

Pitch and frequency

Physics - Key Stage 3

Sound waves - Lesson 3

Miss Mason



Recap

1. What is sound?

Sound is caused by v_____ of p_____ which knock into each other and transfer e_____. Sound travels as a l_____ wave and is only able to travel through a m_____.

2. Which types of surfaces best reflect sound and which types of surfaces best absorb sound?

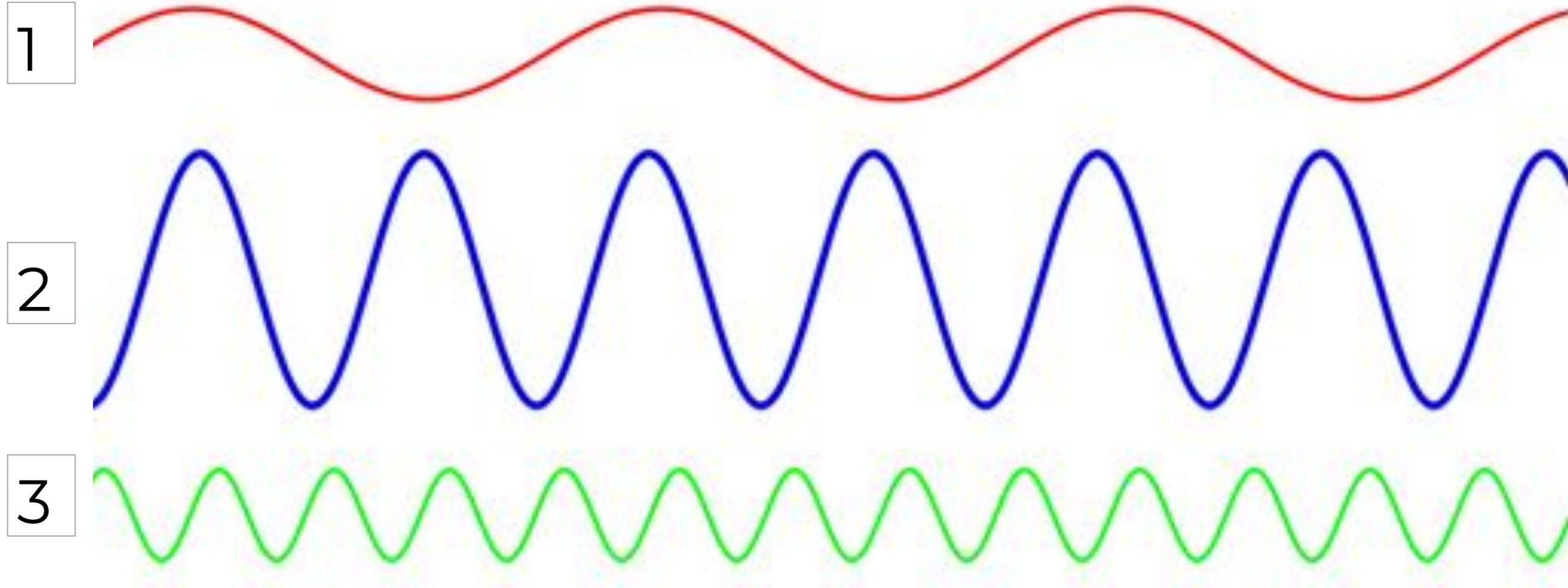
3. Describe what echolocation is.

Echolocation involves organisms such as d_____ or b____ or underwater vehicles such as s_____ sending out a s_____ w_____ and waiting for it to hit an object. When the sound wave hits an object, it is r_____ as an e_____ and returns to the organism/vehicle. The d_____ of the object from this point can then be calculated by multiplying s_____ by t____ and the organism/vehicle can work out how far they need to t_____ to reach the object.

