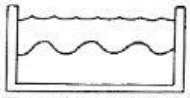
Sound Waves

The Speed of Sound in different mediums

The **sound wave** is a series of compression and rarefaction areas traveling through a substance.



Through water (25°C)

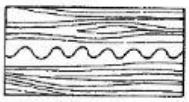
6. _____

Drag and drop the speeds

5,200 m/sec

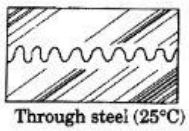
1,497 m/sec

3,320 m/sec



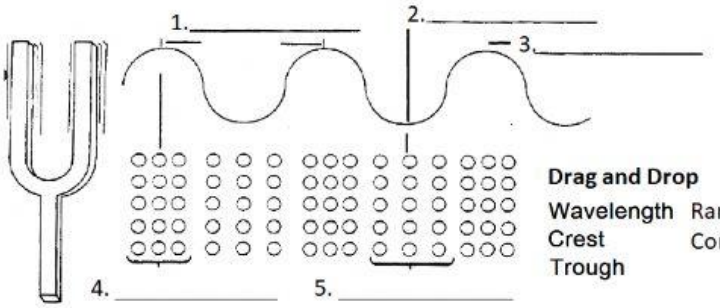
Through pine wood (25°C)

7. _____



Through steel (25°C)

8. _____



Drag and Drop

Wavelength Rarefaction

Crest Compression

Trough

Describe the relative spacing of molecules as they are affected by compression and rarefaction.

As energy moves through a medium, the particles move **parallel perpendicular** to the direction of the wave and are **tightest loosest** at the compressions and **tightest loosest** at the rarefactions.

Describe the motion of individual molecules. In a **transverse compressional** wave, the particles move up and down **parallel perpendicular** to the direction of the wave, in a **transverse compressional** wave the move back and forth **parallel perpendicular** to the direction of the wave.

Look at the speed of sound through these unknown substances and determine if the substances are solid, liquid, or gas.

a. 1200 m/sec _____

b. 259 m/sec _____

c. 5000 m/sec _____

d. 2680 m/sec _____

What is the speed of sound through air at these temperatures?

The speed of sound is 331.5 m/sec at 0 °C and increases .6 m/sec for each degree the temperature increases. We can put this in the **y = mx + b** line format like this:

Speed = .6 (temperature) + 331.5

Temp.	Speed
5°C	_____
15°C	_____
25°C	_____
35°C	_____
45°C	_____
55°C	_____
65°C	_____

Drag and Drop to Graph the points