

**SIGNIFICANCE OF THE USE OF ADDITIONAL MATERIALS IN TEACHING  
SECTION OF PHYSICS OF SOUND PHENOMENA**

**(on the example of 6 class)**

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**Abstract**

This article recommends additional materials for the provided knowledge of the textbook and for teaching students to independently solve problems in order to increase efficiency in teaching the chapter "Initial information about sound phenomena" in the 6th grade of a comprehensive school in the course of physics.

**Keywords:** pitch, speed, decibel, octave, sound timbre, wavelength, sound power, learning process, learning efficiency, sound phenomena, frequency, sound, loudness.

**Main Part**

Today's main task in the field of education is to qualitatively update the content of the continuous education system, as well as to train, retrain and improve the qualifications of professional personnel, to improve the teaching methodology, to gradually apply the principles of individualization to the educational process, etc. From them it can be seen that all the work is carried out focused on improving educational efficiency. The effectiveness of education is based on the suitability of educational content to the goals and tasks, its scientific basis, consistency, relevance to life, as well as the selection of methods, models and tools suitable for students [1]. To achieve these, it is necessary to create the most optimal content, form and methods of improving the general secondary education system. From this point of view, we recommend using the following questions in the teaching of the chapter " Preliminary information about sound phenomena" of the 6th grade physics course of general secondary schools .

1. The speed of sound is greater in substances of which aggregate state: gas or solid? Can sound travel in a vacuum?
2. Why do people listen to the tracks to see if a train is approaching?
3. A meteorite fell on the moon. How long does it take for ground sensors to record the sound of the explosion?
4. If the oscillating tuning fork leg is placed on the table, its sound will be much louder. Why?
5. The sounding tuning fork is first held in the hand, then rested on the table with its leg. In which case does the sound stop faster and why?

**Problem:** The voice of a tenor singer vibrates in air at a frequency between 130 and 520 Hz. In the air sound of the waves maximum and minimum the length define \_ In the air sound the speed is 330 m/s.

**Given:**  $n_1=130$  Hz,  $n_2=520$  Hz,  $v = 330$ m/s

**Necessary to find:**  $\lambda_1=?$   $\lambda_2=?$

**Solution:** Since the length of the sound wave is  $\lambda = \frac{v}{\nu}$  calculated using the formula, we write the following formula for the maximum and minimum wavelengths:

$$\lambda_1 = \frac{v}{\nu_1} \quad \lambda_2 = \frac{v}{\nu_2}$$

Let's calculate the values given to these formulas .

$$\lambda_1 = \frac{v}{\nu_1} = \frac{330}{130} \approx 2.5 \text{ m}$$

$$\lambda_2 = \frac{v}{\nu_2} = \frac{330}{520} \approx 0.6 \text{ m}$$

**Answer :**  $\lambda_1 = 2.5$  m  $\lambda_2 = 0.6$  m

It is recommended to solve the following issues at home:

1. If sound waves propagate in the medium at a frequency of 500 Hz with a speed of 340 m/s, then what is the phase difference in the vibrations of two particles of the medium at a distance of 17 cm from each other? The particles lie in the line along which the wave propagates.
2. If we remove the cap of the auto-pen and blow in front of its open end, we hear a whistle. Explain the reason for its formation.
3. The length of the pen cap is 5.5 cm (see the condition of problem 12). What is the frequency of the resulting sound?
4. The vibration frequency of the tuning fork is 1.38 GHz. What is the length of the tuning fork? The speed of sound is 332 m/s.
5. How does the frequency of the sound emitted by the tuning fork change when the temperature decreases [3, 4]?

Enriching the topics with additional materials as above, conducting classes will help to increase the efficiency and activity of learning the topics by students, as a result, increase their interest in science.

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