mystery science

Grades K-5
Mini-Lesson: “Why do our teeth chatter in the cold?”

VIDEO TRANSCRIPT

VIDEO 1

Hi, it's Jay. Have you ever been really cold? Like, colder than cold? Like, my toes feel like blocks of ice cold? I have. I remember running a race in winter once, and it was freezing outside. It was so cold that my eyelashes got frozen. When it gets really cold like that, all sorts of amazing things can happen. Waterfalls can freeze. Dripping water can turn into icicles. You can even start to see your breath. Someone named Harper has a question about something else that can happen in the cold. Let's give Harper a call now.

[Video Call]

- Hi, Jay.
- Hey, Harper.
- I have a question. Why do our teeth chatter in the cold?
- That's a great question.

I used to swim in Lake Michigan when I was little, and the water was almost always cold. I wouldn't really notice it when I was swimming around with my friends. But when I got out, I'd feel really cold. So cold that my teeth would begin to do this. Yep. It might have happened to you, too. When our bodies get really cold, like when we're on the playground on a chilly morning without a jacket, or playing in the snow for too long, or maybe hopping out of a swimming pool on a cold day, something starts to happen. Our arms shake, our legs shake, and our teeth begin

to chatter—to shake up and down all on their own. And then, when we warm up, it all stops. But why is that?

VIDEO 2

I don't know how you answered, but if you said it has something to do with staying warm, you're on the right track. Imagine it's a really cold day and you already have a jacket on, and maybe even a scarf and gloves, but you still feel really cold. What could you do to stay warm? Let's think about this for a second. These people are really cold. You can kind of tell by the way they're acting. Notice what they're doing? They're stomping their feet, rubbing their hands together, some of them are even hopping up and down a little. And there's a really good reason for that. It all takes *energy* to move around like that. And when things use energy, something interesting happens. Have you ever touched a laptop or tablet that's been on for a while? Or maybe stood near a bright lamp? They're warm, right? That's because all those things are using energy. And when energy gets used, things can start to warm up. That goes for humans, too. Think about what happens when you're running really fast, or playing basketball, or dancing. You start to feel hot because when you run or jump or play, your muscles are using energy, just like a laptop or tablet or lamp. So every little movement creates a tiny bit of warmth. Okay, but what happens if you don't feel like running around or playing to get warm? Well, your body has a clever way to keep you warm anyway: by making your muscles move on their own. I'm serious. When it gets really cold, your brain tells your muscles to get moving. And that's what happens. Your muscles start twitching, even though you're not trying to move them. And that makes your legs shake and your arms shake. There are even muscles around your mouth, and they begin to shake too. That's what's making your teeth chatter. It takes a lot of energy to make your muscles twitch like that. And just like when you play basketball or dance, using energy makes

our body warmer. So all that shivering and teeth chattering you're doing, it's actually your body trying to keep you warm. Oh, and get this, we're not the only ones who shiver to stay warm. Dogs and cats shiver. Bees shiver their wing muscles to keep their hive and their queen warm. And check out this python. Pythons wrap around their eggs and gently shiver to keep them warm, too. So cool. So, in summary, when you get really cold, your body has a special way to keep you warm: it makes the muscles in our arms, legs, and even mouth begin to twitch. And when that happens, our teeth begin to chatter. Now, all that shaking takes energy. And when energy is used, it can release heat. So the next time your teeth are chattering, just remember, it's just your body turning on the heater to keep you warm. That's all for this week's question. Thanks, Harper, for asking it.