Simulations en classe de première

Représentation de la moyenne des valeurs des 100 échantillons

```
from math import*
from numpy import*
from random import*
from matplotlib import*
from matplotlib.pyplot import*

def moyenne(n):
    L1=[]
    for j in range(n):
        P=random()
        if P<=0.6:
            P=1000
        elif P<=0.8:
            P=1050
        else:
            P=1100
        L1.append(P)
    return(mean(L1))

def graph(n,E):
    for i in range(E):
        plot(i,moyenne(n),'+',color='red')
    axis([0,100,1000,1100])
    plot([0,100],[1022,1022],color='green')
    plot([0,100],[1038,1038],color='green')
    show()
graph(50,100)
```

Proportion des échantillons tels que la moyenne m vérifie $\mu-\frac{2\sigma}{\sqrt{n}}\leq m\leq\mu+\frac{2\sigma}{\sqrt{n}}$

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def écart(n,N):
    Compt=0
    for i in range(N):
        if abs(moyenne(n)-1030)<=8:
            Compt=Compt+1
    return Compt/N

def graphe(n,N,E):
    L=[]
    for k in range(E):
        L.append(écart(n,N))
    axis([0,E,0.0,1])
    xlabel("Nombre d'échantilons")
    ylabel("Proportions observées en bleu")
    title("Programme première")
    grid(True)
    plot(L,'b-')
    show()
graphe(100,100,100)
```