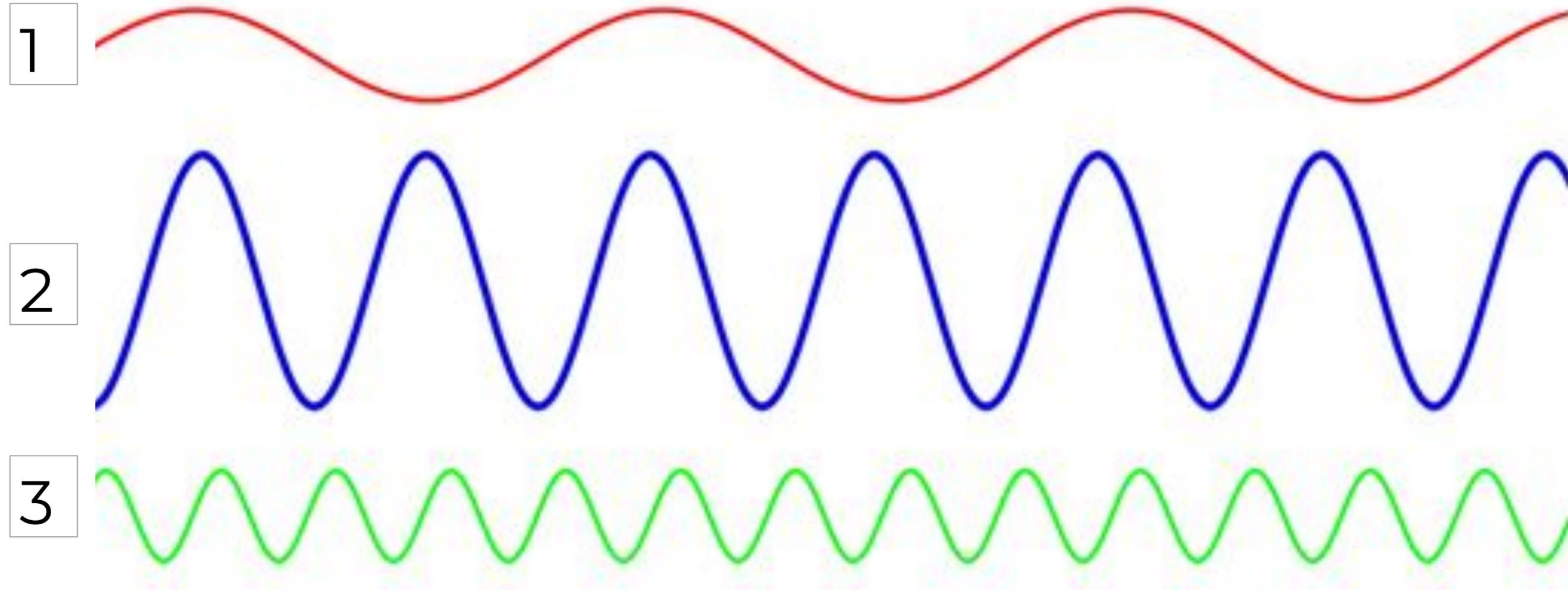
4. Draw out what a sound trace from an oscilloscope would look like, adding all of the appropriate labels.



Which sound wave has the highest pitch? How do you know?



Which sound wave has the lowest pitch? How do you know?



Copy and complete

A high pitched sound has a _____ frequency.

A higher pitched sound will have more _____ per second and a _____ wavelength.

Frequency is measured in _____.

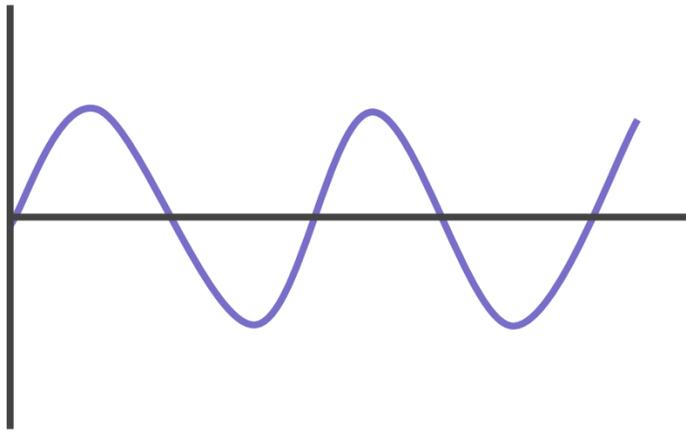
Pitch is affected by the s_____ of vibrations.

What is a low pitched sound like?
(Consider it's frequency and wavelength).

