In [1]:
```
import numpy as np
import pandas as pd
```

In [10]:
```
from random import randint
```

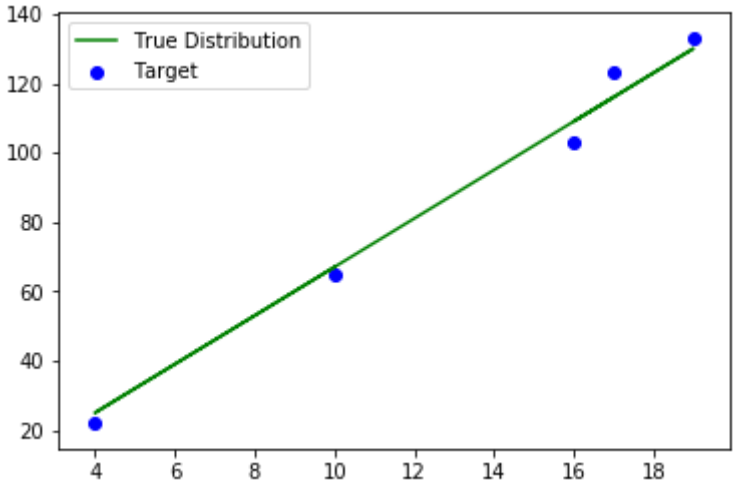
In [2]:
```
def reg_fun(x):
    return 7*x-3
```

In [22]:
```
x = []
y = []
for _ in range(5):
    t = randint(0,20)
    print(t,reg_fun(t))
    x.append(t)
    y.append(reg_fun(t) + randint(-10,10))
```

```
10 67
4 25
19 130
16 109
17 116
```

In [15]:
```
from matplotlib import pyplot as plt
%matplotlib inline
```

In [30]:
```
plt.plot(x,[reg_fun(i) for i in x],color='green',label='True Distribution')
plt.scatter(x,y,color='blue',label='Target')
plt.legend()
plt.show()
```



In [32]:
```
xbar = np.mean(x)
ybar = np.mean(y)
d = 0
n = 0
for i in range(5):
    d += (x[i]-xbar)**2
    n += (x[i]-xbar)*(y[i]-ybar)
    print(np.round((x[i]-xbar)**2,2),np.round((x[i]-xbar)*(y[i]-ybar),2))
w1 = n/d
w0 = ybar - w1*xbar
```

```
10.24 77.44
84.64 618.24
33.64 254.04
7.84 38.64
14.44 128.44
```

In [33]:
```
print('xbar : ',xbar,'ybar : ',ybar,'w0 : ',w0,'w1 : ',w1)
```

```
xbar :  13.2 ybar :  89.2 w0 :  -8.557029177718832 w1 :  7.405835543766579
```

In [34]:
```
print('n :',n,'d :',d)
```

```
n : 1116.8 d : 150.79999999999998
```

In [26]:
```
def model(w0,w1,x):
    return w0 + w1*x
```

In [28]:
```
plt.plot(x,[model(w0,w1,i) for i in x],color='red',label='Predicted')
plt.scatter(x,y,color='blue',label='Target')
plt.legend()
plt.show()
```