Electric Force, Field, and Potential

AP Physics 2 · Vocabulary in context

Word	Example
Electric charge /ɪˈlektrɪk tʃɑːdʒ/	Electrons carry negative **electric charge**.
fundamental property /ˌfʌndəˈmentl ˈprɒpəti/	Charge is a **fundamental property** of matter, like mass.
like charges	Two **like charges** push each other apart.
↔ **repel** /rɪˈpel/	Two positive charges **repel** each other.
opposite charges	**Opposite charges** pull towards each other.
attract /əˈtrækt/	A positive and a negative charge **attract** each other.
conserved /kənˈsɜːvd/	Charge is **conserved**: none is lost at the junction.
01 10 **quantized** /ˈkwɒntaɪzd/	Charge is **quantized**: it comes in whole multiples of e.
elementary charge /ˌelɪˈmentəri tʃɑːdʒ/	The **elementary charge** is 1.6×10^{-19} C.
• **point charges** /pɔɪnt ˈtʃɑːdʒɪz/	Coulomb's law gives the force between two **point charges**.
Coulomb's law /ˈkuːlɒmz lɔː/	**Coulomb's law** gives the force between two charges.
÷ **inverse-square law** /ɪnˈvɜːs skweə lɔː/	The **inverse-square law** says double the distance gives a quarter of the intensity.
permittivity /ˌpɜːmɪˈtɪvəti/	The **permittivity** of a material tells us how strongly it weakens an electric field.

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permittivity of free space /ˌpɜːmɪˈtɪvəti ɒv friː speɪs/	The **permittivity of free space** ε_0 sets the value of k. ε_0 k
neutral /ˈnjuːtrəl/	A **neutral** atom has the same number of protons and electrons.
conductor /kənˈdʌktə/	Copper is a good **conductor** of electricity.
insulator /ˈɪnsjuːleɪtə/	Plastic is an **insulator**.
Friction /ˈfrɪkʃn/	**Friction** charges a balloon rubbed on hair.
Conduction /kənˈdʌkʃn/	**Conduction** charges an object when a charged object touches it.
Induction /ɪnˈdʌkʃn/	**Induction** charges an object without touching it.
grounded	A **grounded** conductor can share charge with the Earth.
electric polarization	**Electric polarization** shifts the charges inside a neutral object, so a charged rod can attract it.
electric field /ɪˈlektrɪk fiːld/	A charged ball has an **electric field** around it.
test charge /test tʃɑːdʒ/	A small positive **test charge** shows the direction of the field.
Electric field lines	**Electric field lines** point away from positive charges.
parallel plates	Far from the edges, oppositely charged **parallel plates** have a nearly uniform field.

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potential difference /pəˈtenʃl ˈdɪfrəns/	The **potential difference** across the lamp is 6 V. 6 V
uniform /ˈjuːnɪfɔːm/	The rod is **uniform**: its mass is spread evenly.
electric potential energy /ɪˈlektrɪk pəˈtenʃl ˈenədʒi/	Two charges close together have **electric potential energy**.
Electric potential /ɪˈlektrɪk pəˈtenʃl/	**Electric potential** is the energy per coulomb of charge at a point.
voltage /ˈvəʊltɪdʒ/	The battery has a **voltage** of 1.5 V. 1.5 V
scalar /ˈskeɪlə/	Mass is a **scalar** because it has no direction.
vectors /ˈvektəz/	Fields are **vectors** and must be added by direction.
equipotential lines	Points at the same potential can be joined into **equipotential lines**, also called isolines.
capacitor /kəˈpæsɪtə/	A **capacitor** stores a small electric charge.
capacitance /kəˈpæsɪtəns/	A large capacitor has a large **capacitance**.
geometry /dʒiˈɒmətri/	With fixed dielectric material, **geometry** determines a capacitor's capacitance.
kinetic energy /kɪˈnetɪk ˈenədʒi/	A fast car has a lot of **kinetic energy**.
electron gun	An **electron gun** accelerates electrons through a large voltage.

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