

Example:

What is the electric force exerted on a $-1.2 \mu\text{C}$ charge at a point where the electric field is 2500 N/C and is directed along the $+y$ axis.

A) -0.15 N

B) 0.15 N

C) -0.0030 N

D) 0.0030 N

E) 4.3 N

Solution:

What is the electric force exerted on a $-1.2 \mu\text{C}$ charge at a point where the electric field is 2500 N/C and is directed along the $+y$ axis.

A) -0.15 N

D) 0.0030 N

B) 0.15 N

E) 4.3 N

C) -0.0030 N

The force by an electric on a charged particle is equal to the charge of the particle multiplied by the electric field strength (from the homework assignment).

$$\text{Force} = (\text{charge of particle}) \times (\text{electric field})$$

$$\text{Force} = (-1.2 \mu\text{C}) \times (2500 \text{ N/C})$$

$$\text{Force} = (-1.2 \times 10^{-6} \text{ C}) \times (2500 \text{ N/C})$$

$$\text{Force} = \underline{-0.003 \text{ N}}$$

Example:

The electric potential at a certain point in space is 12 V.

What is the electric potential energy of a $-3.0 \mu\text{C}$ charge placed at that point? Hint: From the reading assignment, electric potential energy is equal to electric potential multiplied by charge.

- A) $+4 \mu\text{J}$
- B) $-4 \mu\text{J}$
- C) $+36 \mu\text{J}$
- D) $-36 \mu\text{J}$
- E) zero μJ

Solution:

The electric potential at a certain point in space is 12 V. What is the electric potential energy of a $-3.0 \mu\text{C}$ charge placed at that point? Hint: From the reading assignment, electric potential energy is equal to electric potential multiplied by charge.

- A) $+4 \mu\text{J}$
- B) $-4 \mu\text{J}$
- C) $+36 \mu\text{J}$
- D) $-36 \mu\text{J}$
- E) zero μJ

Electric potential energy is equal to electric potential multiplied by charge (from the reading assignment).

$$\text{PE} = (\text{electric potential}) \times (\text{charge})$$

$$\text{PE} = (12 \text{ V}) \times (-3.0 \mu\text{C})$$

$$\text{PE} = (12 \text{ V}) \times (-3.0 \times 10^{-6} \text{ C})$$

$$\text{PE} = -36 \times 10^{-6} \text{ J}$$

$$\text{PE} = \underline{-36 \mu\text{J}}$$