

БӨЛІМ: ФИЗИКА

Investigation the dependence of the oscillation period of the pendulum on various parameters

ЖАРИЯЛАНДЫ
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СІЛТЕМЕ
<https://bilimger.kz/69210/>

Long-term plan unit: Oscillations		School: named by Mukhtar Auezov	
Date:		Teacher name: Serikbay Daulet	
Grade: 9		Number present:	absent:
Theme of the lesson	Investigation the dependence of the oscillation period of the pendulum on various parameters.		
Learning objectives that are achieved at this lesson	-explain the causes of oscillations in various oscillating systems; — investigate the dependence of the oscillation period of the pendulum on various parameters.		
Lesson objectives	After this lesson, students should be able to — know different types of oscillating systems; -explain the causes of oscillations in various oscillating systems; — investigate the dependence period of the oscillation of the pendulum on various parameters.		
Success criteria	Students have achieved if they: — know different types of oscillating systems; -explain the causes of oscillations in various oscillating systems; — investigate the dependence period of the oscillation of the pendulum on various parameters.		
Language objectives	Period of the oscillation, frequency of the oscillation, equilibrium position, displacement, amplitude, angular frequency, simple pendulum, mass-spring system, length of the pendulum, spring constant. The time taken for one complete oscillation is referred to as the period of the oscillation. The number of oscillations per unit time is the frequency .		
Values instilled at the lesson	Students' achieve of specific learning objectives, and get a certain amount of knowledge, but also develop the ability to apply their knowledge in solving learning and life problems.		
Cross-curricular links	Values links Mathematics. Trigonometric functions: sine and cosine. Cast rule.		
Previous learning	Free and forced oscillations. Characteristics of the oscillations. Equation of simple harmonic motion.		
Course of the lesson			
Planned stages of the lesson	Planned activities at the lesson		Resources

Beginning 5 min.	Starting point Recall and discuss with the class: — Difference between free and forced oscillations; — Characteristics of the oscillations: amplitude, time period, frequency, angular frequency, displacement, phase of oscillation. — Equations of SHM: displacement, velocity and acceleration. Determine lesson objectives with class: — know different types of oscillating systems; -explain the causes of oscillations in various oscillating systems; — investigate the dependence period of the oscillation of the pendulum on various parameters.	
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Middle 5 min	<p>Learning objectives: — know different types of oscillating systems; -explain the causes of oscillations in various oscillating systems; By using video clip (video_1) discuss with class different types of oscillating systems</p>	
20 min	<p>Investigate the dependence period of the oscillation of the pendulum on various parameter through inquiry-based learning Students are divided into small groups. One group will investigate the dependence period of the oscillation of the simple pendulum on the length of the pendulum and the amplitude of the oscillation. Simple Pendulum Another group will investigate the dependence period of the oscillation of the mass-spring system on the mass and the spring constant. Mass-spring systems Students based on the study will draw conclusions.</p>	
7 min	<p>Solving problems Problem _1_Alternative to practical Students work independently</p> <ol style="list-style-type: none"> 1. Why do you push child on a swing? What does happen if you don't push child? 2. Mobile phones use GSM standard of 900 MHz. What is period of oscillations? 3. Child plays on swing so that she performs 30 oscillations in one minute. What is the period and frequency of oscillations? 4. Use circular analogy to draw position of the box and speed vector when phase ϕ is . . <p>The teacher checks and evaluates problem solving. Gives feedback. If necessary, helps to the students.</p>	

End 3 min	Generalization: Students will be asked if they have achieved the lesson's objectives.	
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ҚМ АА Күәлік нөмірі: **KZ45VPY00102718** — ҚР Мәдениет және Ақпарат министрлігі

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