



# Pioneer Valley Symphony

Building community through music since 1939

# What's in an orchestra?



A STUDENT WORKBOOK FOR NEW PARTICIPANTS

Designed for the Pioneer Valley Symphony  
By Judy Hudson and K C Scott

# Have you ever been to a symphony concert?

This is what you should do at a symphony concert—

**GO** to your seat.

**SIT** or talk quietly before the concert begins.

**LOOK** at the orchestra as it comes on stage.

**CLAP** when the concertmistress comes on.

**BE** very quiet as you listen to the oboe tune the orchestra.

**CLAP** when the conductor enters.

**LISTEN** to the music carefully.

- Imagine what the music is saying.
- Watch how the musicians play.
- Does everyone play at the same time?
- Feel how loud the sound can get.
- Hear how softly the orchestra can play.
- Clap when each piece is over.
- Have fun!

## What instruments here can you name?



# The players in the Pioneer Valley Symphony will come on stage with their instruments

There are usually 72 musicians.

**45** people play strings.  
(violin, viola, cello, and bass)

**12** play woodwinds.  
(flute, oboe, clarinet, and bassoon)

**11** play brasses.  
(trumpet, French horn, trombone, and tuba)

**4** play percussion.  
(timpani, drums, triangle, cymbals, and gongs)

---

**72**



The exciting part of a symphony concert is that you are there — you can see and hear "live" music played right in front of you!

**Maybe you also know someone in the orchestra!**



**The conductor,** Paul Phillips stands in front of the orchestra and tells the musicians when to play — when to start and when to stop; when to play loudly and when to play softly.

## How does he do this when he doesn't say anything?

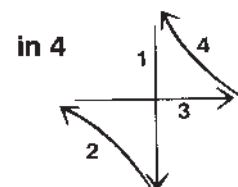
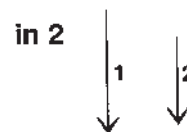
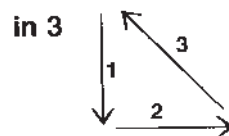
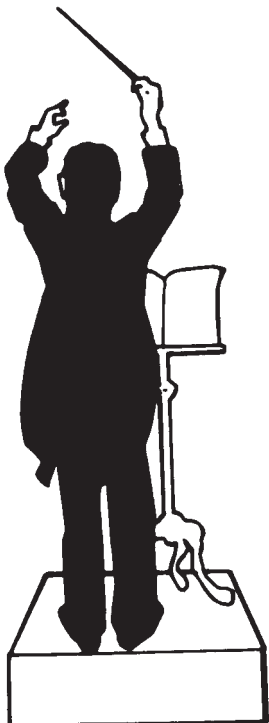
By using his hand and his **baton** — the stick he holds in his right hand.

He reads the music from his **score** — a book with all the notes played by every instrument. You can see one page of a score here, with all the instruments that play.

The players read from a **part** — a score which has only the notes played by their instruments.

The conductor's baton tells the players what the **beat** is — a march in two, a waltz in three, for instance.

- When he wants them to start, he begins to beat
- When he wants them to stop, he stops his beat.
- When he wants them to play softly, his beat is very small.
- When he wants them to play loudly, his beat is very big!



George Bizet  
March of the Toreadors from Carmen Suite No. 1

Allegro giocoso.  $\text{♩} = 116$ .

Flute

Piccolo

Oboes

Clarinets

Bassoons

in A.

French Horns

in E.

Trumpets

Trombones

Timpani

Triangle

Bass Drum and Cymbals

Harps

Allegro giocoso.

