GEOMETRIC DISTRIBUTION

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CODE FOR VARYING p

```
import numpy as np
import matplotlib.pyplot as plt
from matplotlib import pyplot



x = []
for i in range(1,15):
    x.append(i)

y=[]*10
p=0.2
for i in range(5):
    y=[]
    for j in range(len(x)):
        num= (p)*((1-p)**(x[j]-1))
        y.append(num)

    plt.bar(x,y,label='p={}'.format(p))

    p=p+0.2

plt.legend()
```

CODE FOR MEAN AND VARIANCE for p=0.2

```
import numpy as np
import matplotlib.pyplot as plt
p=np.arange(0.2,1,0.1)
mean=(1)/(p)
var=(1-p)/(p*p)
plt.plot(p,mean,label='mean p=0.2')
plt.plot(p,var,label='varinace p=0.2')
```

```
plt.legend()
```

CENTRAL LIMIT THEOREM VERIFICATION

```
p=0.2

ns=10
for i in range(4):

    samplemean=[]
    for j in range(ns):
        sum=0

        x = np.random.geometric(0.2,n)
        for k in x:
            sum=sum+k
        samplemean.append(sum/n)
    fig, ax = plt.subplots(figsize =(10, 7))
    ax.hist(samplemean, bins ='auto')

    plt.title("NUMBER OF SAMPLES ={}".format(ns))
    plt.show()
    ns=ns*10
```