

Unit V. How loud

Key Question: How loud can sounds be?



Student name:

Class:



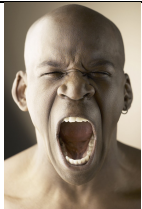





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Activity 1 – Loudness of sounds

- In the table you see photos of different sound sources. For each sound source describe the sound which it produces. Use words like soft, loud, high, low, pleasant, unpleasant, etc.

SOUND SOURCE	DESCRIPTION OF SOUND IT MAKES
	
	
	
	
	
	
	
	

- 1.** Which sound is the most pleasant? Which sound is the most unpleasant?

- 2.** Sounds, that are loud, unwanted and unnecessary are describe as noise. Which of these sounds would you call noise.

- 3.** Which sound is the loudest? Which sound is the quietest?

- 4.** Can you trust your ears to decide how loud these sounds are?

Activity 2 – How loud?

The loudness of sounds and noises is measured in decibels (dB). Such measurement is done with a sound level meter.

In this activity you will use the €Sense sound sensor and the computer to measure how loud sounds are. Here the sound sensor works as a sound level meter.

- List in the table on the next page, which sounds you are going to measure.
- Try your sounds and decide which sounds are quiet and which sounds are loud.
- In which unit the sound sensor measures the sound intensity?

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- Measure the sound intensity of each sound with the sound sensor and record the measured values in the table.

Notice that to make this a fair investigation you should keep the sensor always at the same distance from the sound source.



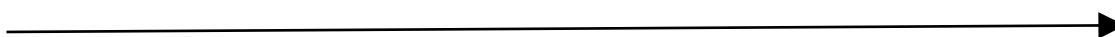
SOUND	QUIET OR LOUD (MY PREDICTION)	SOUND LEVEL dB (APPROXIMATELY)

Note:

The sound level readings can change rapidly, you need to estimate the measured value.

5. Sort the sounds into order, from quietest to loudest.

6. Make a sound intensity scale with numbers from 0 to 110 dB. Mark it to show Quiet, Loud, Very loud.



7. Which sound you have investigated would produce the most effective alarm?

Activity 3 – Who whistles the loudest?

Now you are going to play a game with your classmate, who of the two of you can whistle the loudest. If whistling is too difficult you can hum instead.

8. What should remain the same to keep the competition fair?

- Exercise your whistling or humming before taking measurements.
- Play the game and record the loudest whistle of you and your classmate. Write the measured values in the table below.

Trial	SOUND INTENSITY OF MY WHISTLE (DB) (APPROXIMATELY)	SOUND INTENSITY OF MY CLASSMATE WHISTLE (DB) (APPROXIMATELY)
1		
2		
3		

The winner is _____.

9. Imagine now you whistle with the same loudness but together at the same time, what do you think the loudness will be?

- Test your prediction. Measure the loudness when you whistle together.

10. The measured loudness during whistling together is

11. Was your prediction correct? ☐ Yes ☐ No

12. Is the loudness of whistling together the sum of the loudness of your whistling and the whistling of your classmate?

Activity 4 – Noise in your classroom

You are going to make a noise survey with the sound sensor. You are going to measure the sound intensity in your classroom during a lesson.

- Set up your €Sense and computer in a place where they will be not disturbed.
- After your measurement is finished, draw the resulting measurement graph below.

Discuss the results with your classmates. Answer the following questions.

13. What have you found from your graph?

14. Is your classroom ever silent?

15. When was your class was the noisiest? What did you do at this time?

16. When was your class the quietest? What did you do at this time?

Questions

A. If you were doing a science experiment, which would be better for measuring sound level?

- ☐ Your ear
- ☐ Sound sensor showing sound level
- ☐ Sound sensor showing sound waves

Why?