

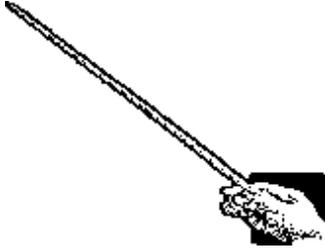


The Orchestra

In your classroom there are many students, but have you ever noticed your teacher seems to know just who is visiting with their neighbor even though she is writing on the chalkboard with her back to the class. How does she do that? Contrary to popular belief, your teacher does not have eyes in the back of her head. She knows which student it is because she recognizes the student's voice or "timbre" (tone color). Every person, although members of the same family may sound very similar, has his or her own distinct sound and every kind of instrument has its own distinct sound, too.

In a symphony orchestra, there are many instruments. Each kind of instrument has a different look and a different tone color. The word "symphony" comes from two Greek words, which mean "sound together." A symphony has several movements or sections with a main theme or perhaps more than one. Because music written for the early orchestra was in the common form of a symphony, the orchestra became known as the SYMPHONY ORCHESTRA. Today's orchestras play many styles of music and have 75 to 85 musicians, but during one period in history the orchestra had hundreds of players. Can you imagine? Where did they all sit?

On the block where you live, each house has a different family living in it. Every family has a different name - Smith, Brown or maybe Jones. The orchestra has families, too, and each family has a different name. They are the STRING, WOODWIND, BRASS, and PERCUSSION families; and when these four families play together they form an orchestra. Together they can create many, many different sounds. Sometimes the music is soft and sweet; sometimes it is loud and lively-whatever the composer, a person who writes music, chooses to create.



The conductor of the orchestra is like a coach. He must have the personality and skills to direct many players at once and turn them into a team. Often conductors hold a long stick called a *baton*. The baton is used to show the beats of the music for the orchestra to follow.

He or she stands in front of the orchestra and directs how the music should be played. The conductor “cues” the players when to start or stop, when to play loud or soft, and when to play fast or slow. To be conductors, he or she must know a great deal about different types of music, know lots of composers and about various musical instruments.

Conductors need to know how to play every instrument and usually can play several instruments really well. They also understand how each instrument works and the special qualities of each instrument. A conductor always has a score in front of them when they are on stage. A score shows the conductor all of the music each different instrument must play. The conductor has to keep track of everyone’s music at the same time and make sure every musician is playing all the right notes.

What do you think would happen if the maestro or maestra lost his or her place in the score? The conductor has to learn each piece of music, sometimes memorizing the music, so he or she can guide all the players to an exciting performance.

When a piece of music is over, the conductor will hold his hands still to signal everyone to stop playing, his or her hands will drop to their sides and he or she will turn and face the audience. When the music is over, that is the appropriate time to clap for the performance.

The String Family

In the first orchestras, there was only one family of instruments -- the string family. There are five members in the string family -- the violin, viola, cello, double bass and harp. The string family has more members, which look more alike than any other family in the orchestra. Except for the harp, the strings instruments are all shaped alike; they each have a wooden body that is played with a bow, which is a wooden rod strung with the hair from a horse's tail, and they each have four strings. The body is hollow and acts as a sounding board, which allows each of these instruments to produce a louder sound. There are specially designed holes carved into the surface of each instrument called "F" holes, which also enhance the sound. The violin, viola, cello and double bass perform like a choir with soprano, alto, tenor and bass parts. Their range of pitch stretches over six octaves. Do you know what an octave is?



The smallest member of the string family is the **violin**. It sounds the highest and usually plays the melody. The violin is an imitator of the human voice and like the human voice is capable of conveying many different emotions. With a "tremolo," the violin can evoke suspense or fear. Using a "spiccato" technique, the violinist may make you think of happy or funny things, but with a swift downstroke of the bow, the emotion may turn to anger. Perhaps this flexibility is why there are so many pieces written for solo violin and orchestra and why there are more violins in the orchestra than any other instrument.

The design of the violin has changed very little in over three hundred years. Violins were hand crafted and carved. A violin maker looked for just the right piece of wood and would study it many days before he ever made the first cut. Have you ever heard of Nicolo Amati or Antonio Stradivari? They were famous violin makers who perfected the violin's design. Some of their exquisite violins are still in use today and are worth large sums of money.

