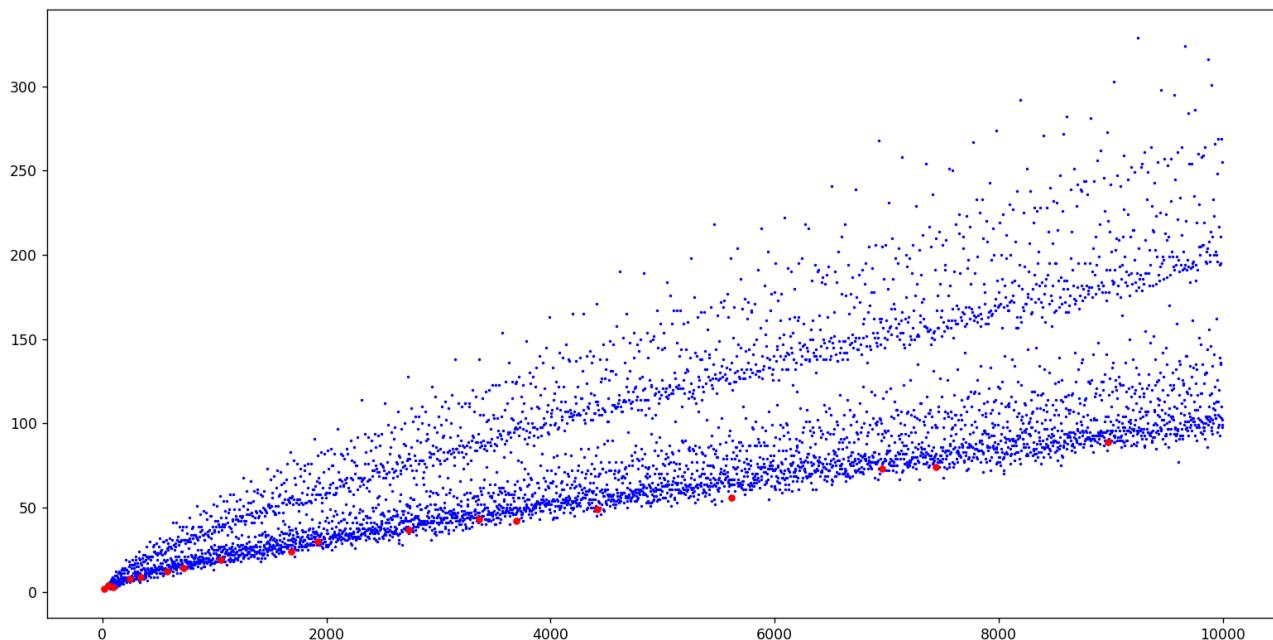


Comètes, la compil (Denise Vella-Chemla, août 2023).

On montre dans les graphiques ci-après comment se positionnent les nombres de décompositions de Goldbach de certains nombres en fonction de la forme de leur factorisation, à titre illustratif, pour apprécier quels sont les entiers qui ont plus ou moins de décompositions comparativement les uns aux autres.