Violin 1

Violin 2

Viola

Cello

Bass

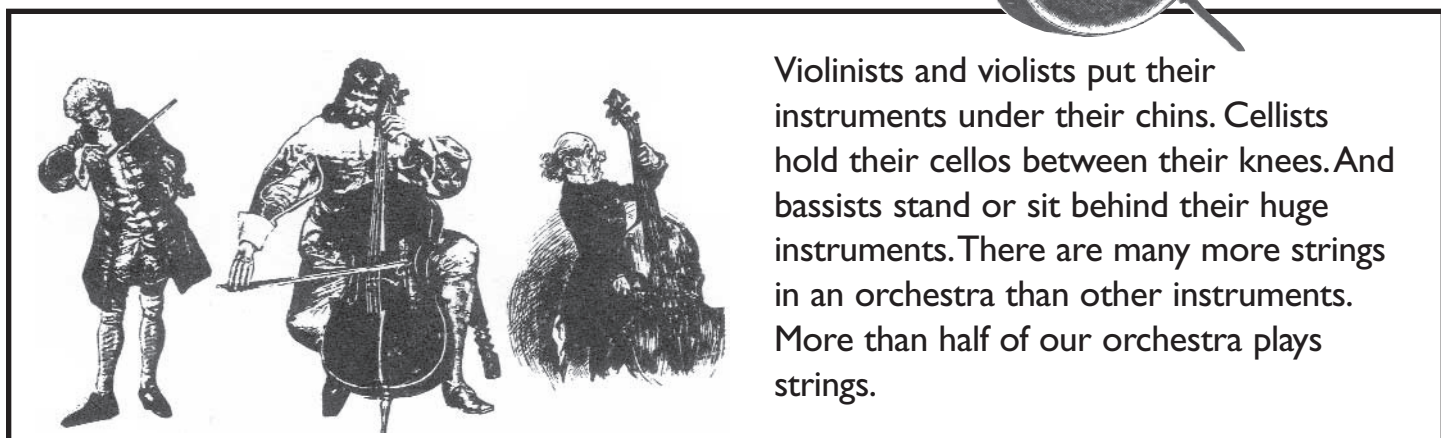
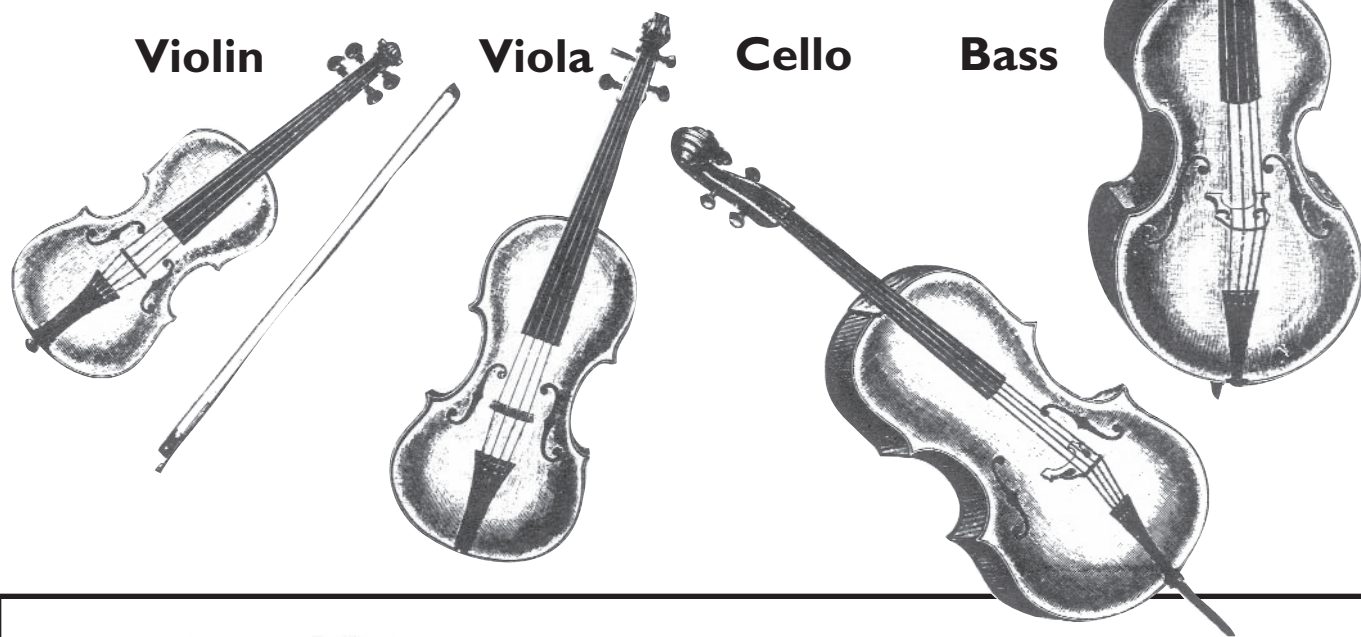
# What instruments are in the orchestra?

There are four main families:

1. the strings
2. the woodwinds
3. the brasses
4. the percussion

## 1 THE STRINGS

There are four different string instruments in the orchestra — all look alike except for their size. The smallest is the violin, then the viola, the cello and the bass. The players use a bow, drawn across the strings, to make the strings vibrate. Sometimes they pluck the strings, which makes a sound more like a guitar.

