

## Electric Potential Worksheet

1. The potential at a distance of 25 cm from a point charge is  $-6.4 \times 10^4$  V. What is the value of the point charge? ( $-1.8 \times 10^{-6}$  C)
2. Calculate the electric potential 0.50 m away from a  $4.5 \times 10^{-4}$  C point charge. ( $8.1 \times 10^6$  V)
3. How much energy is acquired by an electron by moving through a potential difference of  $2.5 \times 10^4$  V? ( $4.0 \times 10^{-15}$  J)
4. Calculate the magnitude of the electric field in a parallel plate apparatus whose plates are 5.0 mm apart and have a potential difference of 300 V between them. ( $6.0 \times 10^4$  N/C)
5. The potential difference between two large parallel plates is 450 V. If the plates are 2.0 cm apart what is the magnitude of the electric field between them? ( $2.3 \times 10^4$  N/C)
6. The magnitude of the electric field between two parallel plates is  $1.5 \times 10^4$  N/C. If the plates are 1.2 cm apart, what is the potential difference between the plates? (180 V)
7. An electron enters an electric field between two parallel plates  $1.5 \times 10^{-4}$  m apart with a velocity of  $3.0 \times 10^5$  m/s to the left. Upon exiting the field, the electron has a new velocity of  $2.5 \times 10^6$  m/s to the left. Calculate the value of the potential difference between the two parallel plates. (17.5 V)
8. A proton is accelerated from rest through a potential difference of 250 V. Calculate the final speed of the proton. ( $2.2 \times 10^5$  m/s)