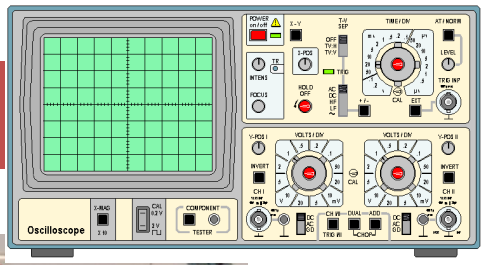
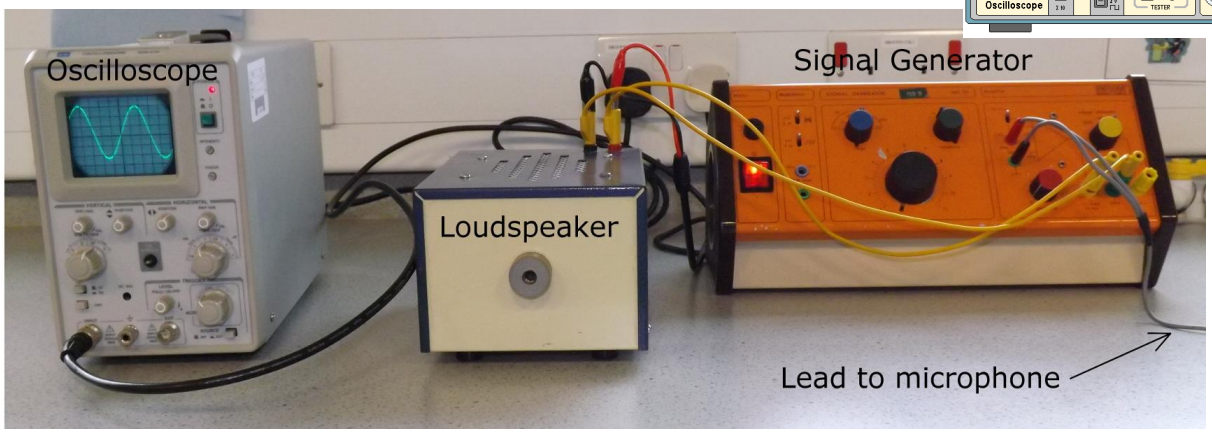
Oscilloscope Traces.





Copy

An oscilloscope *is a type of electronic test instrument that* ***graphically displays varying signal voltages.*** *(shows a graph of the change in voltage)*

It can be used to ***display sound signals*** *after they've been* ***converted*** *to an* ***electrical signal by a microphone****. The* ***longitudinal sound waves*** *are* ***converted*** *to* ***transverse waves*** *and displayed on a screen.*

