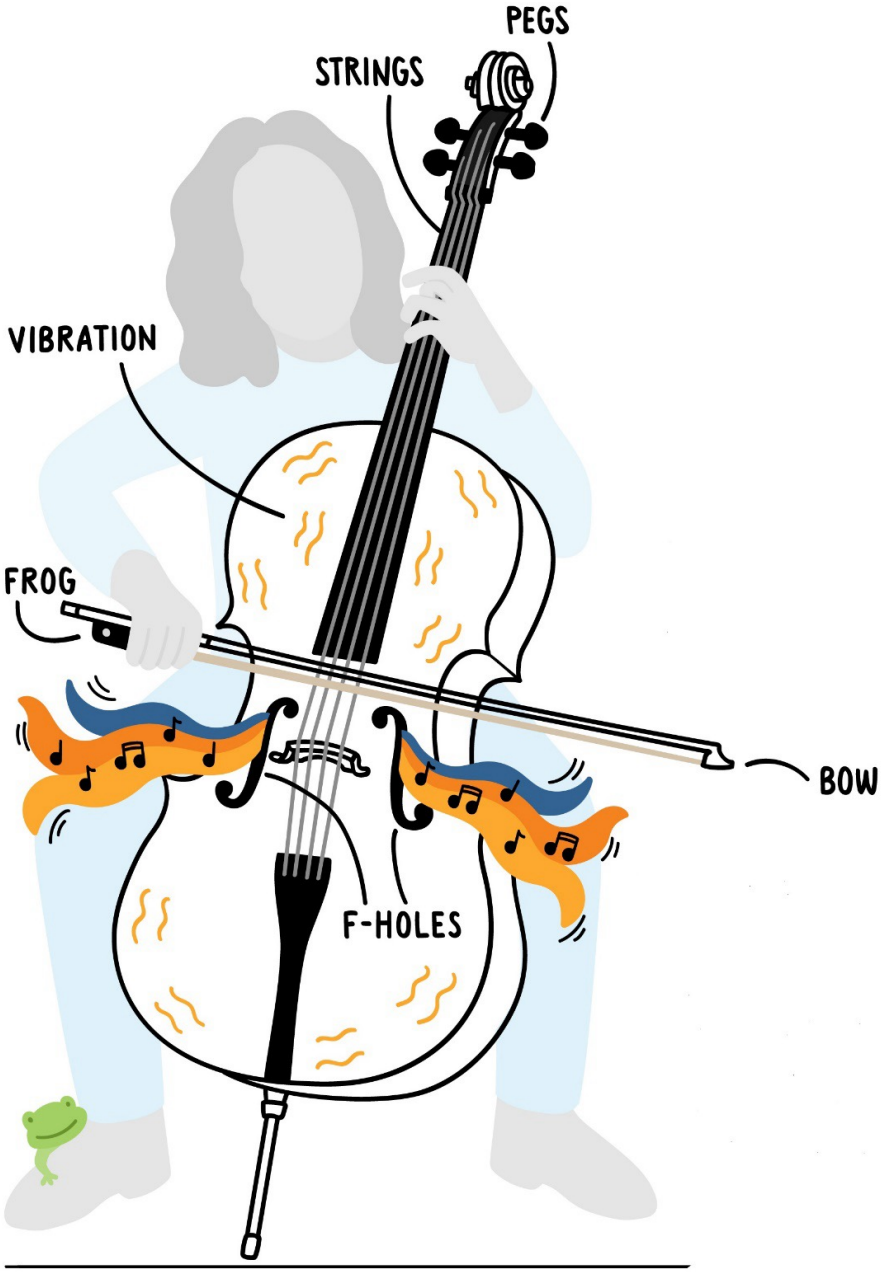
SCHOOLTIME
PITTSBURGH SYMPHONY ORCHESTRA

This activity addresses PA Academic Standards 9.1.3.C and National Core Arts Standard MU:Re8.1.2a

How Do We Make Sound?

