

## Lesson 3 – LI: to explore how high and low sounds are made

Sounds can be loud or quiet, depending on how much energy or force is used; bigger vibrations make louder sounds and smaller vibrations make quieter sounds. The scientific word for loudness is amplitude.

But there are other ways in which sounds can be different. Think about the following:

Can you make a high sound with your voice?

How about a low sound with your voice?

Can you describe how to make a high or low sound with a musical instrument?

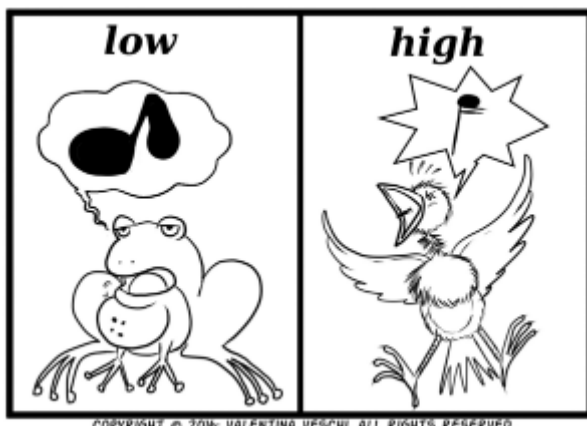
Think extra carefully - can you use an everyday object from your desk to make a high sound and then a low sound?

High and low are the words that we use to describe the pitch of a sound.

Remember - the pitch of a sound is different to the amplitude (volume).

Amplitude is a measure of how loud or quiet a sound is, whereas pitch is a measure of how high or low a sound is. High sounds can be quiet or loud, and low sounds can be quiet or loud too.

Watch this clip to see if you can hear and identify how musical instruments create varying sounds. Can you hear the different pitches?



Click the video



Try making high and low pitched sounds on a selection of string, percussion and wind instruments, and think carefully - what is it that makes the sounds high and low?

Consider these questions when exploring the science of pitch:

With guitars or ukuleles, what change must you make to the strings in order to change the pitch?

With drums, what do you change in order to vary the pitch?

What is it about the bars on a xylophone or glockenspiel that affects pitch?

When you cover and uncover the holes on a recorder, what does it do to the column of air inside the instrument?

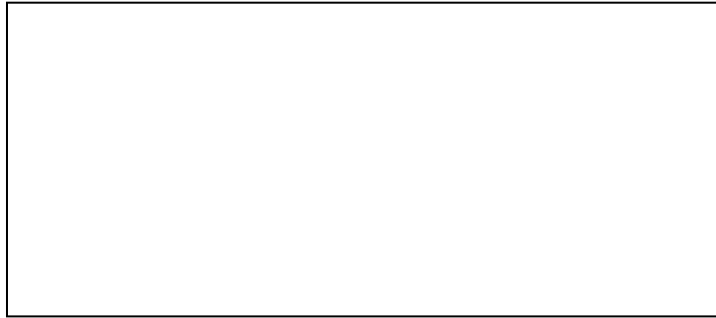
If you blow harder on a recorder, does it affect the pitch or the amplitude?

With pan pipes, what affects the pitch of each pipe?

I am going to explore how to vary the \_\_\_\_\_ of a musical instrument. 'Pitch' is how \_\_\_\_\_, or how \_\_\_\_\_ a sound is; it should not be confused with \_\_\_\_\_ (volume) which is how \_\_\_\_\_, or how \_\_\_\_\_ a sound is.

1. Name of Instrument

Diagram



What I did to make a low sound

What I did to make a high sound



## Conclusion

On a string instrument, there are several ways to change the pitch.

The tighter, thinner or shorter a string is, the higher pitched the sound will be.

The looser, thicker or longer a string is, the lower the sound will be.

Faster vibrations make higher sounds and slower vibrations make lower sounds.



## Conclusion

On a wind instrument, a **column of air** inside vibrates to make sound.

Shortening the column of air creates higher sounds, and lengthening it creates lower sounds.

We do this by blocking and unblocking the holes on a recorder, or by moving the slide on a trombone.



## Conclusion

On a percussion instrument, the surface that is struck vibrates to create sound.

Bars or keys can have different lengths - the shorter they are, the higher the pitch will be.

Size can also affect pitch – small bells make high pitches and large bells make lower pitches.

On a drum, a tight skin makes a high pitch – and the skin is always tighter at the edge.  
Thin skins also make higher pitched sounds.