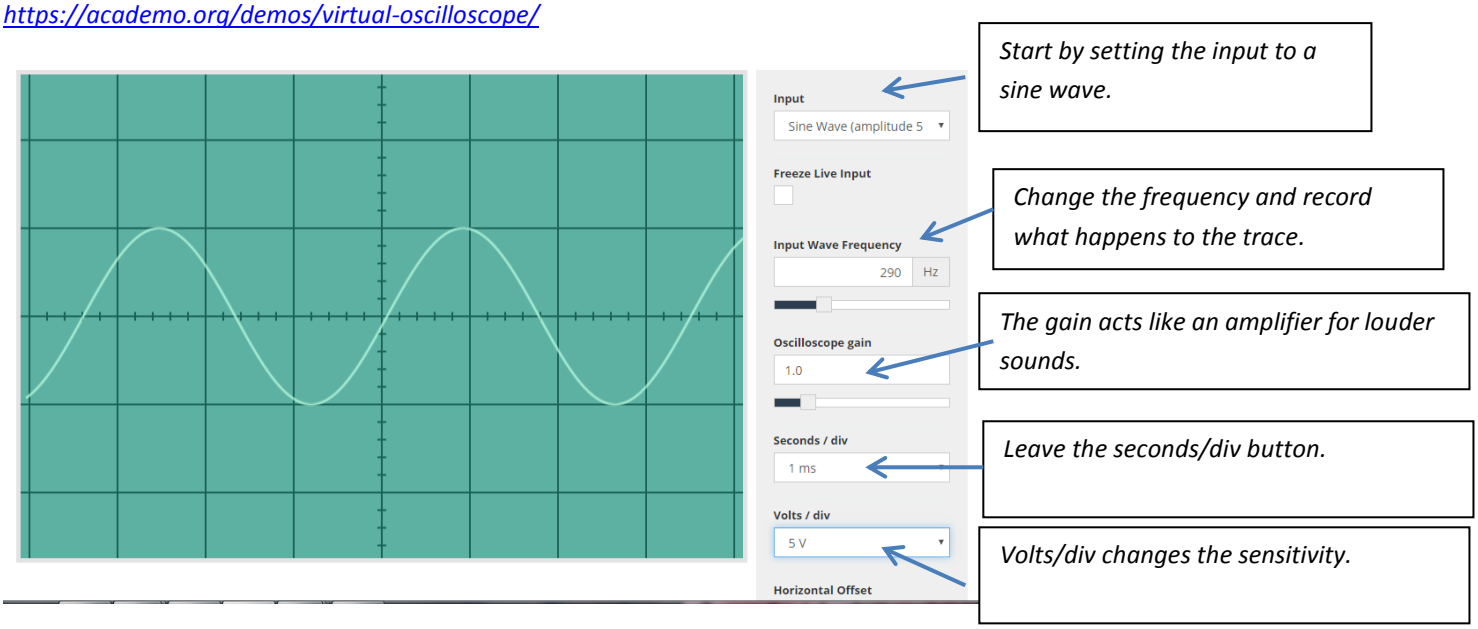
The energy change would be

Sound ⇒ electrical ⇒ light

As we can't currently do the practical you can try it for yourself.

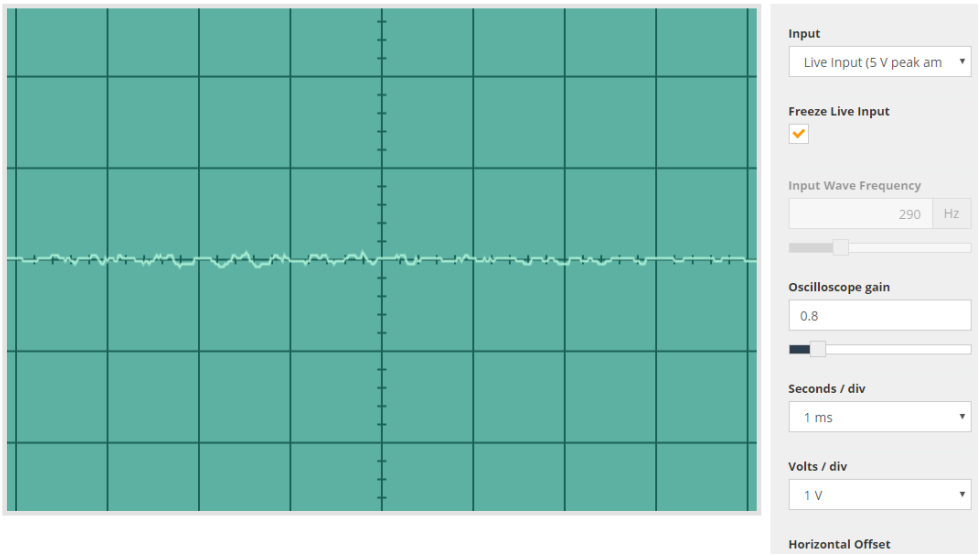
Academo

https://academo.org/demos/virtual-oscilloscope/



Now on the sheet below (print it out or use your jotter) draw the traces on the worksheet.

Then change the Input to LIVE INPUT (5V peak max) and see what happens to the trace on the oscilloscope. You might need to change the



Complete the worksheet below

Using the grids on the other side of the page draw the patterns for the following sounds.

All diagrams should be drawn using the original pattern as the starting point.

