Автор: Ешпанова Замзагул Сәттіғалиқызы
Пән: Физика
Сынып: 8-сынып
Бөлім: Электростатика негіздері
Тақырып: Electric Field

Electric Field	8.4.1.6. Explain physical meaning of “electric field” and determine its dynamics characteristics; 8.4.1.7. calculate force applied on charge by electric field; 8.1.4.8. Show electric field by using electric field lines.

Сабақ барысы

Сабақ кезеңдері	**Жоспарланған іс-әрекет**	**Ресурстар**

Сабақ барысы (40мин)	Planned Activities I. Organization moment:Greeting. Ұйымдастыру сәті. II. Checking home task. Activity ‘Board game’ Үй тапсырмасын тексеру «Board game» әдісі Оқушылар тапсырма жазылған алаңдағы «start» -қа тұрып кубты лақтыру немесе мобильді қосымша арқылы ойын ойнайды. Кубты лақтырған кезде қандай сан түссе сол санға сәйкес қадам жасап, жеткен қадамдағы сұраққа жауап береді. Егер де ‘OH, NO!’-ға түссе ойынның басына қайтып барады. Ал егер ‘Great’-болса онда әрі қарай ойынды жалғасытарады. Learners have to stand on the start. Then using cube play ‘Board game’. If learners step on the ‘OH, NO!’ button have to go back to start, so if step on the ‘Great’ button learner have to play again. 1. Нүктелік заряд дегеніміз..... 2. Диэлектриктер дегеніміз.... 3. Зарядтың сақталу заңы 4. Кулон заңын тұжырымда 5. Great! 6. Бір-бірінен 3см қашықтықта тұрған, әрқайсысы 20нКл екі заряд өзара қандай күшпен әсерелеседі? k=9*109Н*м2/Кл2 7. Oh, No! 8. Зарядтың әрқайсысын 4 есе арттырғанда, өзара әсер күші бұрынғыдай болып қалуы үшін, сол зарядтардың арақашықтығын неше есе өзгерту керек? 9. Great! 10. Charge, Positive, Negative (Translate) Дескриптор: • Заңдарды түсіндіре алады. •Терминдерді біледі. • Кулон заңын есептер шығаруда қолданады. Teacher:You did a great job!/Well done!/ Wow, fantastic! III. Introduction new topic: 1.Shows the simulations on the board then ask learners: What can you say aboutthis simulation? https://phet.colorado.edu/sims/html/charges-and-fields/latest/charges-and-fields_en.html (Teacher say the topic of today’s lesson) Bilimland.kz –арқылы жаңа сабаққа шолу. 2. Activity “Poster presentation” (Learners have to prepare poster presentation about todays topic) Electric Field– Definition the electric field vector E at a point in space is defined as theelectric force Fe acting on a positive test charge q placed at that point dividedby the test charge: F = K|q||q|/r2 = magnitude of the electric force k =Coulomb's constant = 8.9875 x 109Nm2/c2 Note that since F is a vector and q isa scalar, E must be a vector. the units of Electric Field in SI units of newtons percoulomb (N/C) • The electric field lines for a point charge. • (a) For a positivepoint charge, the lines are directed radially outward. • (b) For a negative pointcharge, the lines are directed radially inward. • Or the electric field lines extendaway from positive charge (where they originate) and towards negative charge(where they terminate) Formative assesment: smile 3. Activity “Fill in gaps”Learners have to write right answer instead of point. 1. If you put positivelycharged small object in the ....., the ..... line will show the direction of resultantforce. If charge is negative, the direction is opposite. 2. If positive chargeinteract with positive charges then you can see process ..... betweencharges. (repulsion) 3. If positive charge interact with negative charges then youcan see process ..... between charges. (attraction) Formative assesment:assess each other (using fingers) 4. Activity “Plicers” Learners have to solve atask and raise your right answer (plicers’ card) question 1: A force of 3 N isacting on the charge 6 μμ C at any point. Calculate the electric field intensity atthat point? Solution: Given: Force F = 3 N, Charge q = 6 μ C The Electric field isgiven by E = Fq = 3N6×10-6C = 5 × 105 N/C. Question 2: Find electric field at a distance of 1 A0 from the nucleus of Helium atom? Solution: Given: Charge in nucleus q = 2 ×× 1.6 ×× 10-19 C = 3.2 ×× 10-19 C. Distance r = 10-10 m The formula of electric field is given by E = Kqr2 = 9×109×3.2×10−19(10−10) = 28.8 × 1010 N/c. Question3. Two electrons (e1 and e2) and a proton (p) lie on a straight line, as shown. The directions of the force of e2 on e1, the force of p on e1, and the total force on e1, respectively, are: ••• e1 e2 p A. −→, ←−, −→ B. ←−, −→, −→ C. −→, ←−, ←− D. ←−, −→, ←− E. ←−, ←−, ←− ans: D Question 4 In this picture can you show which is negative or positive charges? A.1 is –, 2 is + B.1 is +, 2 is – C. 1is -, 2 is – D. 1 is +, 2 is + Question 5 Descriptor - learners have to explain physical meaning of “electric field” - learners have to explain physical meaning of “electric field” and determine its dynamics characteristics; - learners have to show electric field by using electric field lines IV. Home task: learn the definitions Feedback: Name one thing you would like to know more Give one thing which you find difficult Name one thing you liked most	