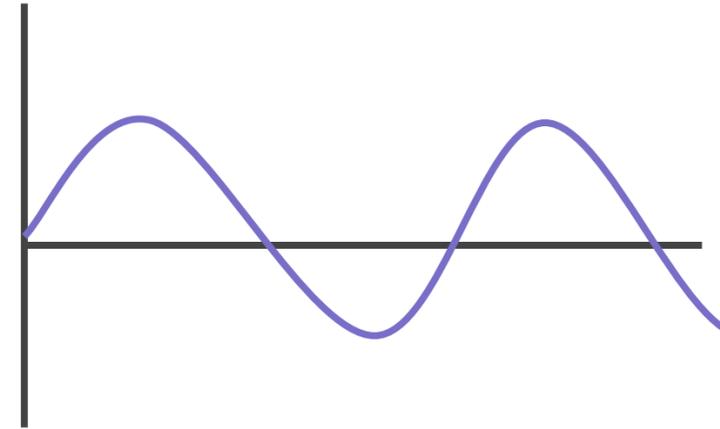


Which sound has the highest pitch? How do you know?

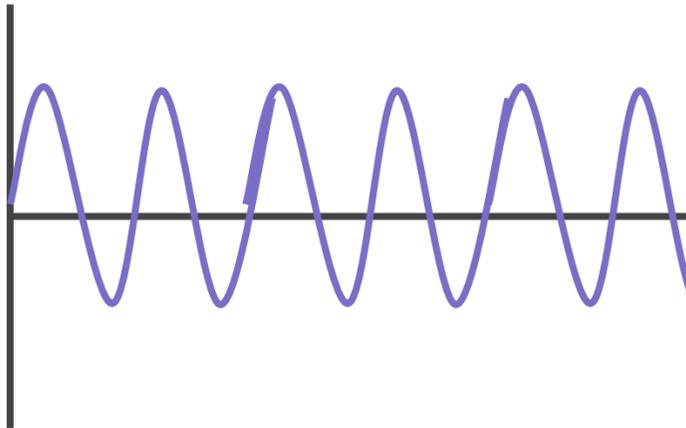
Option 1



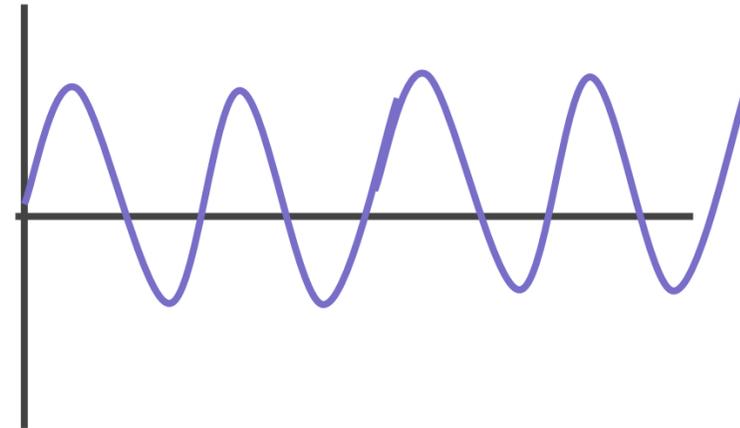
Option 2



Option 3

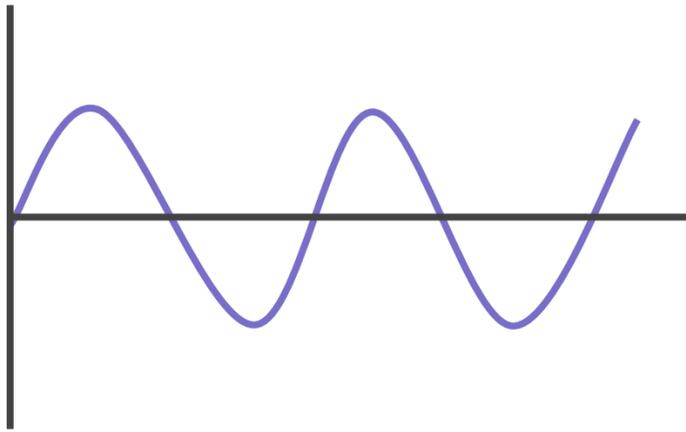


Option 4

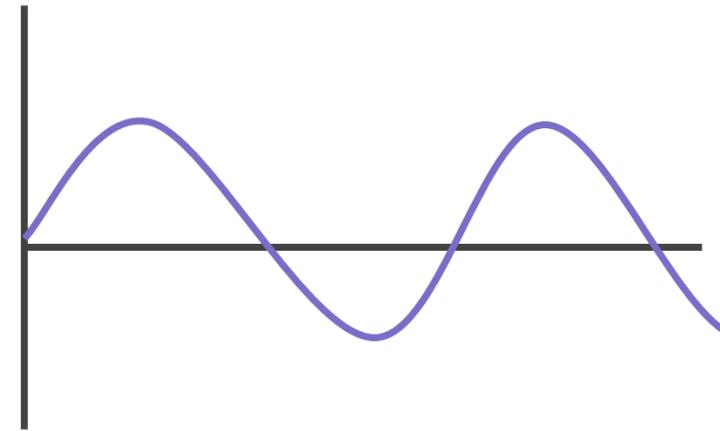


Which sound has the lowest pitch? How do you know?

