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Student worksheet

4.1 Vibrating particles pass on sound

Pages 70–71 and 193

Sound

1 How is sound created?

_____

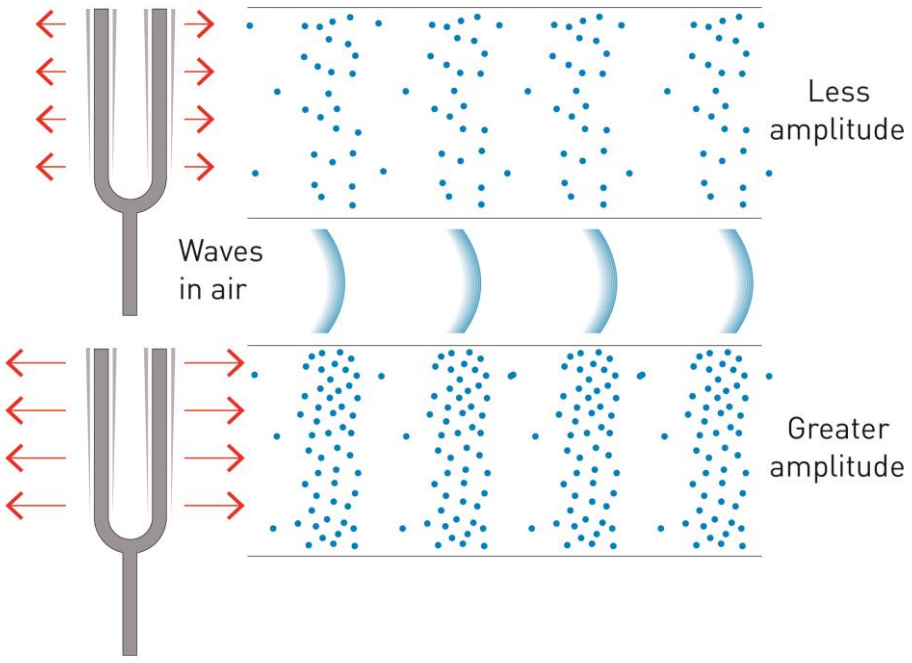
_____

_____

2 Match the words in this table with their definitions.

Rarefaction	The distance a particle moves from its position of rest
Wavelength	Part of a sound wave where air particles are forced apart
Amplitude	Part of a sound wave where air particules are forced close together
Frequency	The unit used to measure frequency
Compression	The number of waves that pass a point every second; measured in hertz
Hertz	The distance between two crests or troughs of a wave

3 On the diagram below, label the areas that represent compressions and rarefactions.



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4 If you could see air particles, what would sound look like?

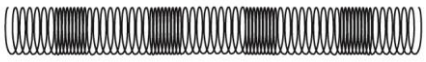
5 Explain how the following are related to frequency, wavelength, compressions and rarefactions.

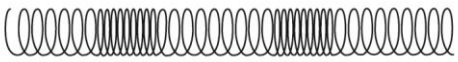
a high pitch

b low pitch

6 Of the following diagrams, label which would be high pitch, low pitch, high frequency and low frequency.

a b





7 On the above diagrams, indicate where a wavelength would be and which has a greater wavelength.

Extend your understanding

Men and women differ in the pitch of their voices. Conduct research about this phenomenon and answer the following questions.

8 What is the average frequency of male voices?

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9 What is the average frequency of female voices?

10 Does a male or female voice have a higher pitch?

11 What is the biological cause of this difference in frequency and therefore pitch between male and female voices?

12 What is 'shimmer'? Explain this concept.

13 Biologically, what happens to a male voice in puberty to make the pitch decrease?

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