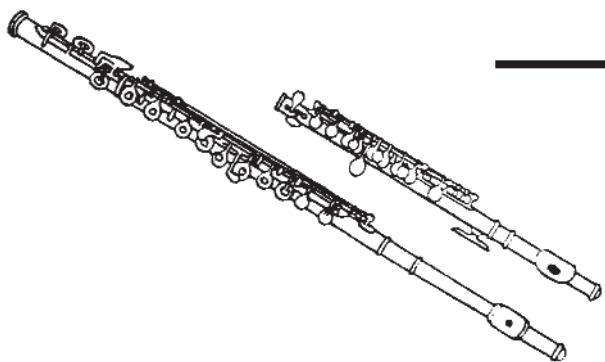


Violinists and violists put their instruments under their chins. Cellists hold their cellos between their knees. And bassists stand or sit behind their huge instruments. There are many more strings in an orchestra than other instruments. More than half of our orchestra plays strings.

Violinist Janet Van Blerkom is the orchestra's "concertmistress." She is the leader of the orchestra. She comes on stage after everyone else is sitting down, and she makes sure that all the instruments are playing the same note, or are in tune.

## 2 THE WOODWINDS

The twelve woodwinds also play four different kinds of instruments, from the tiny piccolo to the enormous contrabassoon. All are played by making air vibrate inside a tube. All were originally made from wood, which is why they are called woodwinds.



---

There are usually 2 **flutes** and 1 **piccolo** — made of silver or wood — blown at one end and held out to the player's right.

---

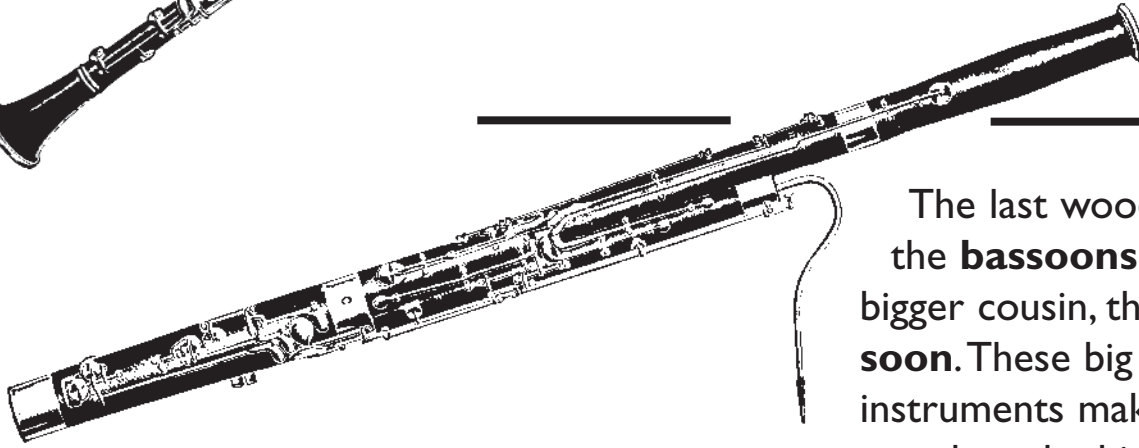


The 2 **oboes** and their bigger cousin, the **English horn**, are held directly in front of the player. Both make a special kind of sound. The air in the tube moves because the player blows into two pieces of cane or "reed" that are tied together, making them vibrate. This is called a "double reed" instrument.

The oboe has a special job. It gives the note (always an A) that all the instruments tune to. This is because the oboe cannot raise or lower its pitch very much.



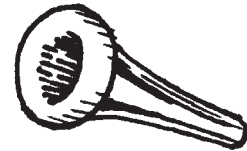
The **clarinet** is also played vertically like the oboe, but it uses only a single piece of cane that vibrates against a mouthpiece. Clarinets and saxophones are called "single reed" instruments.



The last woodwinds are the **bassoons** and their bigger cousin, the **contrabassoon**. These big "double reed" instruments make a very low sound — the bigger the instrument, the louder the sound.

---

## 3 THE BRASSES



The 11 brass players also play four different kinds of instruments, all made from shiny brass. Brass instruments have a mouthpiece like a little cup. And their sound is made by the player's lips, which vibrate against the cup, making the air move inside the brass tubes.