1) Comètes de visualisation (en rouge, sur comète générale en bleu, p, q deux nombres premiers) des $2p^2$, des $2p^3$, des $6p^2$, des $6p^4$, des $2pq$, des $6pq$:



```
import math
from math import sqrt
import matplotlib.pyplot as plt
import time

def prime(atester):
    k = 2
    if atester in [0, 1]: return False
    if atester in [2, 3, 5, 7]: return True
    while True:
        if k * k > atester: return True
        else:
            if atester % k == 0: return False
            else: k = k + 1
```

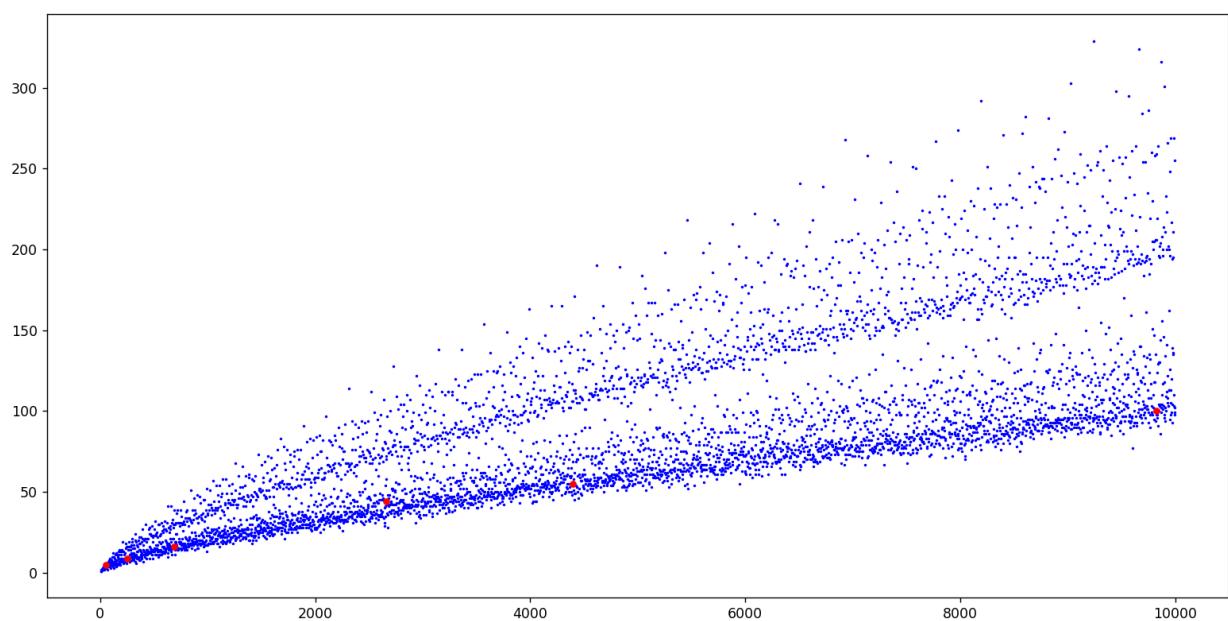
```

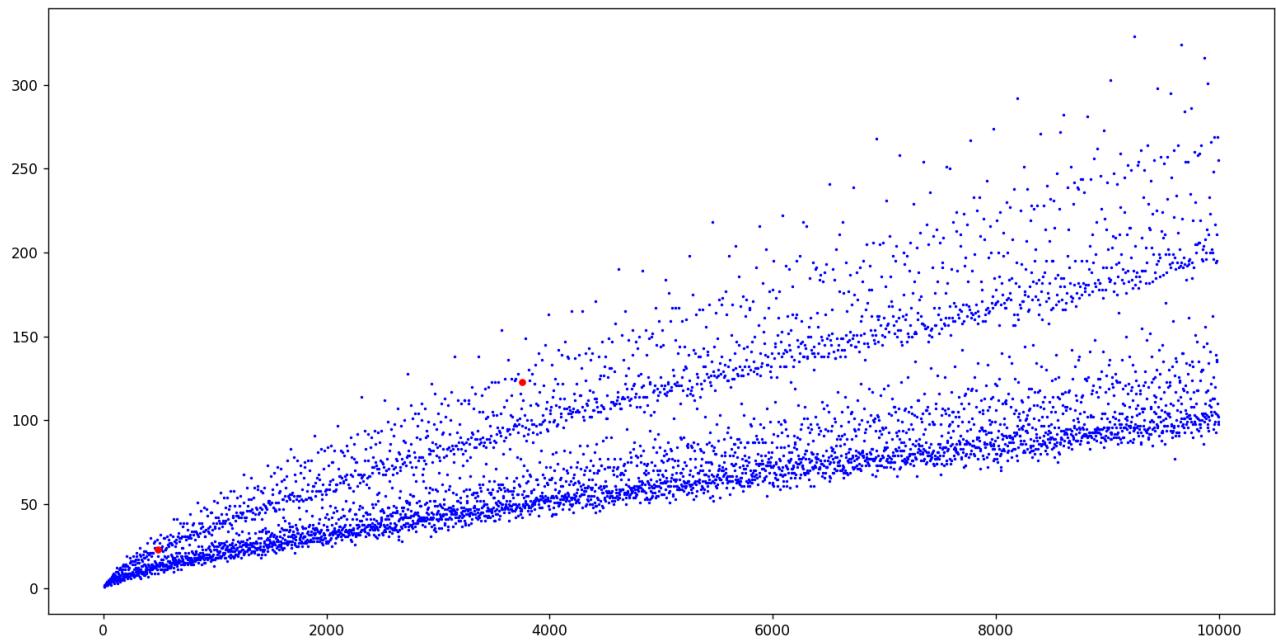
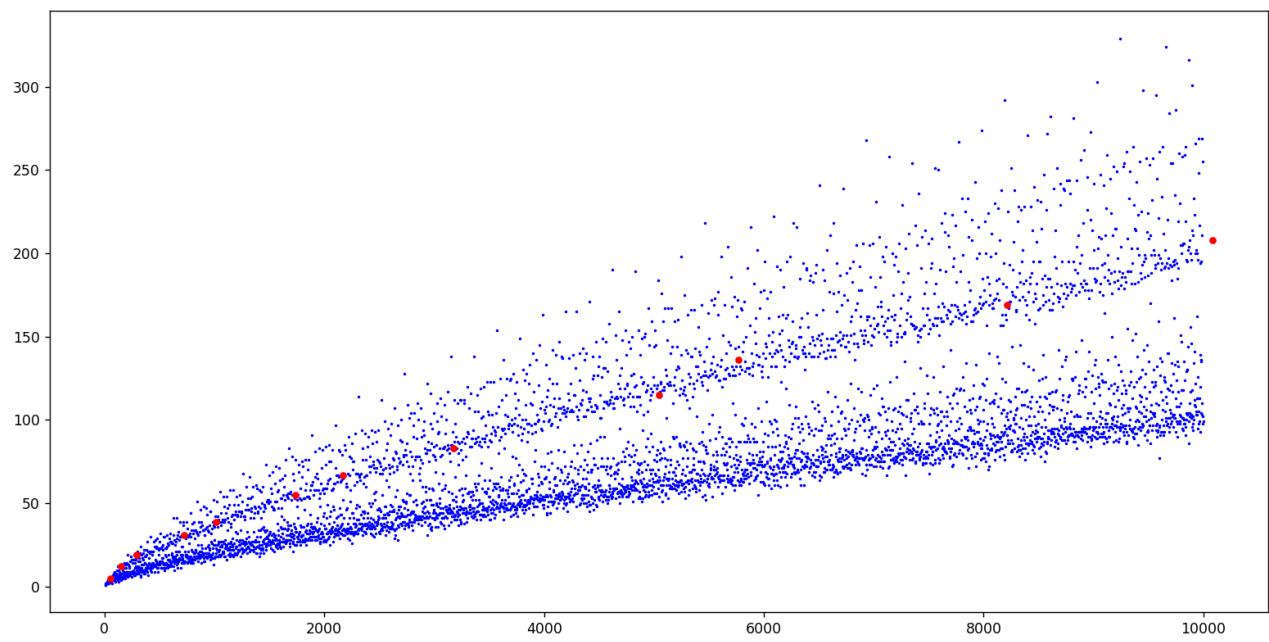
tic=time.time()
lesx = []
lesy = []
for n in range(6,10000,2):
    lesx.append(n)
