**Plan of lesson**

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| **School:**  Aktobe regional specialized physico-mathematical boarding school**The chapter of a long-time plan:** **Teacher:** Tilep Aizhan**Class:** 8  |
| **Theme of lesson** | 10.2.1.5 - Kinematics of curvilinear motion |
| **Educational aim:** | 10.2.1.5 – Determination of the curvature radius of the trajectory in the curvature of the curvature, tangential body traversing and full acceleration |
| **Aim of lesson:** | By the end of the lesson**All students will be able** to know about main concepts of kinematics: *angular velocity, linear velocity.***Most of them** **will be able** to use the formula of *circular motion* and solve the problems.**Some students will be able** to define and give examples of *circular motion*. |
| **Evaluation criteria:** | To know the physical meaning of movement along circles, to solve problems.* learn the unit of measure and the angular velocity of angular and linear velocity;
* Uses the formula freely in the report.
* Freezes the formula, converts to SI of units;
* Provides examples of life use;
* - Knows the difference and importance of the angular and linear velocity.
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| **Descriptors :** | 1. Know the definition of linear velocity, marking, formula, unit of measure.
2. Definition, marking, formula, measurement units of angular velocity.
3. Correctly explains the terms of the report;
4. Give examples from life.
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| **Lingual aims:** | By the end of the lesson, students will be able to:* Define the meaning and use the subject-specific following words: *angular velocity, linear velocity, radius-vector, tangential acceleration, angular acceleration, centripetal acceleration.*
* Define the meaning and use the following words: *attract, direct, compare.*
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| **Values:** | Public national unity.Unity of language. |
| **Interdisciplinary connection:** | Mathematics, geography. |
| **Previous knowledge:** | Relativity of motion |
| **The course of the lesson:** |
| **Planned stages of the lesson:** | **Planned activities on the lesson** | **Resources** |
| **Beginning of the lesson:** | **І.**  **Organizational period.**Greetings with students, inventory.**ІІ.** Warm-up. Coded word: 3. 9. 18. 3. 21. 12. 1 18 – CIRCULAR  | Alphabet of English language |
| **In the middle of the lesson:** | In physics, circular motion is a movement of an object along the circumference of a circle or rotation along a circular path. It can be uniform, with constant angular rate of rotation and constant speed, or non-uniform with a changing rate of rotation. The rotation around a fixed axis of a three-dimensional body involves circular motion of its parts. The equations of motion describe the movement of the center of mass of a body.Examples of circular motion include: an artificial satellite orbiting the Earth at a constant height, a fan's blades rotating around a hub, a stone which is tied to a rope and is being swung in circles, a car turning through a curve in a race track, an electron moving perpendicular to a uniform magnetic field. For motion in a circle of [radius](https://en.wikipedia.org/wiki/Radius) *r*, the circumference of the circle is *C* = 2π*r*. If the period for one rotation is *T*, the angular rate of rotation, also known as [angular velocity](https://en.wikipedia.org/wiki/Angular_velocity) ω.

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| Rectilinear motion | Circular motion |
| x – coordinate | $φ$ – angular acceleration |
| $\vec{ϑ}$ – linear velocity | $ω$ – angular velocity |
| s = $φ$R |
| $ϑ$ = $ω$R |
| x = x0 + $ϑ$t | $φ$ = $φ\_{0}$+ $ω$t |
| $$\vec{a}= \frac{∆\vec{ϑ}}{∆t}$$ | $$\vec{ε}= \frac{∆\vec{ω}}{∆t}$$ |
| $\vec{a}\_{τ}$ - tangential acceleration | $\vec{ε}$ – angular acceleration |
| $a\_{τ}$ = $ε$ R – |
| $\vec{ϑ}$ *=* $\vec{ϑ}$*0 + at* | $\vec{ω}= \vec{ω}\_{0}+\vec{ε}$ *t* |
| x = x0 + $ϑ$0t + $\frac{at^{2}}{2}$ | $φ$ = $φ$0 + $ω$0t + $\frac{εt^{2}}{2}$ |
| s = $\frac{ϑ^{2}- ϑ\_{0}^{2}}{2a}$ | $φ$ = $\frac{ω^{2}- ω\_{0}^{2}}{2ε}$ |
| N = $\frac{φ}{2π}$ |
| $ϑ\_{average }$= $\frac{ϑ\_{1}+ ϑ\_{2}}{2}$ , if a = const | $ω\_{average }$= $\frac{ω\_{1}+ ω\_{2}}{2}$ , if ε = const |

 | Physics book, handout cards |
|  | *Reading task 1. Focus on subject-specific language*a) Underline unknown words.b) Compare the words with your partnerc) Guess the meaning of words *Writing task. Focus on content knowledge* What is the definition of circular motion?*Reading task 2.* Gapped sentences1. The equations of motion describe the movement of the center of \_\_\_\_ of a body.
2. For motion in a circle of [radius](https://en.wikipedia.org/wiki/Radius) *r*, the circumference of the circle is *\_\_\_\_\_\_.*
3. Since the object's velocity vector is constantly changing \_\_\_\_\_\_\_, the moving \_\_\_\_\_\_\_ is undergoing acceleration by a \_\_\_\_\_\_\_\_ force in the direction of the center of rotation.

**FA:**3appallings**D:\Desktop\Screenshot_2017-07-12-16-45-35.pngPeak of "Joule-Watt"****Peak of "Joule-Watt"** (Questions to the tops of the hill are hidden, Schoolchildren go out to the peak of "Joule-Watt" by solving it)**FA:** Assessment through the "Head Finger" method. | Handout cardsJoule-Watt model of the "peak"handout paper**C:\Users\User\Desktop\ce95ca24f4ae7c273accdbb6dcb1a2822668509c_original.png**http://s54.radikal.ru/i146/1009/3a/9dbbbece2c23.png**C:\Users\User\Desktop\ce95ca24f4ae7c273accdbb6dcb1a2822668509c_original.png** |
| **Сабақтың соңы:** | Applying knowledge: Crossword without questions.

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|  | **Feedback:**

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| **Knew** | **Know** | **Want to know** |
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|  | **REFLECTION:** **http://www.stihi.ru/pics/2009/09/13/5830.jpghttp://janowcity.com/templates/Default/images/weather.pngExcellent Good Bad****http://sntsun.ru/images/sun_200x200.png** |  |
| **What tasks do you plan for talented, capable pupils?** | **Assessment -** How do you check the knowledge of the learners? | Interdisci-plinary communication, keeping safety rules in the classroom |
| **All students:**Writes the necessary information and formulas on the subject.Planned differentia-tion tasks by knowing, understanding, applying, analyzing. | **Partner Evaluation:**1. Self-assessment.2. Applause. (praise, support).3. Evaluation through the framework of equilibrium.4. The thumb tips have been considered effective. | Applies knowledge of mathema-tics. The pupil was encouraged to keep the body healthy so as to maintain health. |