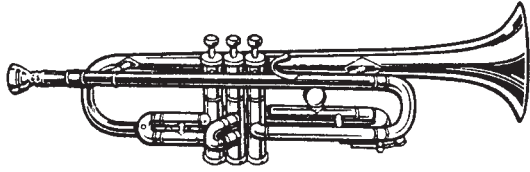
---



There are 4 or sometimes 5 **French horns**. The round, curled up brass tube ends in a broad end shaped like a large funnel, which is called the "bell."

---

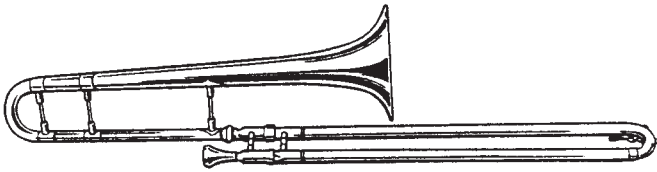




The 3 **trumpets** are shorter, and make a higher, more piercing sound.

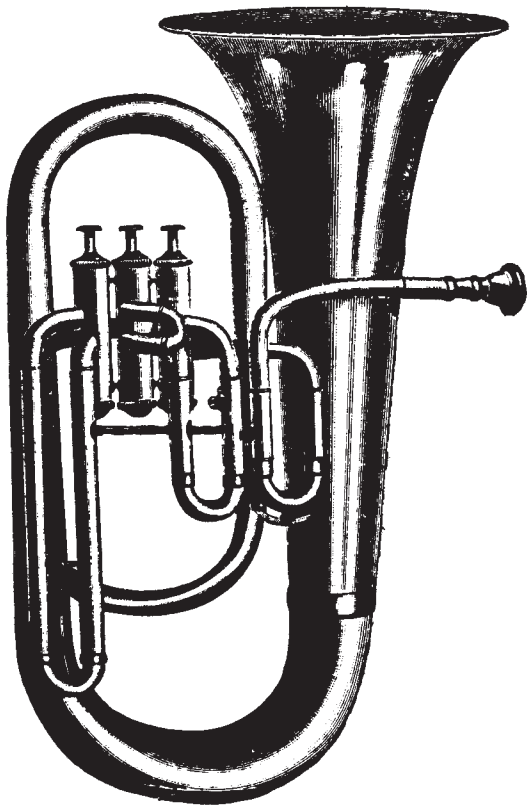
You can always hear the trumpets when they play.

---



The 3 **trombones** are played by sliding part of the tube in and out, to make higher or lower sounds.

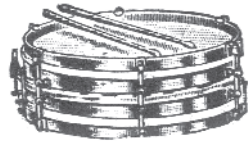
---



The biggest instrument is the **tuba**, and it makes a very low sound.

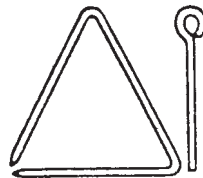
# 4 THE PERCUSSION

Symphony orchestras use many kinds of percussion. Percussion instruments are played by hitting them with sticks or beaters. The most often heard is the set of 3 or 4 kettledrums, which are called the **timpani**. Other percussion instruments include the **bass drum**, **snare drum**, **gongs**, **cymbals**, **triangles**, **tambourine** and the **xylophone**.