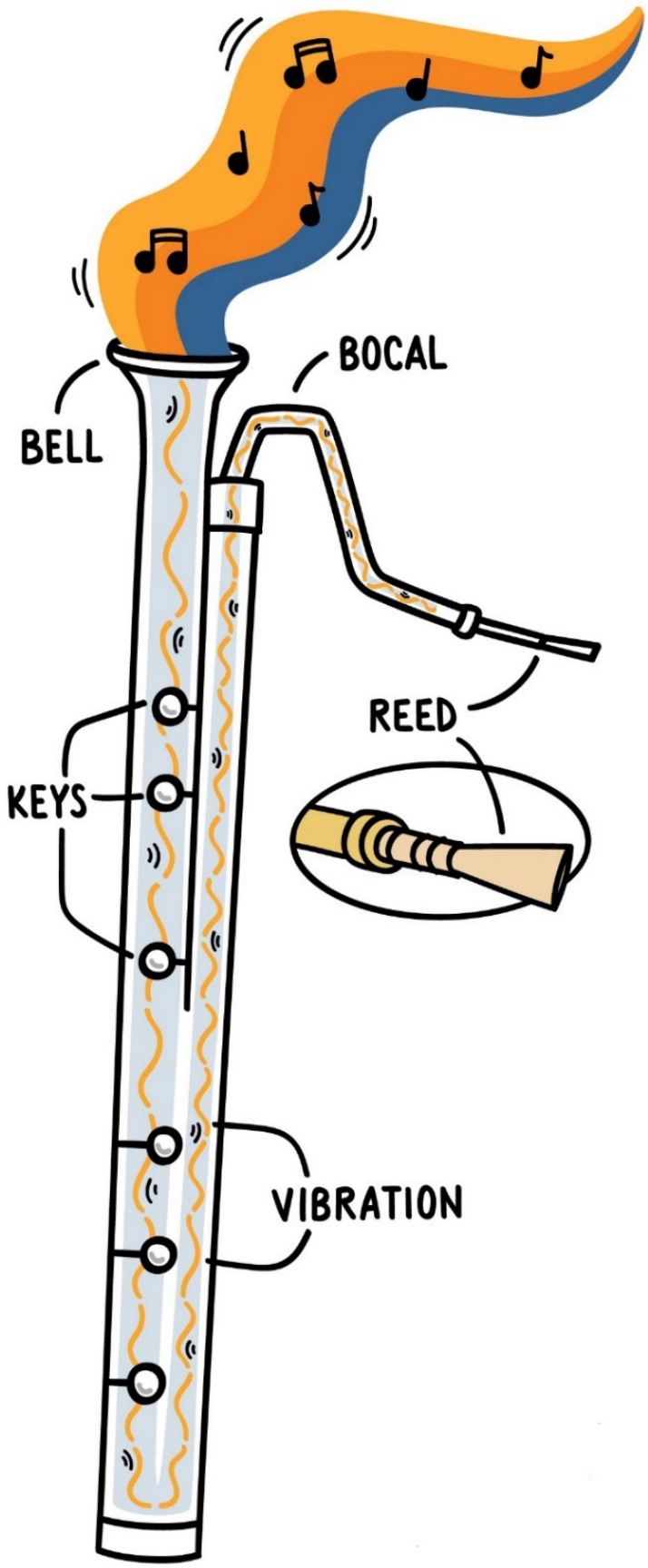
STRINGS

String instruments make sound when their strings **vibrate**. Players can draw the bow **across** the strings to make them vibrate. Or they can **tap** the bow on the strings. Or they can **pluck** the strings with their fingers.



The vibrations from the strings bounce around inside the instrument. Holes in the shape of a fancy letter 'F' help push the sound from inside the instrument into the air.

The pitch of the sound changes depending on where the player presses the string. When the string is longer, it sounds lower. When it is shorter, it sounds higher.



How Do We Make Sound?

WOODWINDS

Instruments in the woodwind family make sound by the player blowing air through a **mouthpiece** to create **vibrations**.

Woodwind instruments have different types of mouthpieces. Some, like the bassoon, use a **double reed** – two tiny pieces of cane that are tied together with thread. Others, like the clarinet, use a **single reed** – a single, thicker piece of cane. And others, like the flute, use no reed at all.