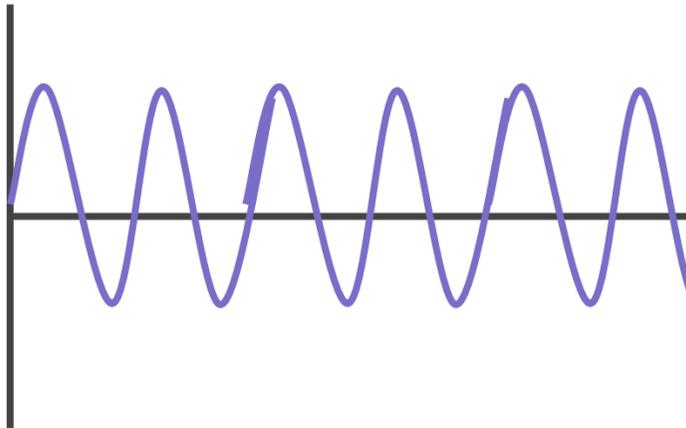
Option 1



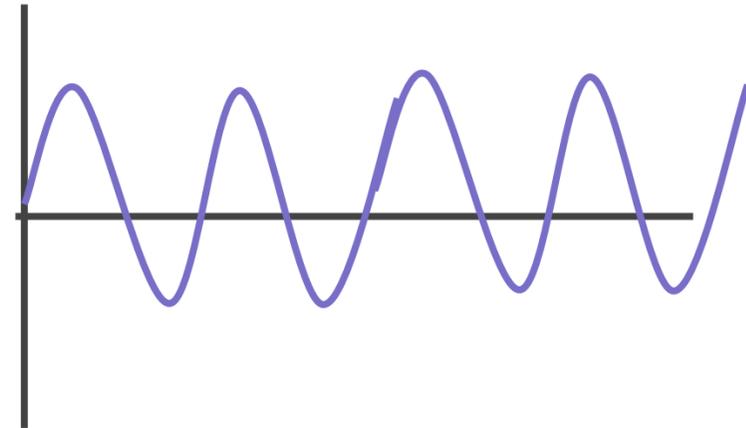
Option 2



Option 3



Option 4



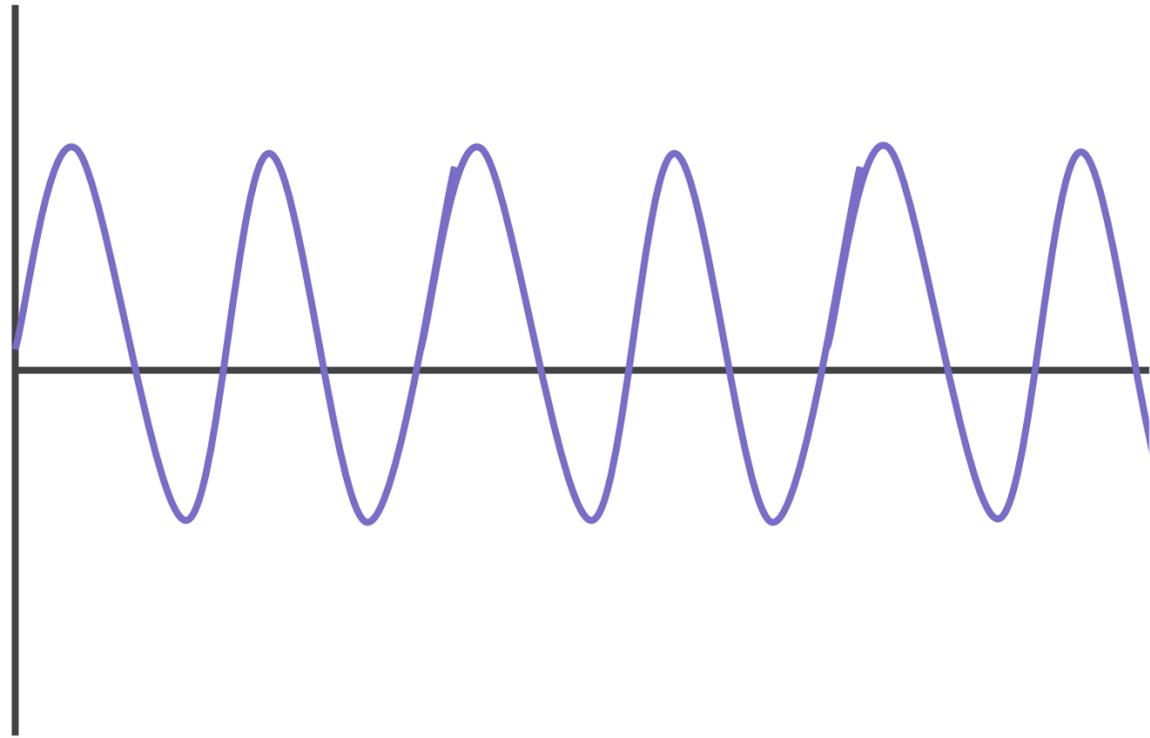
Drawing sound waves

Draw 2 sound waves on oscilloscope traces - both