

ACTIVITY #1: MUSICAL WATER GLASSES

OVERVIEW

String instruments are very good at making different pitches—each string has its own! Try making your own instrument that has lots of different pitches too, and then practice creating your own melodies.

MATERIALS

- Several drinking glasses or mason jars
- Pencil, paintbrush, or other stick
- Water
- Food coloring (optional)

BACKGROUND INFO

String instruments produce sound when the musician plucks, hits, or rubs one or more of its strings. The string vibrates, and the vibrations are amplified by the body of the instrument, which is usually hollow and made of wood. In an orchestra, string instruments are played with a bow, which the musician rubs along the strings to create a long, smooth sound. Sometimes, a string musician might pluck the string with their fingers instead. This is called *pizzicato*, and it produces a short, bright sound.

Each string on a string instrument has its own pitch, and musicians can make even more pitches by pressing their fingers into the strings in different spots. Pressing down in just the right places make the string shorter, and shorter strings mean higher pitches.

You can make your own instrument with lots of pitches from simple materials right at home. Although these musical water glasses don't have any strings, they each have their own pitch, just like the strings on a string instrument. Play around with different pitches on your water glasses and see what melodies you can come up with!

Think about the instruments you saw in the **Strings, Streams, and Pizzicato Springs** video. Which one had the highest pitch? The lowest?

INSTRUCTIONS

Check out the **Strings, Streams, and Pizzicato Springs** video for a visual tutorial. Or, follow these steps:

1. Line up your glasses in a row and add a small amount of water to the glass on the left. Add a little bit more water to the next glass in line, a bit more to the next glass, and so on. The glass all the way on the right should have the most water. *Optional: add a few drops of food coloring to your glasses so that each one is a different color.*
2. With your pencil or paintbrush, tap gently on the rim of one of the glasses. What do you hear? Now tap another glass. What is different?
3. You now have your own set of musical water glasses! Experiment with them and pay attention to all the different pitches. Can you play a melody? What does it sound like when you play two glasses at once?

EXTENSIONS

- Experiment and see what you can do to raise or lower the pitch of each glass. What happens if you add water to a glass? What about if you pour some out? Try using different objects to (gently) tap your glasses. What sound does a metal spoon make? What about a plastic one?
- To make your musical water glasses sound more like a standard seven note scale, try this: Collect eight glasses or jars of the same size, and use a measuring cup to add $\frac{1}{4}$ cup of water to the first one. Add $\frac{1}{2}$ cup to the second, $\frac{3}{4}$ to the third, and so on, increasing by $\frac{1}{4}$ cup each time. The eighth glass should contain two cups of water. Now see if you can play a scale or your favorite song!
- Another way to play your musical water glasses is to turn them into drums! If you have a balloon or latex glove, try cutting out some round pieces and securing one over the top of each glass with a rubber band. Now tap on your drum with your pencil or paintbrush. What do you notice? How has the sound changed?