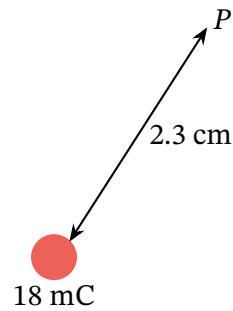


Worksheet: Absolute Electric Potential



Q1: Find the absolute electric potential at point P shown in the diagram. Use $8.988 \times 10^{-9} \text{ N} \cdot \text{m}^2/\text{C}^2$ for the value of Coulomb's constant. Answer to two significant figures.



- A $3.1 \times 10^{-7} \text{ V}$
- B $5.5 \times 10^{-9} \text{ V}$
- C $1.3 \times 10^{-10} \text{ V}$
- D $7.0 \times 10^{-9} \text{ V}$
- E $1.5 \times 10^{-7} \text{ V}$

Q2: A particle has a charge of 2.5 mC. Find the absolute electric potential at a point that is 15 cm away from the particle. Use $8.988 \times 10^{-9} \text{ N}\cdot\text{m}^2/\text{C}^2$ for the value of Coulomb's constant. Answer to two significant figures.

A $1.5 \times 10^{-12} \text{ V}$

B $3.7 \times 10^{-13} \text{ V}$

C $1.5 \times 10^{-10} \text{ V}$

D $2.5 \times 10^{-12} \text{ V}$

E $1.0 \times 10^{-9} \text{ V}$

Q3: Which of the following formulas correctly relates the absolute electric potential V caused by a charged particle to the charge of a particle q , the distance from the particle r , Coulomb's constant k , and the electric field due to a particle E ?

A $V = k \frac{q^2}{r}$

B $V = k \frac{q}{r}$

C $V = \frac{E}{r}$

D $V = k \frac{q^2}{r^2}$

E $V = k \frac{q}{r^2}$

Q4: Two charged objects are separated by a distance of $45 \mu\text{m}$. One object has a charge of 2.2 mC and the other object has a charge of -1.9 mC . What is the absolute electric potential at the point halfway between the objects? Use $8.988 \times 10^{-9} \text{ N}\cdot\text{m}^2/\text{C}^2$ for the value of Coulomb's constant. Answer to two significant figures.

A $1.2 \times 10^{-7} \text{ V}$

B $1.2 \times 10^{-6} \text{ V}$

C $1.9 \times 10^{-6} \text{ V}$

D $5.4 \times 10^{-7} \text{ V}$

E 0 V

Q5: An electron passes an object with a charge of 3.3 mC , and at the point of the electron's closest approach distance d , the value of the absolute electric potential due to the object is $2.8 \mu\text{V}$. Find d . Use $8.988 \times 10^{-9} \text{ N}\cdot\text{m}^2/\text{C}^2$ for the value of Coulomb's constant. Answer to two significant figures.

A 0.011 m

B 0.035 m

C $3.5 \times 10^{-8} \text{ m}$

D $1.1 \times 10^{-5} \text{ m}$

E 0.30 m

Q6: Two charged objects, each with a charge of $28 \mu\text{C}$, are separated by a distance of 15 mm. What is the absolute electric potential at the point halfway between the objects? Use $8.988 \times 10^{-9} \text{ N} \cdot \text{m}^2/\text{C}^2$ for the value of Coulomb's constant. Answer to two significant figures.

A $3.4 \times 10^{-11} \text{ V}$

B $6.7 \times 10^{-11} \text{ V}$

C $8.9 \times 10^{-9} \text{ V}$

D $6.7 \times 10^{-10} \text{ V}$

E 0 V