K-Means

In [1]:
```
import numpy as np
from matplotlib import pyplot as plt
```

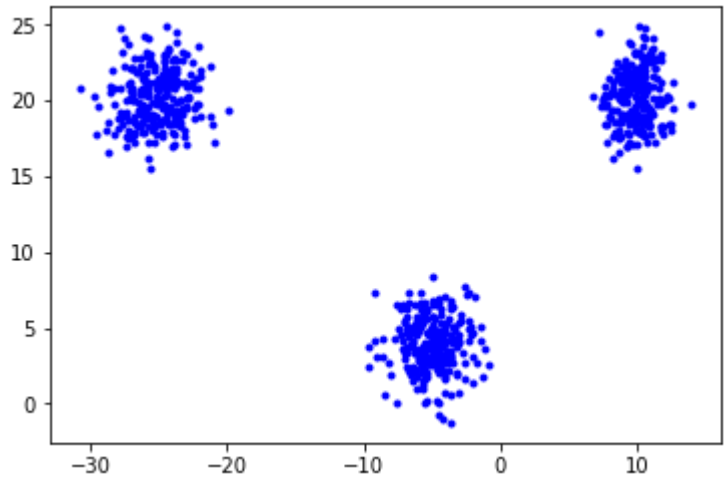
In [2]:
```
N=250


d1 = 1.6*np.random.randn(N,2)
d1[:,0]= d1[:,0] - 5
d1[:,1]= d1[:,1] + 4
plt.plot(d1[:,0],d1[:,1],'.b')


d2 = 1.8*np.random.randn(N,2)
d2[:,0]= d2[:,0] - 25
d2[:,1]= d2[:,1] + 20
plt.plot(d2[:,0],d2[:,1],'.b')


d3 = 1.25*np.random.randn(N,2)
d3[:,0]= d3[:,0] + 10
d3[:,1]= d3[:,1] + 12
plt.plot(d3[:,0],d2[:,1],'.b')
```

Out[2]:
```
[<matplotlib.lines.Line2D at 0xb2ce828>]
```



In [3]:
```
from sklearn.cluster import KMeans

n_clusters =  3

X = np.concatenate((d1,d2,d3))

def implement_kmeans (n_clusters):
    kmeans = KMeans(n_clusters=n_clusters, random_state=0).fit(X)
    kmeans.cluster_centers_.shape

    plt.plot(X[:,0],X[:,1],'.')
    plt.plot(kmeans.cluster_centers_[:,0],kmeans.cluster_centers_[:,1],'o')
```

In [4]:
```
from ipywidgets import interact, HTML, FloatSlider
interact(implement_kmeans,n_clusters=(1,10,1))
```

Out[4]:
```
<function __main__.implement_kmeans>
```