should have the same height (amplitude) waves but one should have a high frequency and one should have a low frequency.



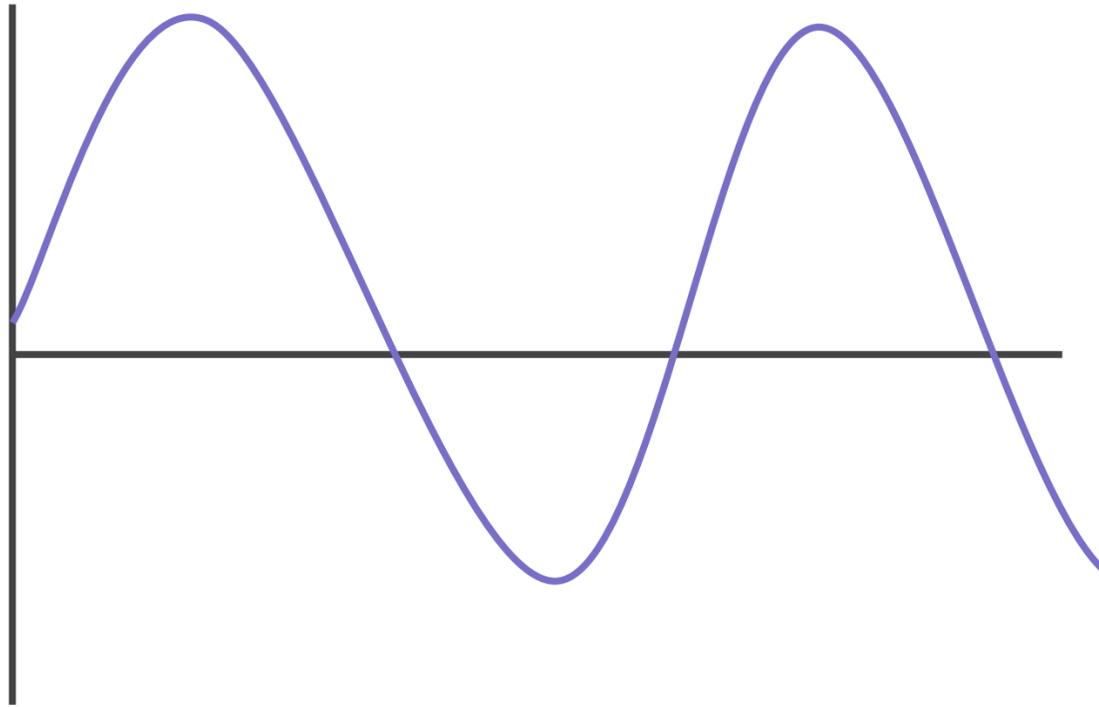
Drawing sound waves

Draw another wave that has half the frequency of this one.