1. A higher frequency with a quieter sound.

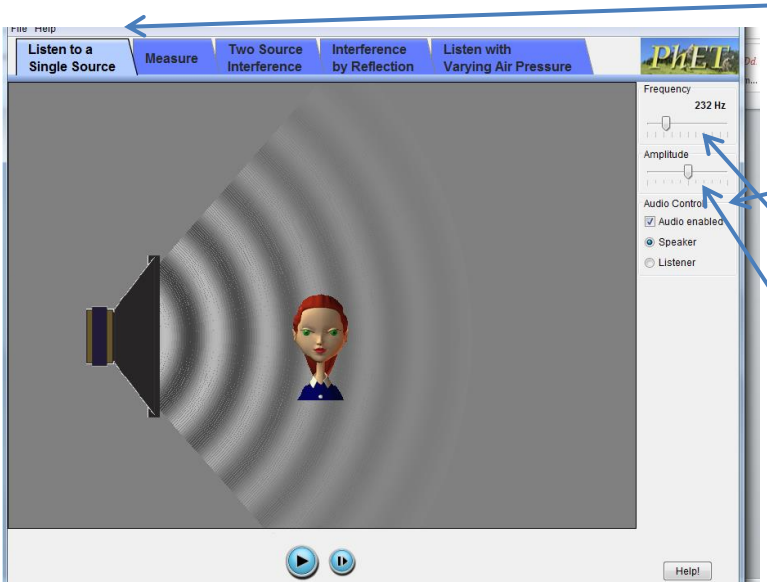
2. A louder sound with lower pitch.

3. A note of the same pitch which is louder.

4. A note of one octave higher with the same loudness.

Phet Colarado Physics

https://phet.colorado.edu/en/simulation/legacy/sound



Set this demo to LISTEN TO SINGLE SOURCE

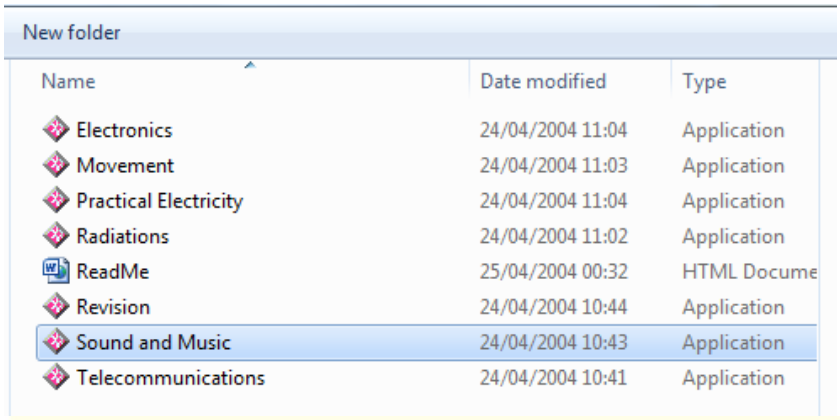
Set the Audio Control to Speaker

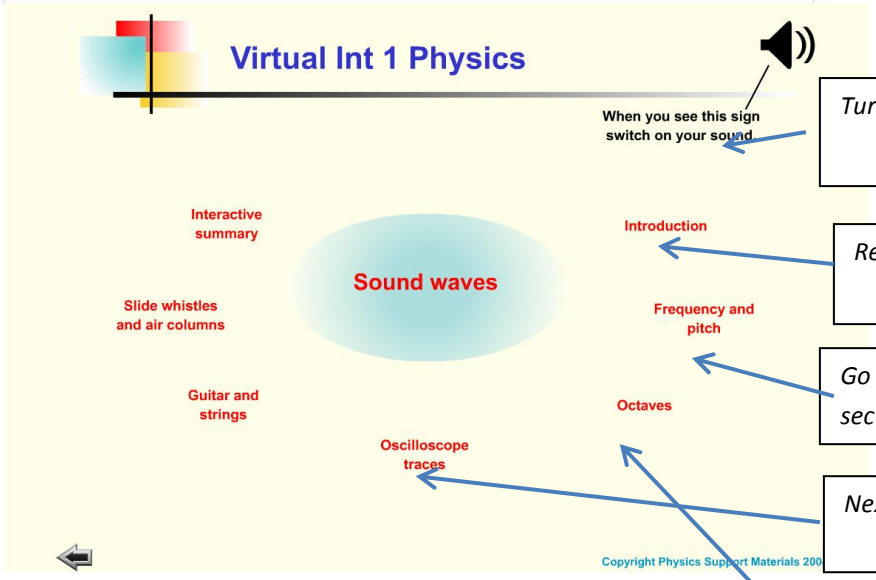
Adjust the frequency and look what happens to the wavelength of the waves

