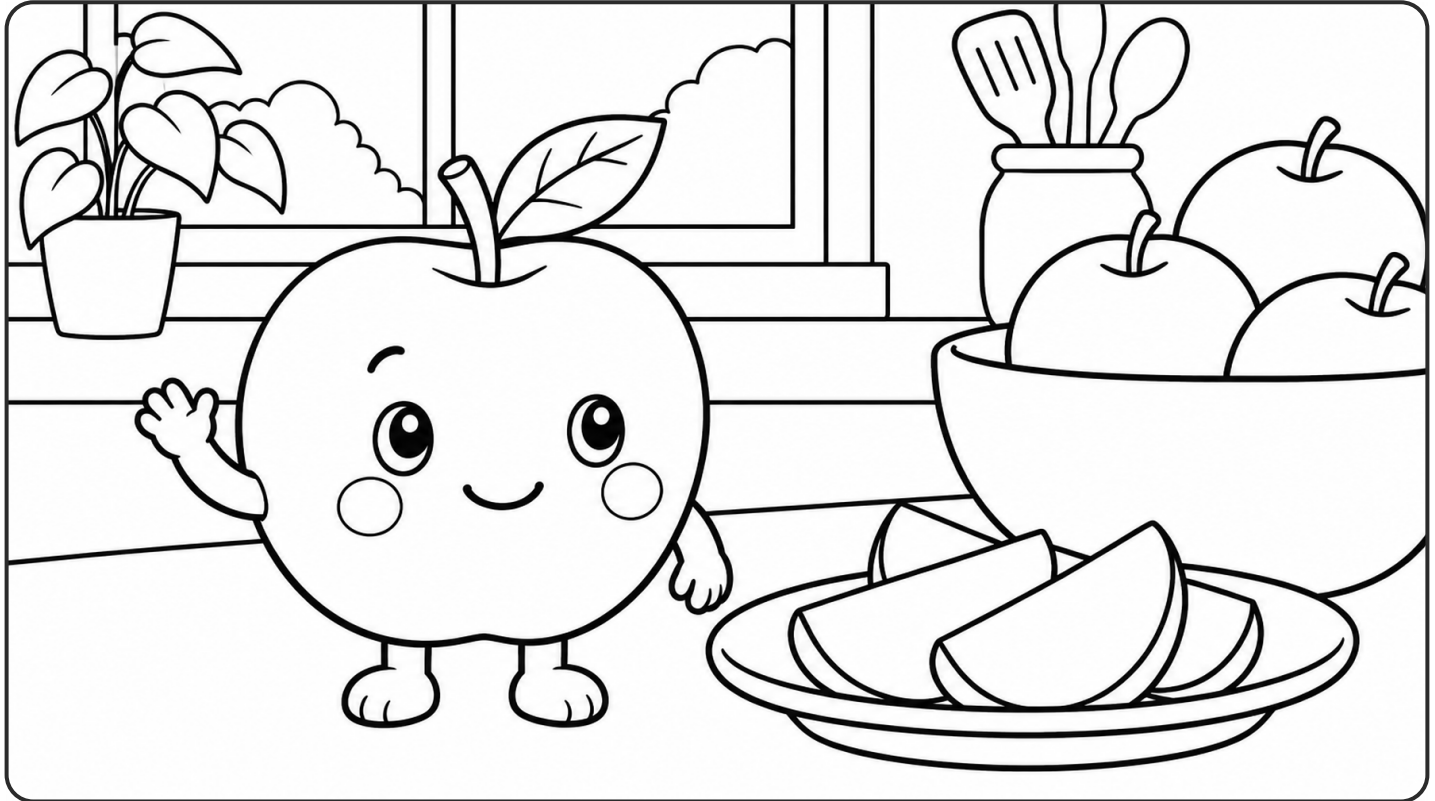


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Why do apples turn brown after we cut them?



You cut an apple, and the inside is white and fresh. But leave it on the plate for a while, and it turns brown! Why?



Why?

1. An apple is made of millions of tiny rooms, called cells.

They are much too small to see. Each one is like a little bag, full of juice. When a knife cuts through, it breaks open the cells, and their juice spills out onto the cut side.

2. The juice meets the air.

Air has a gas in it called oxygen. It is the same gas that you breathe in. Some things in the juice meet the oxygen, and they join together. When they join, they make something new, and it is brown.

3. A tiny helper makes it happen fast.

The helper in the juice is called an enzyme. In just a few minutes, the brown starts to show.

Try it! The lemon test

You need: an apple, a little lemon juice, and a grown-up to cut the slices

1. Ask a grown-up to cut an apple into slices.
2. Rub lemon juice on one slice, and leave another slice plain.
3. Put them side by side, wait half an hour, and look. Which one is browner?

What happened? Lemon juice is sour, and that sour juice slows the little helper way down.

