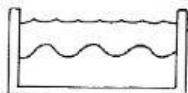


## Sound Waves

The Speed of Sound  
in different mediums



Through water (25°C)

Drag and drop the speeds  
5,200 m/sec  
1,497 m/sec  
3,320 m/sec



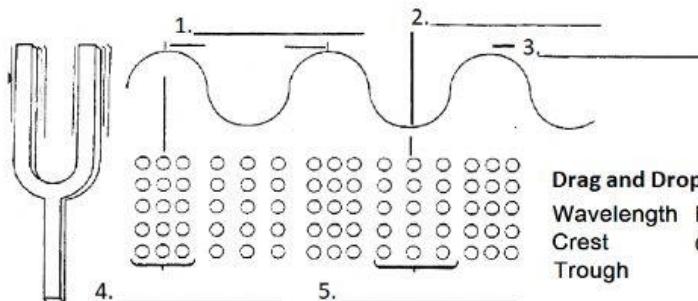
Through pine wood (25°C)

6. \_\_\_\_\_



Through steel (25°C)

7. \_\_\_\_\_



Drag and Drop  
Wavelength  
Crest  
Trough  
Rarefaction  
Compression

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.

8. \_\_\_\_\_  
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:

$$\text{Speed} = .6 \text{ (temperature)} + 331.5$$

Temp.	Speed	Drag and Drop to Graph the points
5°C	_____	●
15°C	_____	●
25°C	_____	●
35°C	_____	●
45°C	_____	●
55°C	_____	●
65°C	_____	●