Adjust the amplitude and see what happens to the movement of the loudspeaker

Virtual Int 1 (available on TEAMS only) Ask your Physics Teacher if you live in Scotland

DON'T OPEN THE FOLDER, BUT OPEN THE DIAMOND, Open the SOUND and MUSIC section





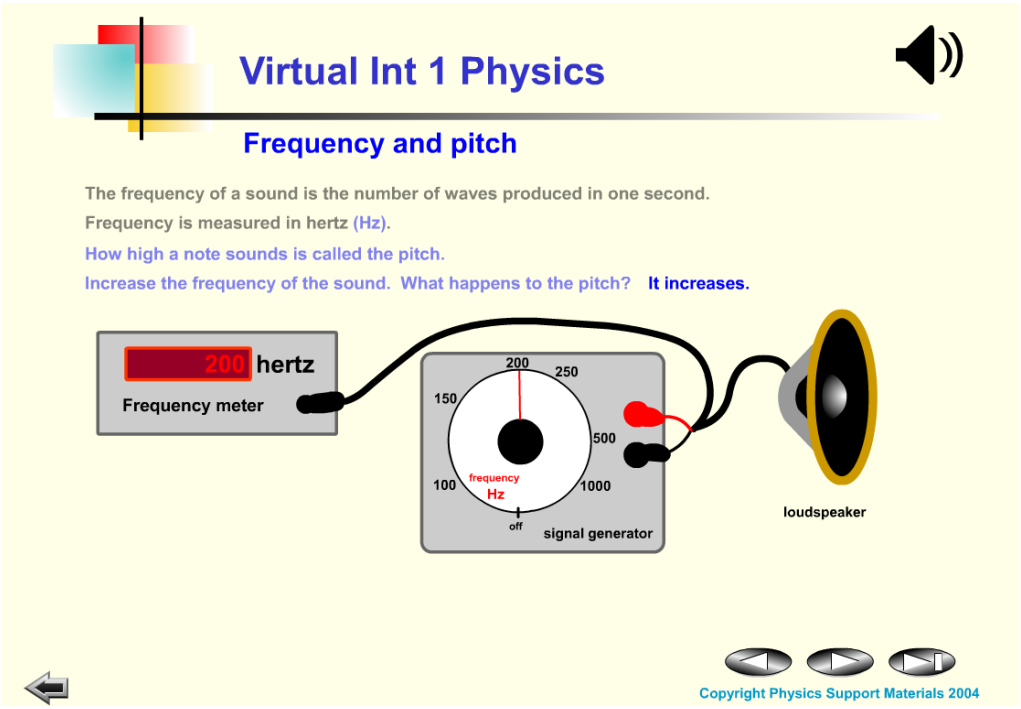
Turn on your sound

Read the introduction Section.

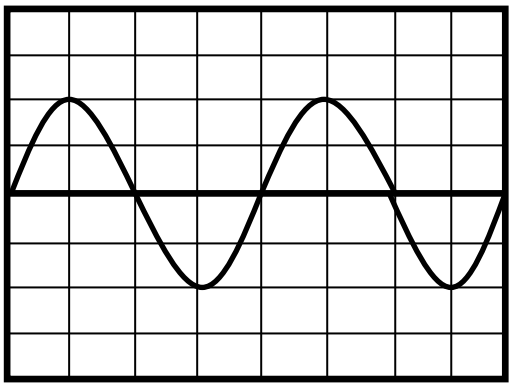
Go through the Frequency and Pitch section