Video + more questions:
whywhywhykids.com/apple

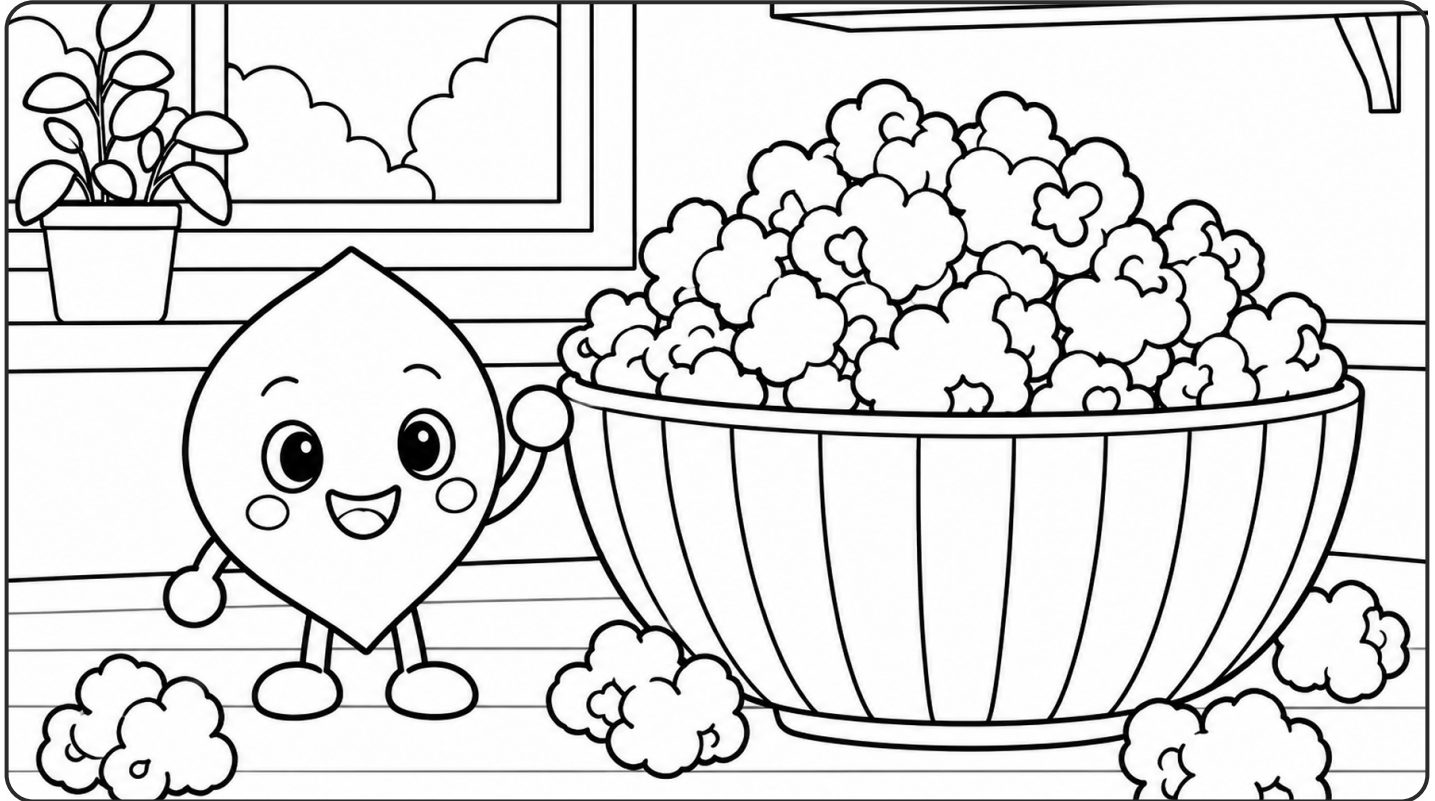


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Why does popcorn pop?



A popcorn kernel is small, hard and yellow. But heat it up, and pop! It turns into a big, white, fluffy puff. Why?



Why?

1. Inside the hard shell there is starch, and a tiny bit of water.

The shell is called the hull. It is strong and tight, with no holes at all.

2. Heat turns the water into steam, and steam needs much more room.

It pushes on the shell from the inside, harder and harder, like blowing more and more air into a balloon. The hot steam also makes the starch soft and gooey, like hot jelly.

3. Pop! The shell bursts and the steam rushes out.

That is the sound you hear. The soft starch puffs up like foam, cools in a blink, and turns dry and crunchy. The kernel is turned inside out and many times bigger.

Try it! The spoon test

You need: popcorn kernels, a spoon, and a grown-up to do the popping

1. Before you pop your popcorn, put ten kernels in a spoon.
2. After it pops, pick out ten pieces. Do they still fit in the spoon?
3. Look closely at one piece. Can you find the little bits of brown shell?

What happened? The brown bits are the hull that burst open. The white fluff is the starch that puffed up.