    moitie = int(n/2)
    nbdg = 0
    for x in range(3,moitie+1,2):
        if prime(x) and prime(n-x):
            nbdg = nbdg+1
    lesy.append(nbdg)
plt.scatter(lesx,lesy,s=1,color='blue')

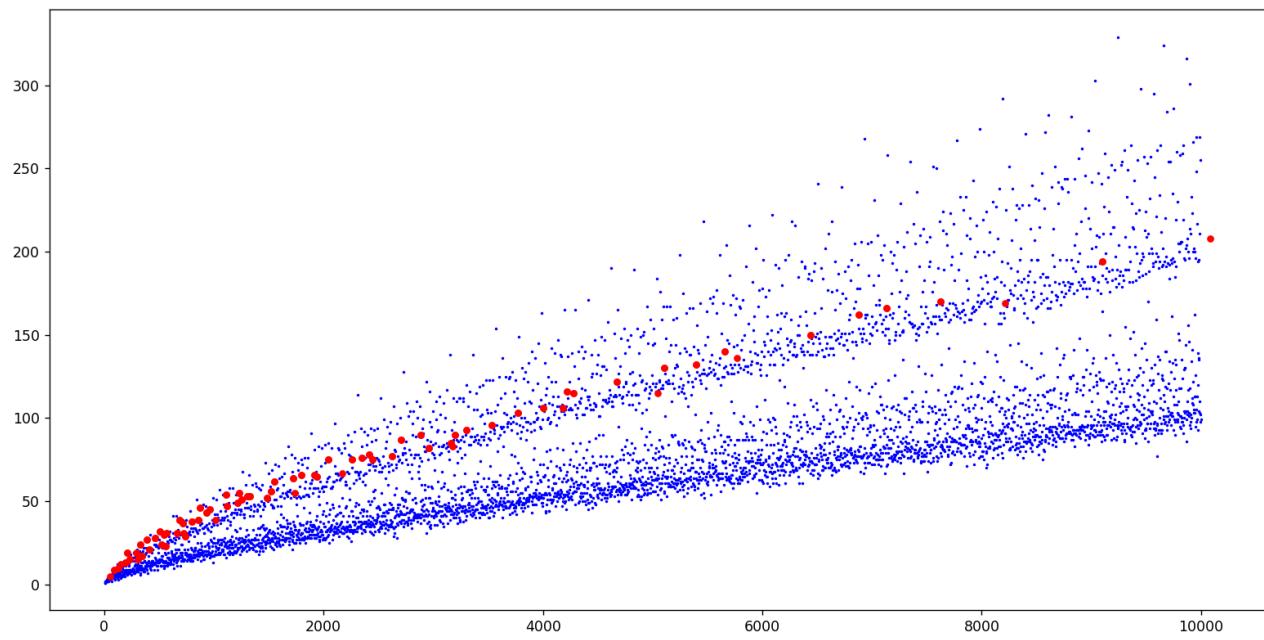
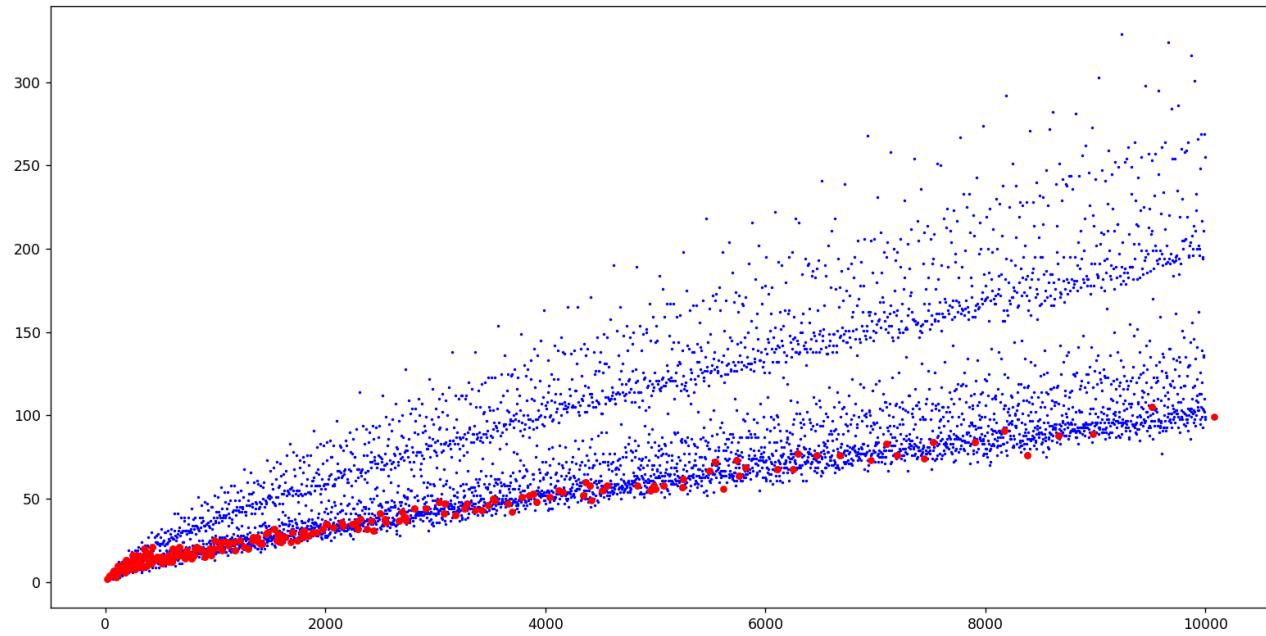
les4k = []
for k in range(1,2500):
    if prime(k):
        les4k.append(4*k)