Next do the Oscilloscope Traces

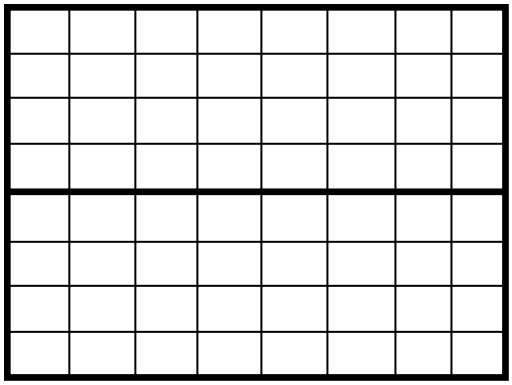
Finally look at what an octave is for a Physicist. Brilliant isn't it!.



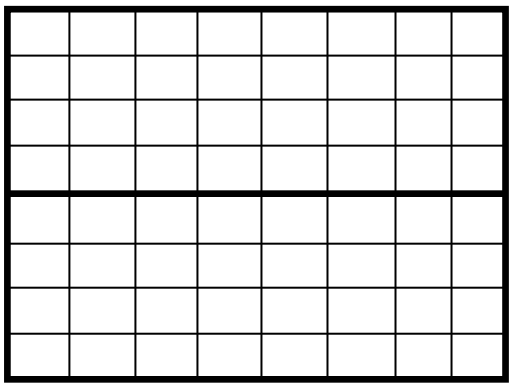
Looking At Sound Waves Worksheet



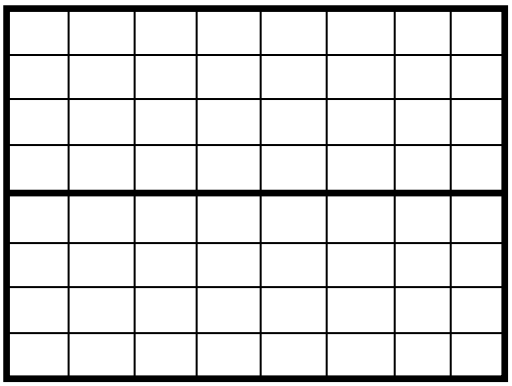
Normal Sound Wave



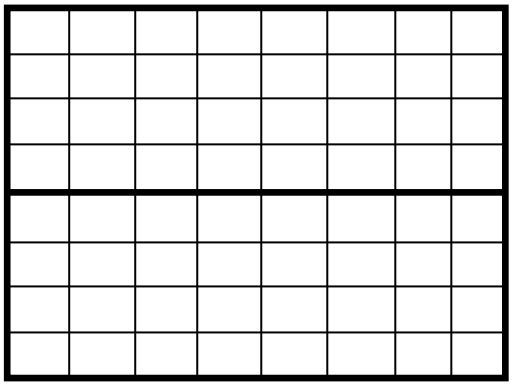
Waves an octave apart



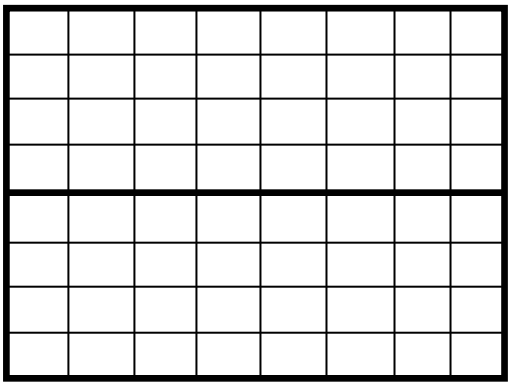
Higher Volume, Same Pitch



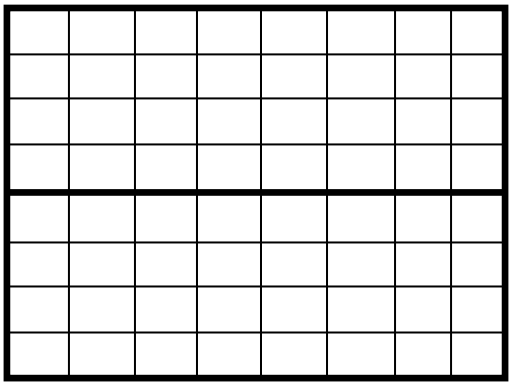
Lower Volume, Same Pitch

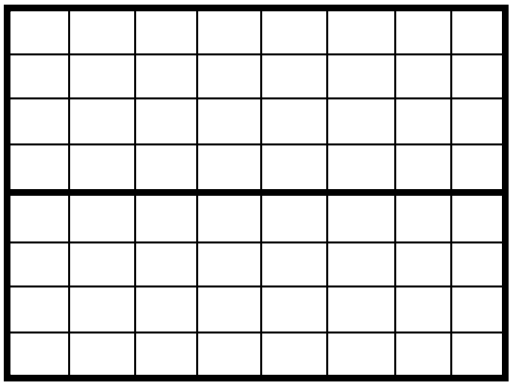


Same Volume, Higher Pitch



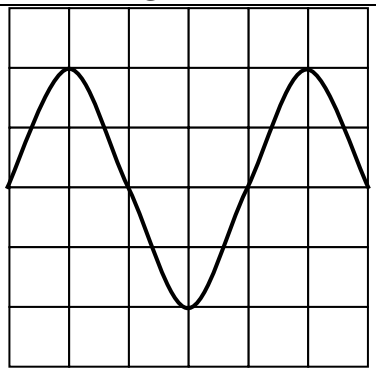
Same Volume, Lower Pitch



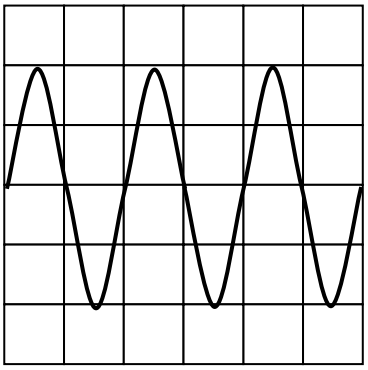


sound and patterns sheet

Original Pattern

