Attributes of Space and of Charged Particles

	planar source	point source	SI unit
electric field	$\vec{E} = E_x \hat{i}$	$\vec{E} = \frac{kQ}{r^2}\hat{r}$	[N/C]=[V/m]
electric potential	$V = -E_x x$	$V = \frac{kQ}{r}$	[V]=[J/C]
electric force	$\vec{F} = q\vec{E} = qE_x \hat{i}$	$\vec{F} = q\vec{E} = \frac{kQq}{r^2}\hat{r}$	[N]
electric potential energy	$U = qV = -qE_x x$	$U = qV = \frac{kQq}{r}$	[J]

Electric field $\vec{E}$ is present at points in space.
Points in space are at electric potential V.

Charged particles experience electric force $\vec{F} = q\vec{E}$.
Charged particles have electric potential energy $U = qV$.