Video + more questions:
whywhywhykids.com/popcorn

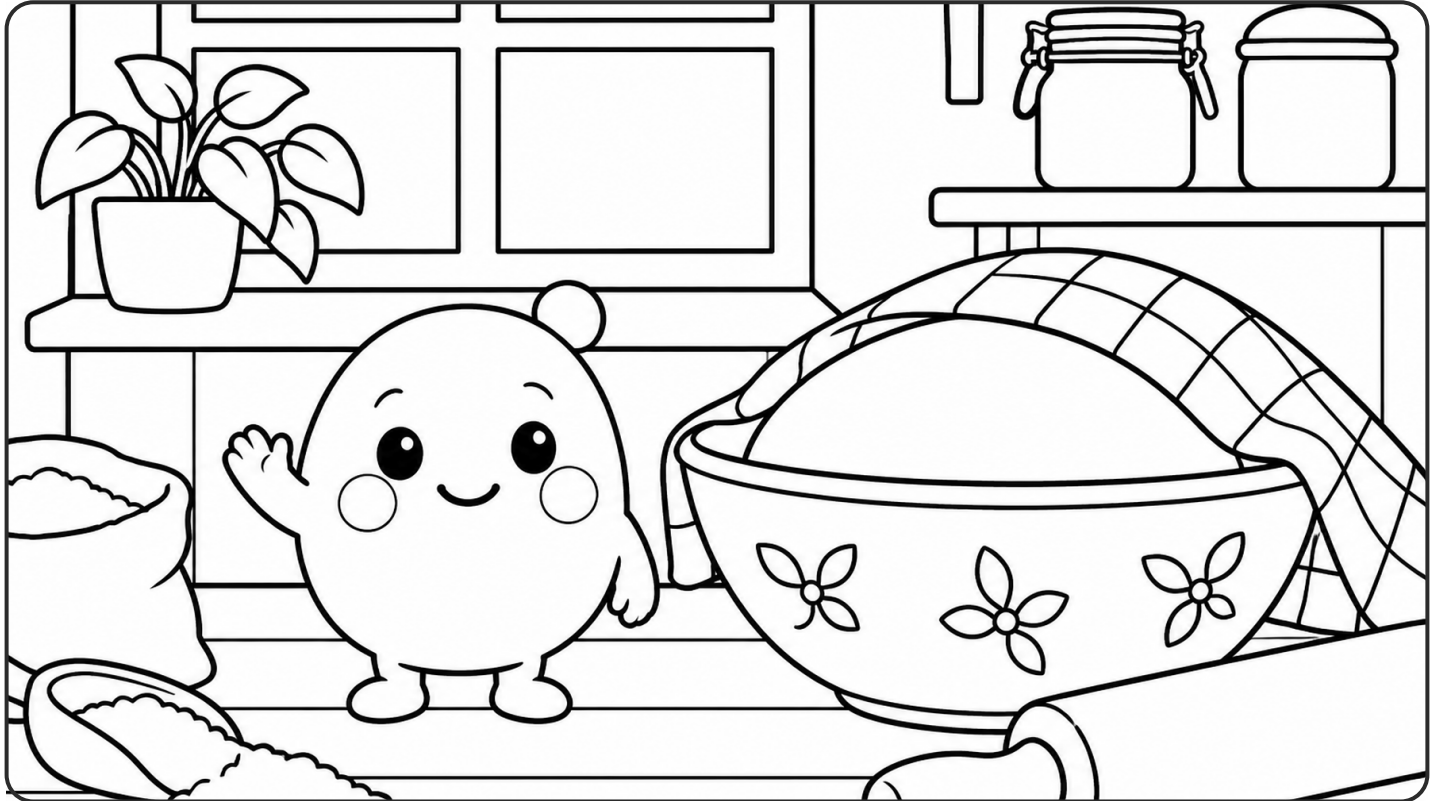


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How does bread dough get bigger?



You make a small ball of bread dough and leave it in a bowl. An hour later, it is twice as big! How does bread dough get bigger?



Why?

1. Yeast is alive!

It looks like a brown powder. But every little grain is a crowd of tiny living things, fast asleep. When they get some warm water, they wake up, and they are hungry!

2. Yeast eat sugar and let out gas.

Flour is full of starch, and some of that starch turns into sugar. The yeast eat it, and let out a gas called carbon dioxide. It is a little bit like burping.

3. A stretchy net traps the gas in bubbles.

When you knead the dough, the flour and water turn stretchy, like a net made of rubber bands. This is called gluten. It traps the gas in thousands of tiny bubbles. As the bubbles grow, the whole dough puffs up.

Try it! The balloon bottle

You need: a bottle, a balloon, warm water, a spoon of sugar, a spoon of yeast, and a grown-up to help

1. Ask a grown-up to help. Put some warm water, a spoon of sugar and a spoon of yeast in a bottle.
2. Stretch a balloon over the top, and wait.
3. In about half an hour, does the balloon start to fill up, all by itself?

What happened? The yeast wake up, eat the sugar and let out gas. The gas fills the balloon, just like the bubbles in dough.

Video + more questions:
whywhywhykids.com/dough



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