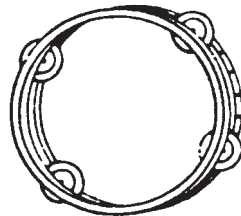


Snare Drum

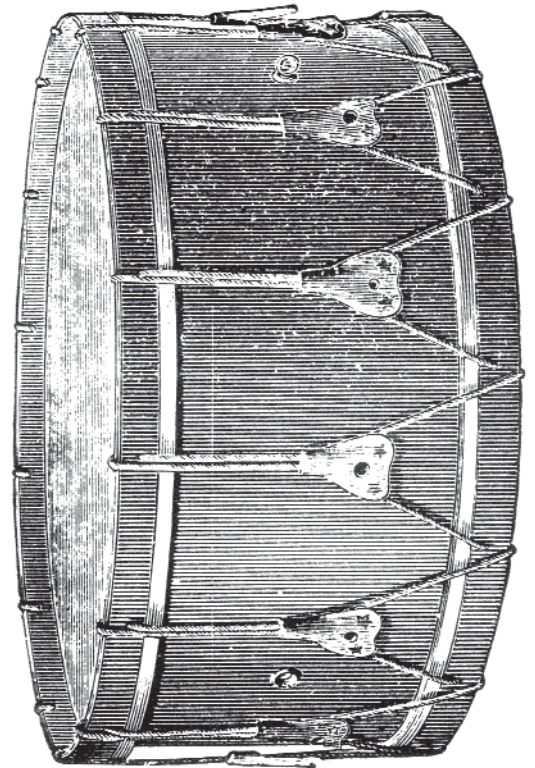
Timpani



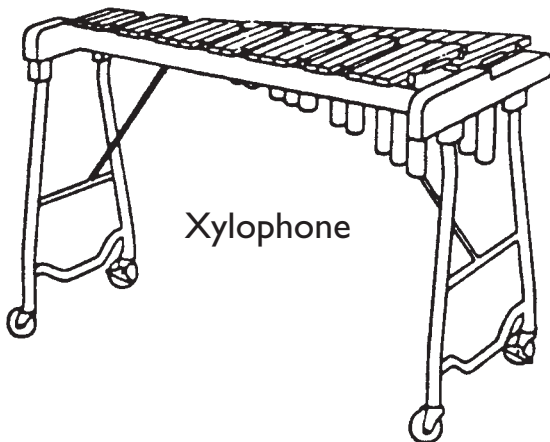
Triangle



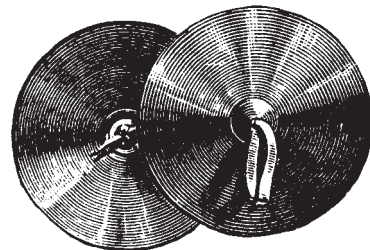
Tambourine



Bass Drum

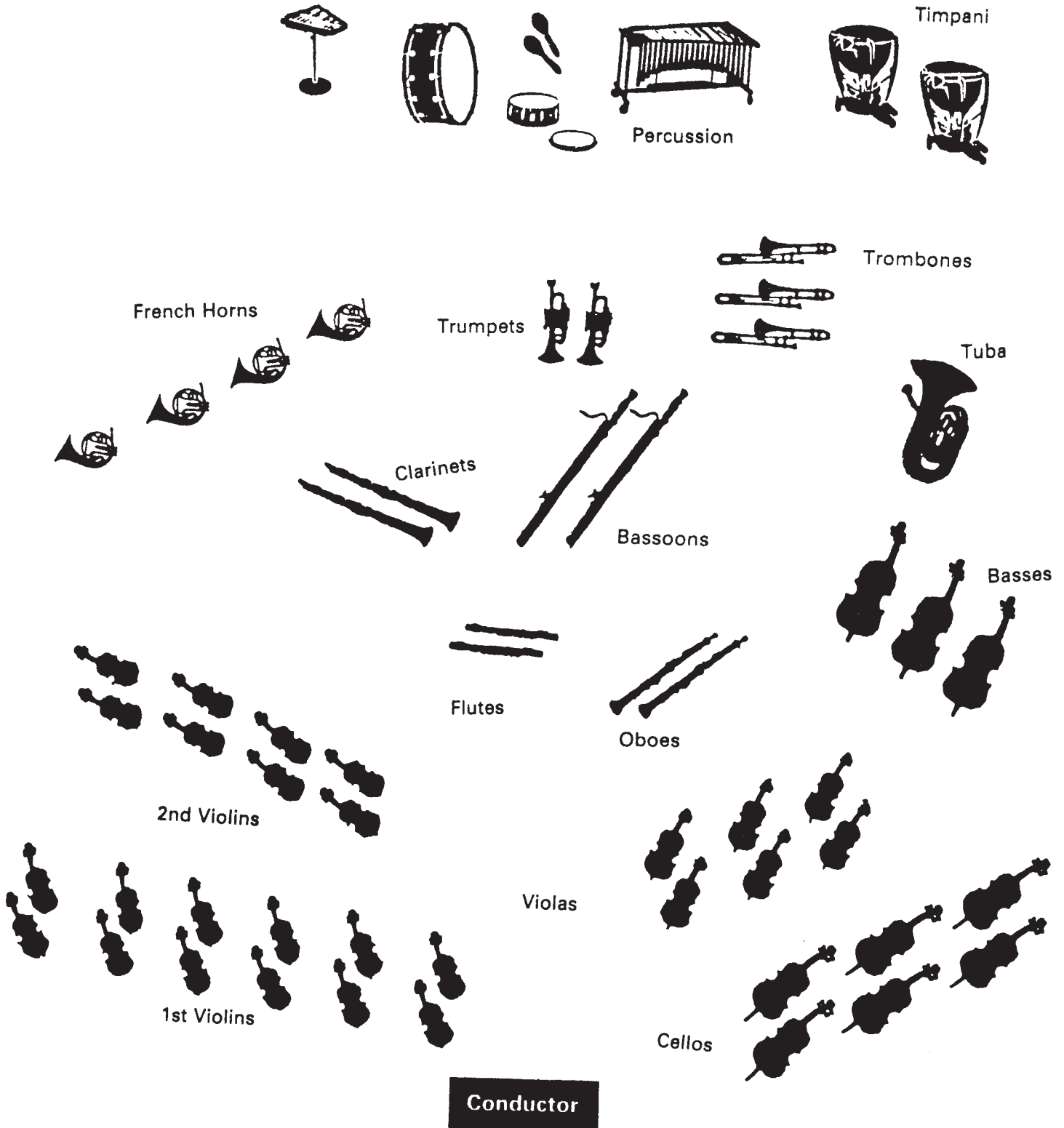


Xylophone



Cymbals

Each instrument in the orchestra sits in a special place. This is how the Pioneer Valley Symphony sits.



## The instruments in the orchestra's four main families create sounds in four different ways.

Let's experiment by making four different kinds of instruments!

**Percussion** is easiest. Percussion instruments are hit (like drums, sticks, cymbals).

You can make almost anything into a percussion instrument:

Your leg (slap it with your hand).

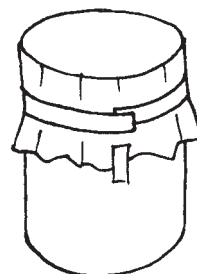
A metal pot lid (hit it with a wooden spoon).

Two wooden spoons (hit them together).



To make a drum you will need:

- A large coffee can or other container
- Brown paper (from a large paper bag)
- Masking tape and scissors



Cut a circle from the paper 4 inches larger than the can. Dampen the paper with water, and center the circle over the open end of the can. Use a few pieces of tape to hold it in place. Fold or pleat the paper circle so it fits snugly, and wrap the tape around the can to hold the paper in place.



Let the paper dry before beating it!

Experiment with different kinds of drumsticks: cork tips, string tips, tape, knitting needles, chopsticks, etc.

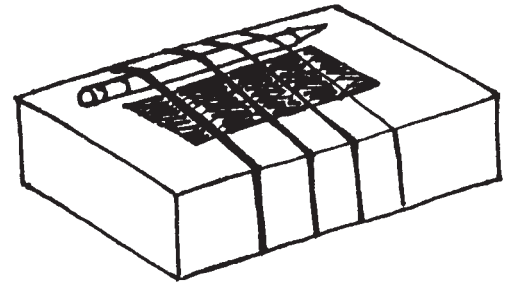
**Stringed instruments** are made by stretching strings over something hollow (like a box) which makes the sound louder. Stretched strings can be bowed (like a violin) or plucked (like a guitar) or hit with a drumstick (like a dulcimer).

You can make a simple stringed instrument like a guitar. You will need:

