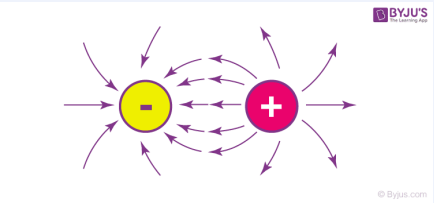
# Electrostatics Cheat Sheet

by Taneesha (Taneesha) via cheatography.com/194359/cs/40527/

## Basic notations

| | |
|---|---|
| K of vacuum | $9 \times 10^9$ |
| E | electric field |
| q | charge |
| r | distance between 2 charges |
| a | radius of circle |
| V | electrical potential due to a point charge |
| U | electric potential energy |

## electrostatics




## Electric field due to point charge

$E = Kq/r^2$

## E due to a spherical shell of charge

| | |
|---|---|
| When point is outside the shell | $E = Kq/r^2$ |
| When point is inside the shell | $E = 0$ |
| When point is on the surface | E max = $Kq/a^2$ |

here r is the distance between the centre of the circle and a point outside it

## E due to a nonconducting charged sphere

| | |
|---|---|
| When point is outside the shell | $E = Kq/r^2$ |
| When point is inside the shell | $E = Kqr/a^3$ |
| When point is on the surface | E max = $Kq/a^2$ |

here r is the distance between the centre of the circle and a point outside it

## Electrical potential due to point charge

$V = Kq/r$

## V due to conducting charged sphere

| | |
|---|---|
| When point is outside the shell | $V = Kq/r$ |
| when point is inside the shell | $V = Kq/a$ |
| when point is on the surface | $V = Kq/a$ |

## U of a system of charges

1. 2 point charges -

$U = Kq1q2/r12$

2. 3 point charges -

$U = K (q1q2/r12 + q2q3/r23 + q1q3/r13)$

r12, r23, r13 are all distances between the corresponding charges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