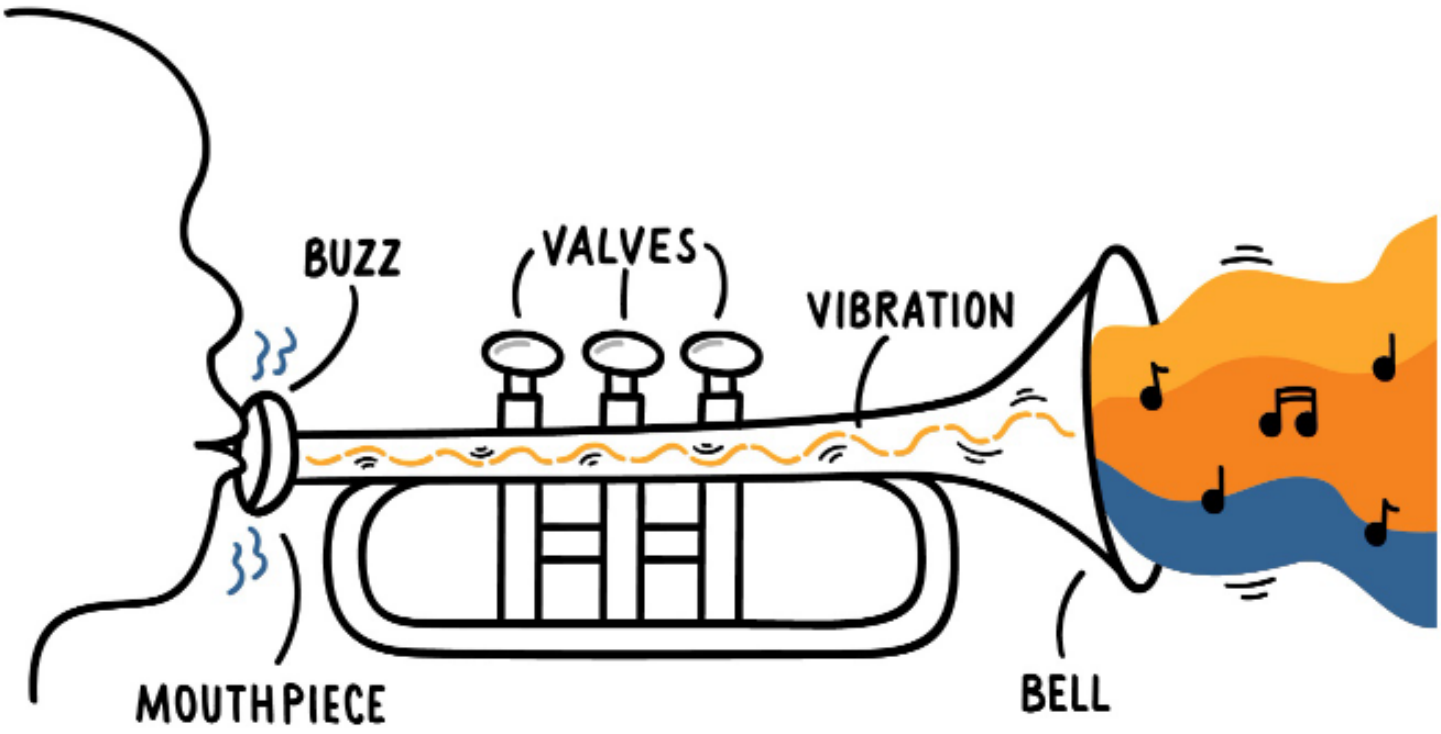
The vibrations travel through the instrument and out the **bell** to create sound.

Players change the sound of the instrument by pressing different combinations of **keys**. The keys make the amount of space inside the instrument shorter or longer. The larger the space, the lower the sound. The smaller the space, the higher the sound.

How Do We Make Sound?

BRASS

Instruments in the brass family make sound by the player **buzzing** their lips to blow air through a round **mouthpiece.** The buzzing creates a **vibration** that travels from the mouthpiece to the bell to create sound.



One of the ways brass players can change the sound of their instrument is by pressing the **valves,** or in the case of the trombone, moving the slide. This makes the amount of space inside the instrument longer or shorter. The longer the space, the lower the sound. The shorter the space, the higher the sound.

Players can also put a mute in the **bell** of the instrument to dampen, or muffle, the sound – kind of like what happens if you talk with your hand over your mouth!

How Do We Make Sound?

PERCUSSION







Instruments in the percussion family make sound by **scraping**, **striking**, or **shaking** to create **vibrations**.

Some percussion instruments, like the piano, are **pitched**. Pitched percussion instruments make sounds that are musical notes and can sound higher or lower.

Other percussion instruments, like the tambourine, are **unpitched** – they make sound but do not match any musical note and cannot be changed to sound higher or lower.

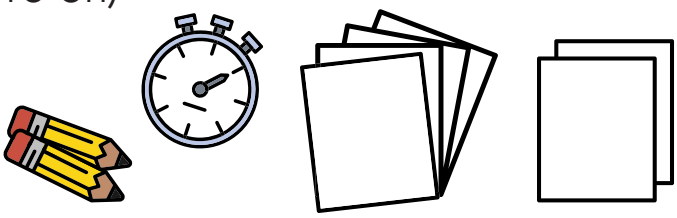
The quality of sound, or a sound's "color," is called **timbre**. Percussion instruments have many different timbres. They can sound sharp, bright, smooth, warm, or rough. The size, shape and material of a percussion instrument changes its timbre. Because percussion instruments are made of so many different materials, in a wide variety of shapes and sizes, they have many different timbres.

Check Your Understanding

Now that you have learned how the different instrument families make sound, test your instrument family knowledge!

You will need:

- 6 small pieces of paper (one piece for each instrument family and two pieces to keep score on)
- 2 pencils
- Timer or stopwatch



Setup:

Split up into pairs. Write the name of each instrument family on a piece of paper and crumble it up to make a ball. You should have 4 balls of paper. Mix them up.

Put 30 seconds on the timer.

How to Play:

1. Player 1 picks one of the paper balls. When the timer starts, look at the paper and try to name as many facts about the instrument family on the paper as possible.
2. Player 2 makes a tick mark for every fact that Player 1 can remember in 30 seconds.
3. Now it's Player 2's turn. Player 2 picks one of the remaining paper balls and Player 1 counts how many facts they can remember in 30 seconds.
4. Play again until all the paper balls have been used.

Use the **How Do We Make Sound** pages for each instrument family to check your partner's facts.

Reflection: Did your partner tell you something new about the instrument family that you didn't know? What was it?