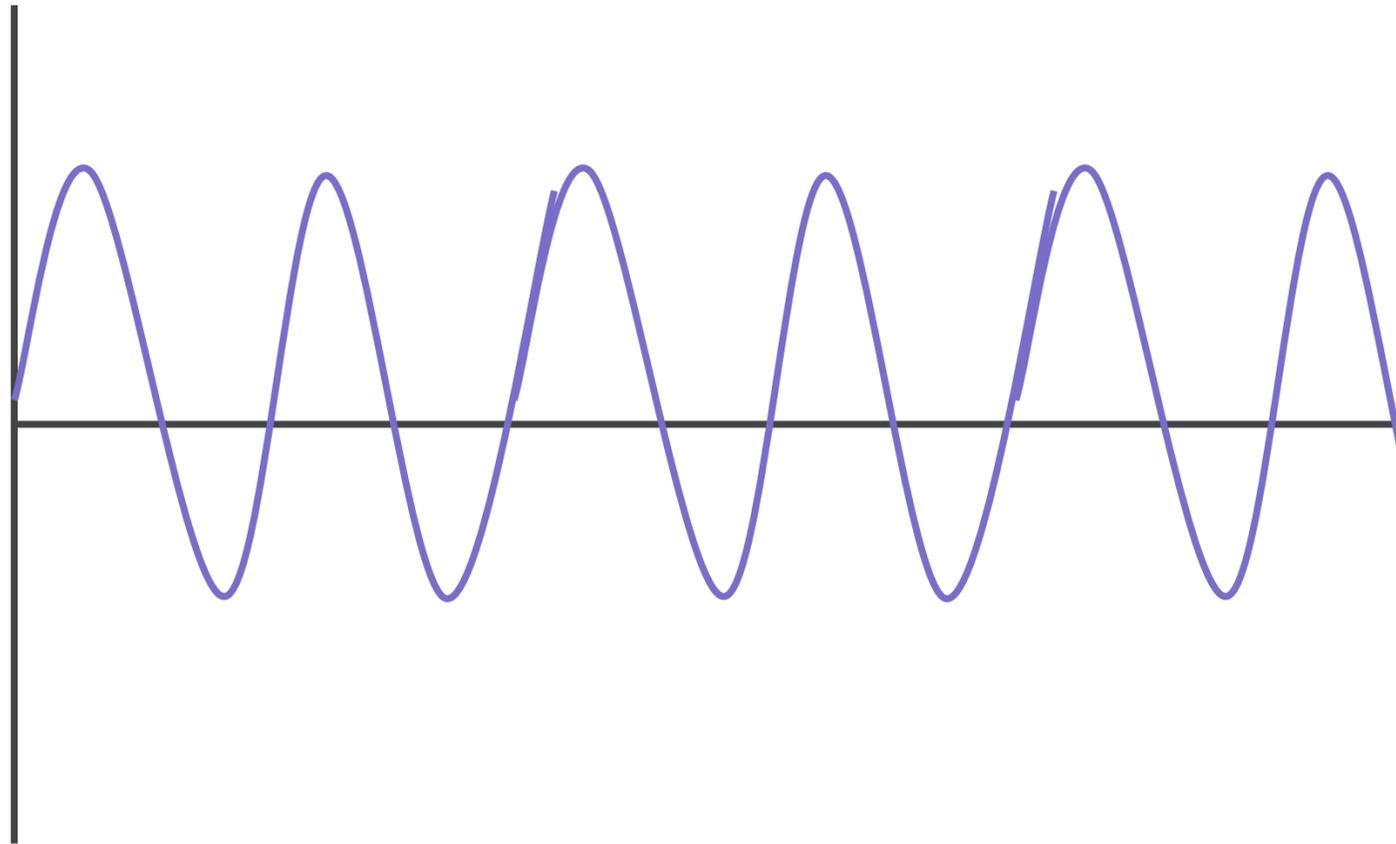
Drawing sound waves

Draw another wave that has double the frequency of this one.