- A box for pasta or tissue (with an opening on the front or top)
- Different sized rubber bands (both in length and thickness)
- A pencil or thicker piece of wood.

Take the see-through plastic off the box opening.  
Put four different-sized rubber bands around the long side of the box.  
Slip the pencil under the rubber bands to make a bridge.  
Pluck the rubber bands.

Experiment to find the best sounding rubber bands. Arrange the rubber bands from highest to lowest in pitch. What happens when you shorten the band by pressing your finger down on the box? Try bowing the strings with a butter knife. Try hitting them with a pencil.



**Woodwind instruments** create sound from the vibration of air inside a tube. The flute's vibrations are made by blowing across a hole.

You can create the sound of a flute by blowing across the top of a soda bottle (it works best with glass bottles). You can make different tones by putting different amounts of water into the bottles.

The vibrations of the oboe and the clarinet are made by blowing into reeds. Have you ever stretched a blade of grass between your thumbs and made it squawk? This is what a reed does.

You can create the squawk of a double reed with a drinking straw. Flatten it on one end, and with scissors, cut it into a point. Put the cut end of the straw into your mouth and lightly press your lips together below where you've cut.

Blow through it and get a squawk! Experiment with the tightness of your lips until you can make a real noise. You can feel the vibrations in your mouth!