When the violin is played, it is held between the chin and left shoulder. The right hand is used to move the bow across the strings. When the bow is drawn across a string, it causes the string to vibrate, which is how the sound is produced. The pitch is changed as fingers of the player's left hand press the strings along the finger board. Sound can also be produced by plucking a string with a finger, a technique known as "pizzicato."

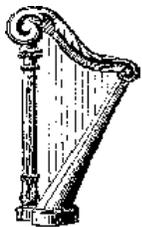
The person who plays the violin is called a violinist. In the orchestra, there are two sections of violins, first violin and second violin. Have you ever pretended to play the violin? Or perhaps you really do play the violin!

The person who plays the **viola** is called a violist. The viola is a little larger (three inches longer) in size than the violin and is played the same way. The sound of the viola is more mellow than the sound of the violin. Although the viola can produce sounds lower than the violin, it requires good listening skills to distinguish the two sounds, especially when they are playing in the same range.



The **cello** is capable of producing both high and low sounds. It is much larger than the violin and viola and its tone is fuller and more powerful. The cello plays the melody part sometimes and at other times plays an inner part. The cellist sits in a chair with the cello held with his/her knees in front of him/her when he/she plays. There is a peg on the big end of the cello, which rests on the floor. Why do you think that is there? The cellist handles the bow with his or her right hand and uses his or her left hand on the strings to change pitches.

The **bass**, also known as the double bass, string bass or bass viol is very large -- the largest instrument in the orchestra! It is six feet tall and produces a very low sound. The bass is used mostly as an accompaniment instrument. Do you remember which instrument usually plays the melody? The bassist or bass player must stand or sit on a stool to play it. The player uses his or her hands in basically the same way as a cellist, but because the instrument is so tall, he or she must be able to shift positions quickly. Normally the string bass has four strings, but sometimes a fifth string is added.



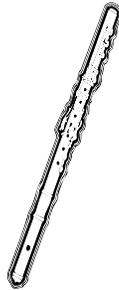
The **harp**, the fifth member of the string family, does not look like any of the other members in its family. It has 47 strings and can make sounds that are high and sounds that are low. There are seven pedals around the base of the harp, which the harpist uses to change the pitches of the strings. The harpist sits with the harp leaning on his or her shoulder and plucks the strings to create the sound. The very first harps were called lyres and were used in ancient times in the courts of kings.

The Woodwind Family

Woodwind instruments used to be made out of wood and wind (air) was blown into the instrument to play it. That is why they became known as “woodwinds.” The body of every member of the woodwind family is shaped like a column, however, some of them have some curves at the top or bottom. When air is blown into them, it vibrates to produce the sound. The pitch is changed by opening or closing the holes in the column. Most members of the woodwind family are also called “reed” instruments. The reed is formed from a piece of cane and is a part of the mouthpiece of the instrument.

The **piccolo**, which does not have a reed, is the “baby” of the orchestra. It is so small it can be carried in your pocket. Yet its tone color is so brilliant it may be heard high above all of the other instruments in the orchestra. The instrument is held straight out to one side and the player blows air across a small hole.

The **flute**, one of the oldest instruments, therefore, it does not have a reed. silver, gold or platinum, but the first plays high notes, which are an octave like a bird than any other instrument. *Animals* by composer Camille Saint-sound of birds. Have you ever listened



is played the same way as the piccolo, Modern flutes are made of metals such as flutes were made of wood. The flute lower than the piccolo and sounds more In the “Aviary” from *Carnival of the Saens*, the flute is used to imitate the to this piece of music?

The **oboe** has a special place in the orchestra since it is the instrument to which all of the other instruments tune. The concertmaster comes onto the stage before the conductor and cues the oboe to play the pitch A. It sounds like chaos because all the pitched instruments begin to play, but they are really tuning their instruments to match the oboe’s pitch.

To play the oboe, air is blown between two reeds (slips of cane wired together). The oboe is referred to as a double reed instrument. It sounds higher than the clarinet and it is somewhat shorter. The column of the oboe is perforated with holes like the other woodwinds and as more holes are covered, the pitch becomes lower. The oboe has a sad, plaintive tone, which often makes people think of snake charmers.