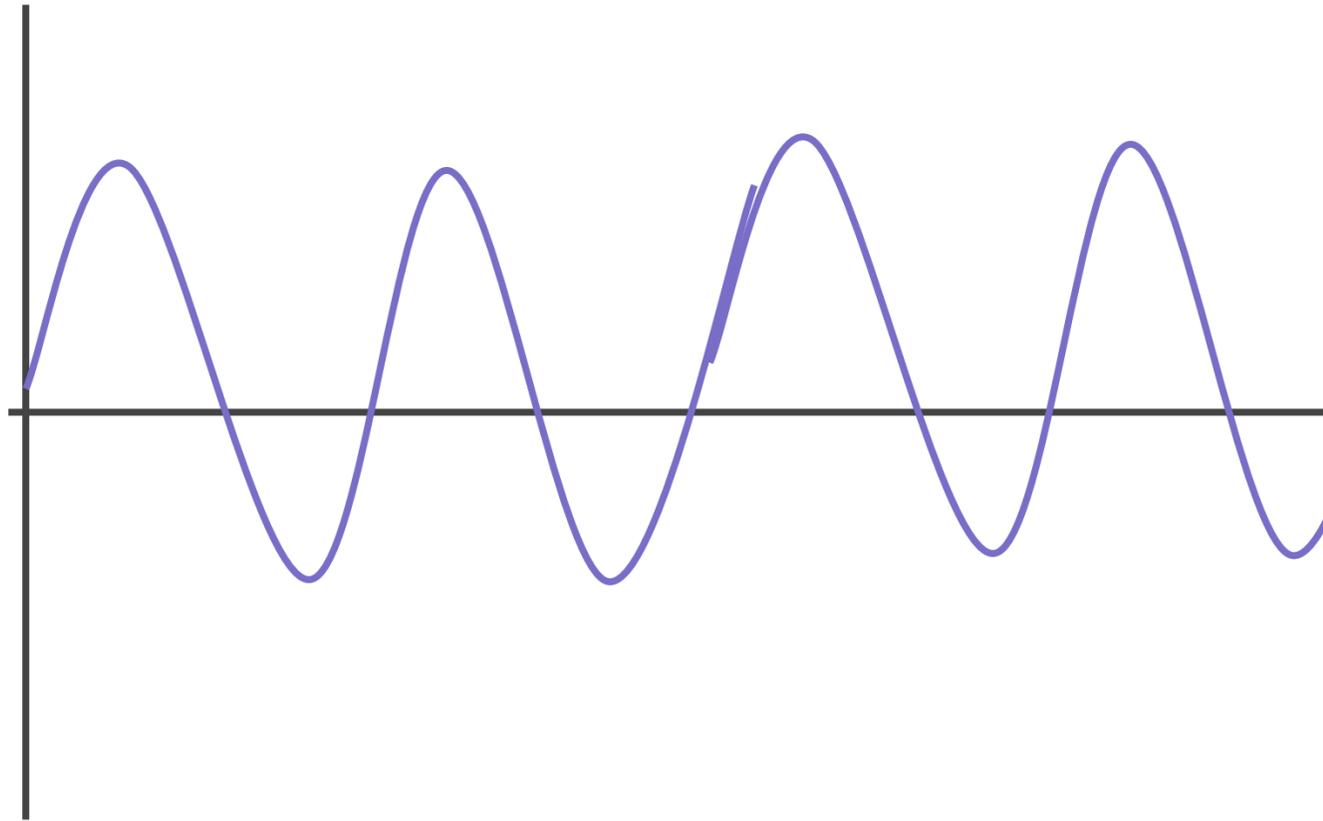
Calculating frequency

If this sound trace is created over a 3 second period, what must its frequency be?



Calculating frequency

If this sound trace is created over a 2 second period, what must its frequency be?



Describe what frequency, pitch and wavelength are along with how they are all connected.

(You may wish to draw diagrams and provide examples to aid your description).

Key words: particles, vibrations, speed, Hertz, number, second, high, low, peak, trough, longer, shorter.



Application task - *explain how this violin would make different pitch sounds*

