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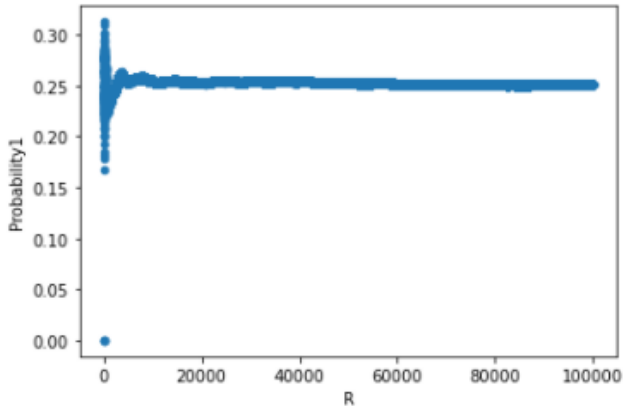
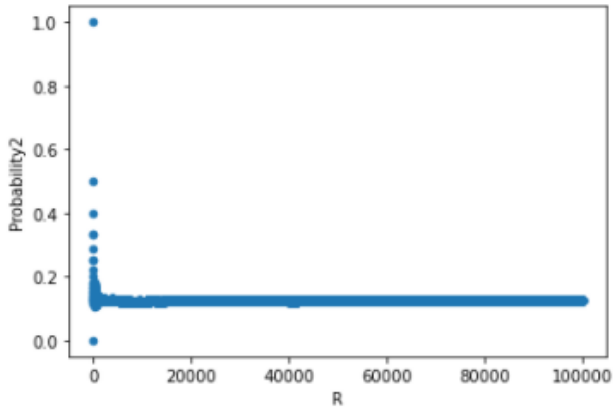
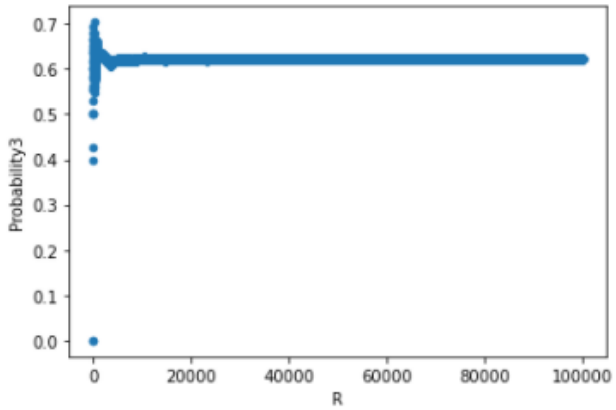
In [9]:

```
import pandas as pd
import matplotlib.pyplot as plt
import random

def probabilitySuccess(a,b):
    if random.randint(1,b)<=a:
        return True
    return False

r=[0]
b1=[0]
b2=[0]
b3=[0]
currentProbability1=[0]
currentProbability2=[0]
currentProbability3=[0]

for i in range(100000):
    notFound=True
    r.append(i+1)
    b1.append(b1[-1])
    b2.append(b2[-1])
    b3.append(b3[-1])
    while notFound:
        b=random.randint(1,6)
        if b<=2:
            if probabilitySuccess(2,6):
                b1[-1]+=1
                notFound=False
        elif b<=3:
            if probabilitySuccess(1,3):
                b2[-1]+=1
                notFound=False
        else:
            if probabilitySuccess(5,9):
                b3[-1]+=1
                notFound=False
    currentProbability1.append(float(b1[-1]/r[-1]))
    currentProbability2.append(float(b2[-1]/r[-1]))
    currentProbability3.append(float(b3[-1]/r[-1]))

data = {'R':r,'Probability1':currentProbability1}
df = pd.DataFrame(data,columns=['R','Probability1'])
df.plot(x ='R', y='Probability1', kind = 'scatter')
plt.show()
data = {'R':r,'Probability2':currentProbability2}
df = pd.DataFrame(data,columns=['R','Probability2'])
df.plot(x ='R', y='Probability2', kind = 'scatter')
plt.show()
data = {'R':r,'Probability3':currentProbability3}
df = pd.DataFrame(data,columns=['R','Probability3'])
df.plot(x ='R', y='Probability3', kind = 'scatter')
plt.show()
```

```
plt.show()
```


Probability1
0.30
0.25
0.20
0.15
0.10
0.05
0.00
0
20000
40000
60000
80000
100000
R


Probability2
1.0
0.8
0.6
0.4
0.2
0.0
0
20000
40000
60000
80000
100000
R


Probability3
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0
20000
40000
60000
80000
100000
R