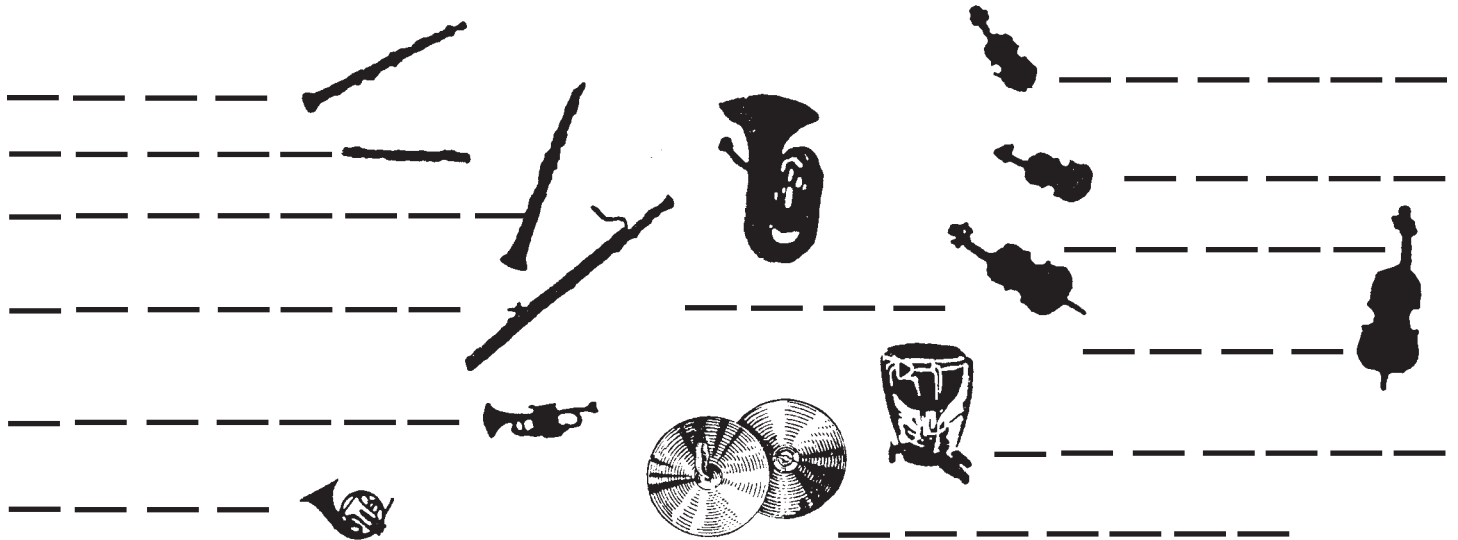
For **brass instruments** the vibrations are made by the player's lips buzzing against the cup-mouthpiece.

Cut off an 18-inch piece of garden hose (make sure it's an old piece your family doesn't want).



Hold it to your lips and blow into the hose. Make your lips buzz. Make your lips tighter. Is the sound higher or lower? Make your lips looser. See how many notes you can make. Cut several different lengths of hose to see what pitches you can make.

**Find the instruments!** The names of each of these instruments are hidden in the letter-square below. First write the name of the instruments in the blanks. Then find them in the square reading left to right, down or diagonally.



S	F	I	W	U	V	O	R	N	T	U	B	A	G
H	T	D	U	B	X	C	S	E	K	M	L	O	V
V	I	O	L	A	B	F	L	L	O	A	P	R	I
F	M	Y	I	N	C	E	R	A	W	X	E	K	O
V	P	X	J	O	Y	I	H	O	R	N	V	S	L
S	A	Q	T	G	M	Z	C	L	W	I	T	A	I
O	N	R	F	L	B	R	J	D	T	X	N	V	N
P	I	Y	L	B	A	S	S	O	O	N	D	E	K
L	A	J	U	Y	L	N	T	R	W	Q	E	T	T
K	R	C	T	O	S	A	B	C	E	P	G	S	R
D	B	I	E	B	R	T	R	U	M	P	E	T	O
S	A	V	J	L	N	A	O	Y	T	U	F	Z	B
B	S	T	I	C	L	T	S	I	S	K	R	L	P
Z	S	A	L	H	E	O	X	Y	C	O	B	O	E

# SCRAMBLE

Unscramble the letters to find the musical instruments.