The **English horn** has a tone color similar to the oboe, but sounds lower in pitch. It is bigger than the oboe, has a bent neck, and a bulb-shaped end. Just like the clarinet and oboe, it is held in front of the player and air is blown into the mouthpiece. If you have ever watched a “Bugs Bunny” cartoon, when he comes out of his hole on a hazy morning and stretches with a carrot in his hand, you have probably heard the sound of the English horn.

The **clarinet** is a single reed instrument and is well suited for melody, but can play quick runs and passages. In the past, clarinets were made of black wood or ebonite with many silver keys. Today some are still made of wood, but others are made of plastic. There are many different clarinets. The **B-flat clarinet** is the most common and has a higher sound than its cousin the **bass clarinet**, which came into general use in the nineteenth century. The **E-flat clarinet** and **A clarinet** also play in the orchestra. The other members of the clarinet family are the high **A-flat**, **alto in E-flat**, **contrabass in E-flat** and **contrabass in B-flat**.



The **bassoon** has the same type of mouthpiece as the oboe. This double reed instrument is so long (eight feet), that it has to be bent in half just so the bassoonist can play it. Capable of playing both serious and funny parts, it is often referred to as the “clown of the orchestra”. At times the bassoon plays the melody, like the clarinet, but it is also used to provide accompaniment. In the Disney movie, *The Sorcerer’s Apprentice*, the bassoon seems to keep time creating a wonderful blend of music and animation, as Mickey Mouse and a broom that has come to life, frantically carry buckets of water. “In the Hall of the Mountain King” by Edvard Grieg is another piece of music which features the bassoon. For fun you may want to watch the movie or listen to the recording.



A cousin to the bassoon is the **Contra bassoon** which plays the deepest, lowest sounds in the family. Its mysterious foghorn sound creates a great effect in movies intended to be scary.

Usually the woodwind section of the orchestra consists of the flute, piccolo, oboe, clarinet and bassoon. The other members of the woodwind family may only be needed for a particular piece.

The Brass Family

The members of the brass family can make very loud music. Each member is made of brass tubing curled up into different shapes. (Brass is a bright, shiny metal.) Each brass instrument has a bell and a cup-shaped mouthpiece, which fits against the player's lips. To make a sound on a brass instrument, the player causes his lips to buzz against the mouthpiece. A player can change the pitch by buzzing his lips tightly or loosely into the mouthpiece. On the trumpet, French horn and tuba there are valves or keys, which are also used to change the pitch as they are pushed with the fingers. The trombone does not have valves. It has a long brass tube, which the player pushes back and forth to make it shorter or longer, and this changes the pitch.

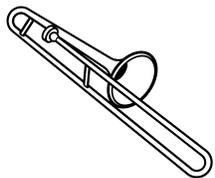


The **trumpet**, which has the highest sound, is made of 4 feet of brass tubing. This heroic and festive sounding instrument, often associated with royalty, is the smallest member of the brass family. Its brilliant tone color can be changed to a mysterious sound or a humorous “wah wah” sound when the player uses a mute. Most often, in the orchestra, the trumpets play in pairs.

The **French horn**, easily recognized by its circular form, is made of 16 feet of tubing and is probably the hardest brass instrument to play. The makers of the French horn curled it into a circle to make it easier to hold. The player uses one hand to press the valves and the other hand goes inside the bell. The French horn can produce both high and low sounds and has a rich, mellow timbre.



The **trombone**, an instrument of power and solemnity, is lower sounding than the French horn, but higher sounding than the tuba. The player of the trombone must have a highly developed sense of pitch since there is no exact stopping place along the slide for any given pitch and the player must use his or her ears to make sure they are playing in tune. The trombone is also capable of producing a “sliding” sound going up or down as the slide is pushed in and out. This is called a glissando.



The largest of the brasses, the **tuba**, is a big, fat horn with a rich bass sound. It plays the lowest notes and as it bounces from one low note to the next sounds as if it is saying “ump-pah.” Can you believe it is made of 35 feet of tubing?



For fun you may want to try buzzing your lips together as if you were a brass player. The tighter you buzz your lips, the higher the sound will be. Did it make your lips itch?

