```
import matplotlib.pyplot as plt

from sklearn.cluster import KMeans

x = [25,34,22,27,33,33,31,22,35,34,67,54,57,43,50,57,59,52,65,47,49,48,35,33,44,45,38,43,51,46]
y = [79,51,53,78,59,74,73,57,69,75,51,32,40,47,53,36,35,58,59,50,25,20,14,12,20,5,29,27,8,7]

import numpy as np

data = np.array([x, y])

data.shape
```

```
(2, 30)
```

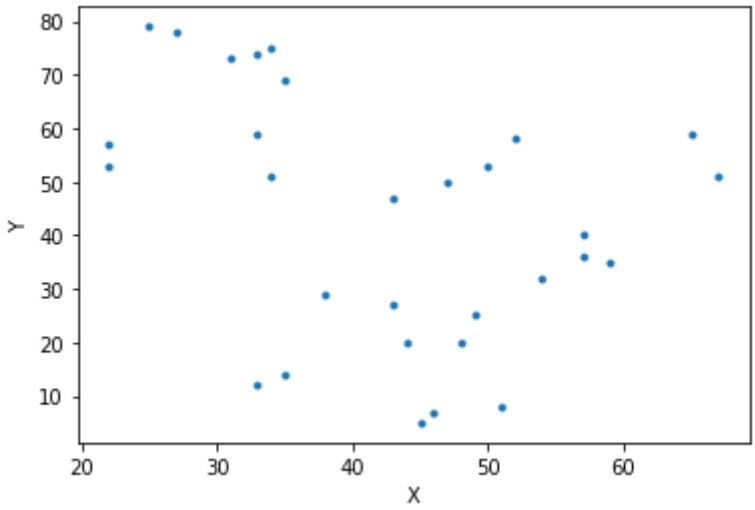
```
data2 = data.transpose()

data2.shape
```

```
(30, 2)
```

```
plt.plot(x,y, '.')
plt.xlabel('X')
plt.ylabel('Y')
```

```
Text(0, 0.5, 'Y')
```




```
kmeans = KMeans(n_clusters=3)

%%time
kmeans.fit(data2)
```

```
CPU times: user 26.8 ms, sys: 0 ns, total: 26.8 ms
Wall time: 29 ms
KMeans(algorithm='auto', copy_x=True, init='k-means++', max_iter=300,
       n_clusters=3, n_init=10, n_jobs=None, precompute_distances='auto',
       random_state=None, tol=0.0001, verbose=0)
```

```
centroids = kmeans.cluster_centers_
```

```
print(centroids)
```

```
[[29.6 66.8]
 [55.1 46.1]
 [43.2 16.7]]
```

```
plt.plot(x,y, '.')
plt.plot(centroids[:,0], centroids[:, 1], 'o')
plt.xlabel('X')
plt.ylabel('Y')
```

```
Text(0, 0.5, 'Y')
```