To finish the joke, write the circled letter in the numbered spaces

1. **SABS** \_ \_ \_ ○

2. **LOCEL** ○ \_ \_ \_ \_

3. **SNOBOSA** \_ \_ \_ \_ ○ \_ \_

4. **MURD** ○ \_ \_ \_

5. **LEFTU** \_ \_ \_ \_ ○



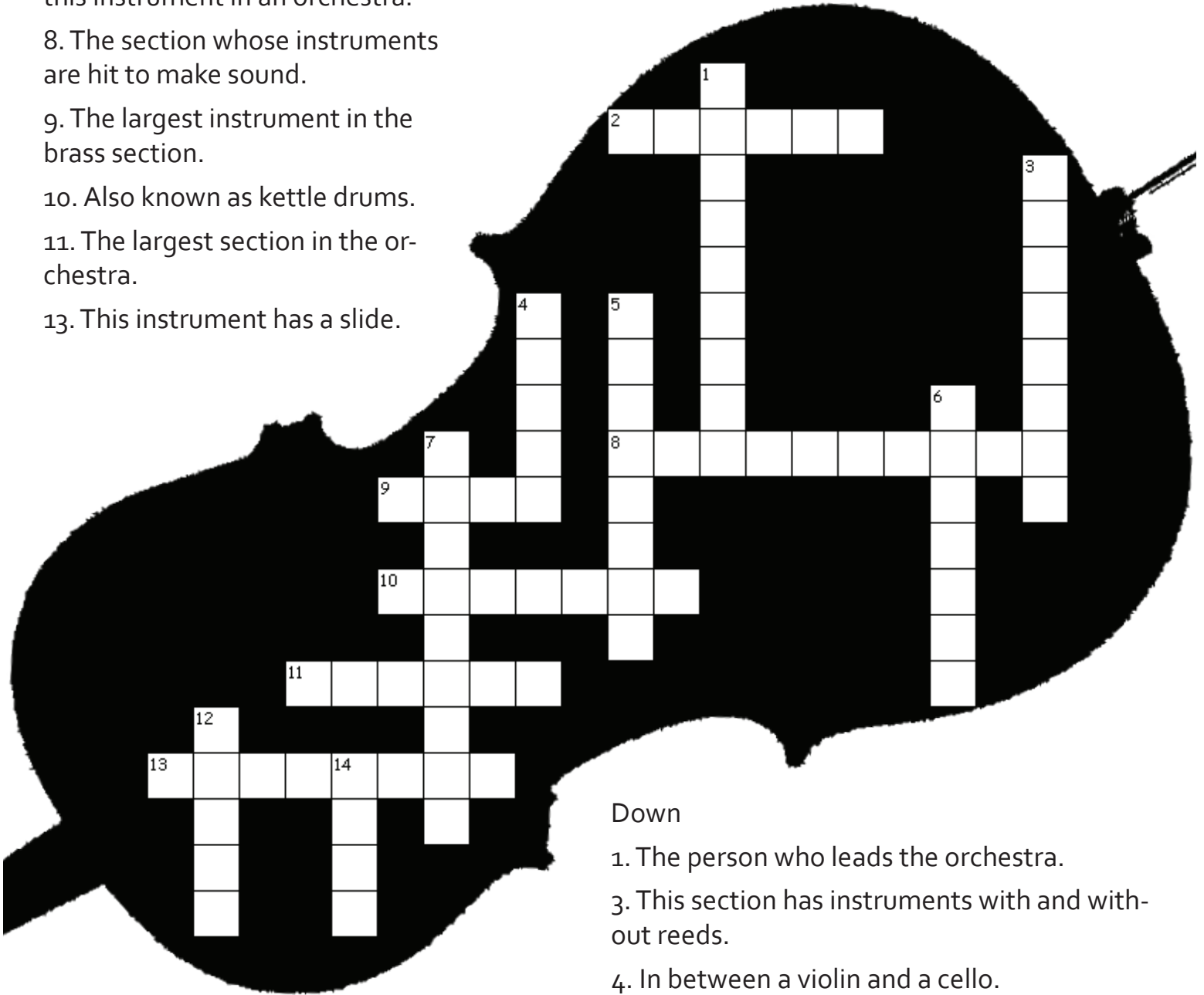
Why did the umpire consult the conductor?

Because he knew the                          !  
  1 2 3 4 5

# CRISS CROSS

## Across

2. There are two different groups of this instrument in an orchestra.
8. The section whose instruments are hit to make sound.
9. The largest instrument in the brass section.
10. Also known as kettle drums.
11. The largest section in the orchestra.
13. This instrument has a slide.



## Down

1. The person who leads the orchestra.
3. This section has instruments with and without reeds.
4. In between a violin and a cello.
5. Another name for an orchestra.
6. The smallest instrument in the woodwind section.
7. The people who play instruments.
12. These instruments are also featured in bands.
14. The largest string instrument.