The Percussion Family

A favorite of young people is the percussion family, which has more instruments than any other family of the orchestra. They are good for keeping the beat or rhythm and making special sounds. There are two kinds of percussion instruments: instruments that have a definite pitch and those with no pitch.

The word percussion means “to strike.” The instruments in this family are played by hitting, shaking or scraping. The sound of each instrument depends on what it is made of and how it is played. Size also makes a difference.

There are normally three kinds of drums used in the orchestra -- the **snare drum**, **bass drum** and the **timpani**. The body of a drum is hollow so air can vibrate inside it and is usually made of wood or metal. The drum head, or “skin,” is usually made of animal skin or strong paper. The snare drum is small and played with sticks.



The bass drum is much larger and makes a low booming sound. The bass drum and timpani are played with mallets, sticks that have a covered end. Both the snare drum and the bass drum are non-pitched, but the timpani, or kettle drum, is a pitched instrument. It has a foot pedal that stretches and loosens the drum head so the player (percussionist) can change the pitch of the notes he/she plays. There are usually at least two timpani in the orchestra, but only one snare drum and bass drum.



The **chimes**, also a pitched instrument, have pipes of various lengths suspended in a frame. Different pitches are produced when the tubal bell is struck with a leather-covered mallet or hammer. The doorbell in your home may have a small chime or perhaps you have heard the sound of chimes played on an organ at a church.

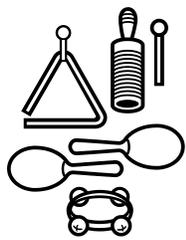
Three other pitched instruments are the **xylophone**, **marimba** and **vibraphone**. Each of these instruments is played by striking the bars with mallets. The xylophone has been around for thousands of years. Wooden bars are attached to a wooden frame with cord. (“Xylo” is a Greek word for wood, and “phone” means sound.) The shorter the bar the higher the pitch and the longer the bar the lower



the pitch. The resonators or tubes underneath each bar help to make the sound louder. The xylophone has a dry, brilliant sound, but the marimba's sound is more mellow and resonates longer. The marimba is also lower in pitch than the xylophone and has more bars. The vibraphone's bars are made of metal and it has a motor, which turns a propeller under each bar to create a sound with vibrato.

Other pitched instruments include the **glockenspiel**, **celesta**, and of course, the **piano**. In 1711, Bartolommeo Cristofori of Florence, Italy invented an instrument he named the "gravicembalo col piano e forte." The name was shortened to "pianoforte" and eventually to "piano."

The range of the entire orchestra can be played by the piano. The piano has 88 keys, some black and some white. Each key produces a different pitch. The first white key on the piano is the pitch A. The white keys continue in order using the seven letters of the musical alphabet over and over. The keys when played cause felt-covered hammers to rise and hit the strings.



Additional non-pitched members of the percussion family, which are usually a part of the percussion section of the orchestra are the **gong**, a heavy metal disk hit with a padded drumstick; **triangle**, **tambourine**, **cymbals** and **wood block**. Sometimes the **sleigh bells**, **whip**, **cowbell**, **maracas**, **castanets**, **claves** or **guiro** are needed in a piece of music or another kind of drum such as the **bongo drum**. How many of these percussion instruments do you have in your classroom?

There is a recorded story, *Gerald McBoing-Boing*, about a boy who is nicknamed Gerald McCoy, the noise-making boy. Gerald is unable to speak and the only way he can communicate is to use percussion instruments. What do you think happens to him?

This CD is available at music stores along with many other wonderful compact discs. The public library has many CDs of some of the finest symphonies in the world and books about composers and instruments. Additional information may be found in your school library.

The opportunity to attend an orchestra concert is a fun and rewarding experience if you prepare yourself ahead of time. Look for all of these instruments when you attend the Wichita Symphony Young People's Concert.

In the orchestra, we have high, middle and low instruments. Some can play in more than one range. This list will help you.

HIGH

Piccolo
Bells
Flute
Violin
Oboe
Clarinet
Trumpet

MIDDLE

Flute
Violin
Oboe
Clarinet
Trumpet
English Horn
Viola
Trombone
Cello
Bassoon
Bass Clarinet
French Horn

LOW

Trombone
Cello
Bassoon
Bass Clarinet
French Horn
Timpani
String Bass
Tuba
Contra Bassoon