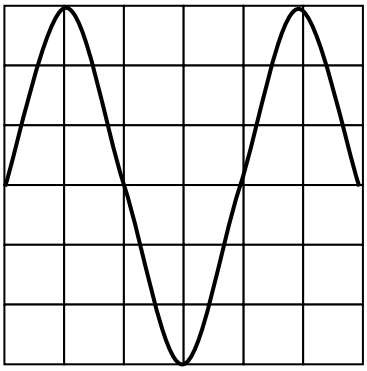


Pattern A



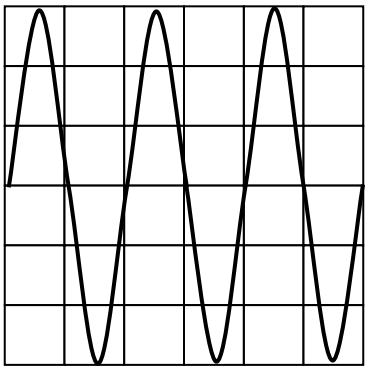
Pattern A Represents a sound with _____ frequency and _____ loudness.

Pattern B



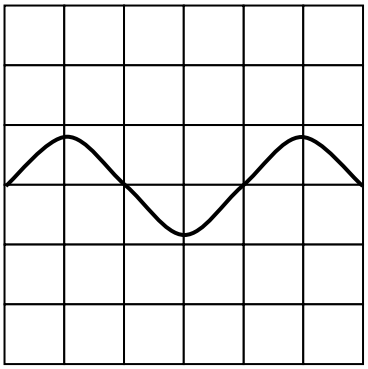
Pattern B Represents a sound with _____ frequency and _____ loudness.

Pattern C



Pattern C Represents a sound with _____ frequency and _____ loudness.

Pattern D



Pattern D Represents a sound with _____ frequency and _____ loudness.

I'll post the answers up next week! Don't cheat but check them off when you've done the work. Please contact me via the website or GLOW for assistance.

There is graph paper on mrsphysics if you need it

https://www.mrsphysics.co.uk/advanced/wp-content/uploads/2016/06/multiwidth-graph-grey.pdf