# Elbow method

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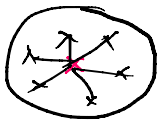
## How to Select optimal value for K?

### Elbow method

* Elbow is one of the iterative method which is used to find optimal value for k.
* Elbow method works iteratively and calculate wcss for different K-values.



wcss → within cluster sum of squares

$$wcss = \sum_{i=1}^{n} (x_i - c_i)^2$$

wcss is sum of squared distance between each point and Centroid in a cluster.

$x_i$ → observation

$c_i$ → Centroid.

and Centroid inve -

$x_i$ → observation

$C_i$ → Centroid.

## How it works?

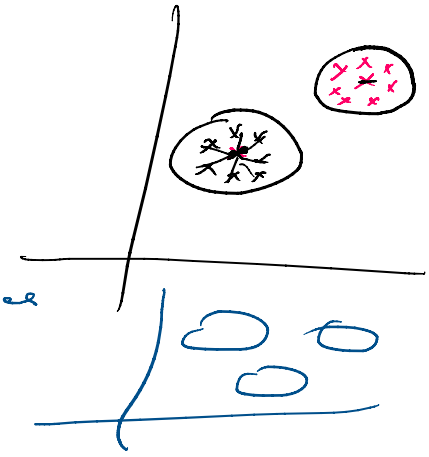
* Start with some K - no of cluster

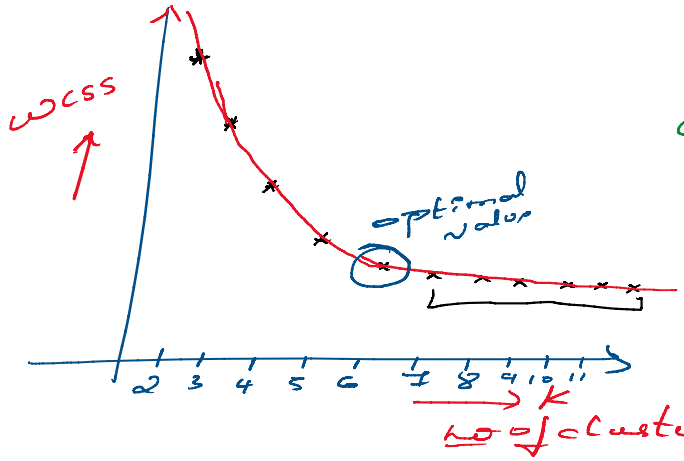
  K = [2, 3, 4, 5, 6, 7, 8, 9, 10]

* K = 2 , apply K-Mean
* It will find wcss

  $wcss = \sum (x_i - c_i)^2$

* Above step will repeat for different K - value
* plot a graph of K versus wcss






Choose k value after which the wcss value is constant

2 to 10