print(les4k)
lesx = []
lesy = []
for n in les4k:
    lesx.append(n)
    moitie = int(n/2)
    nbdg = 0
    for x in range(3,moitie+1,2):
        if prime(x) and prime(n-x):
            nbdg = nbdg+1
    lesy.append(nbdg)
plt.scatter(lesx,lesy,s=16,color='red')

plt.show()
tac=time.time()
print('execution en ',tac-tic,' s.')

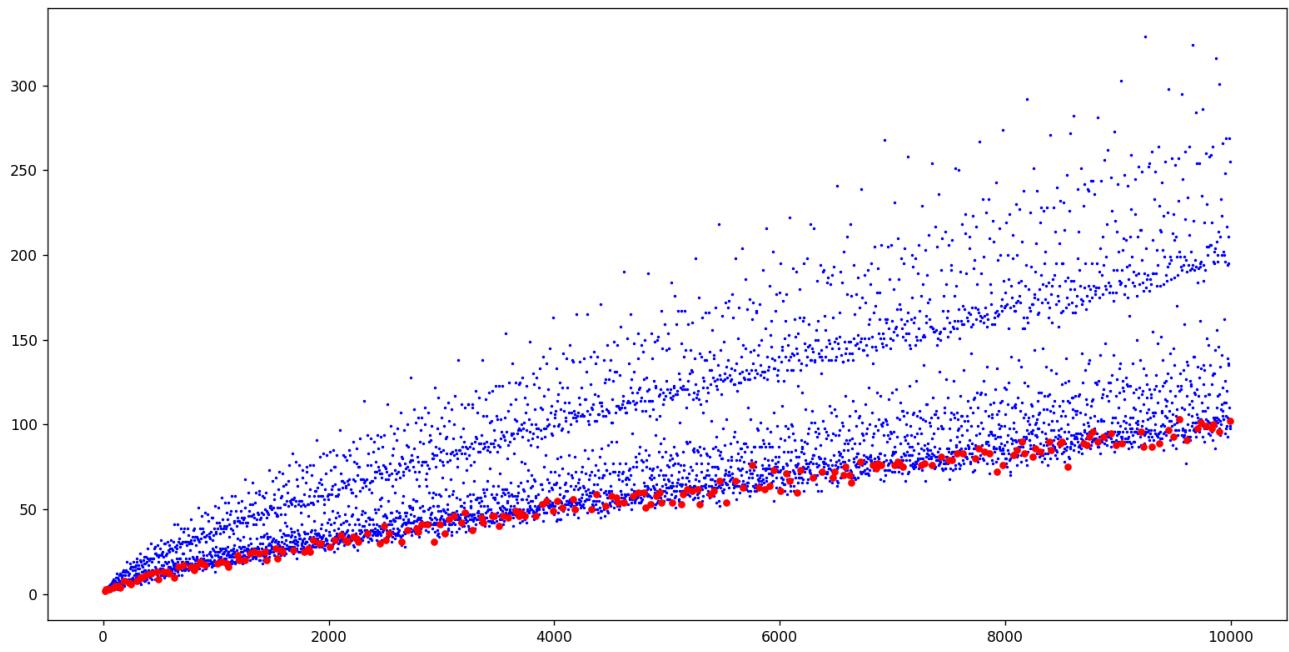
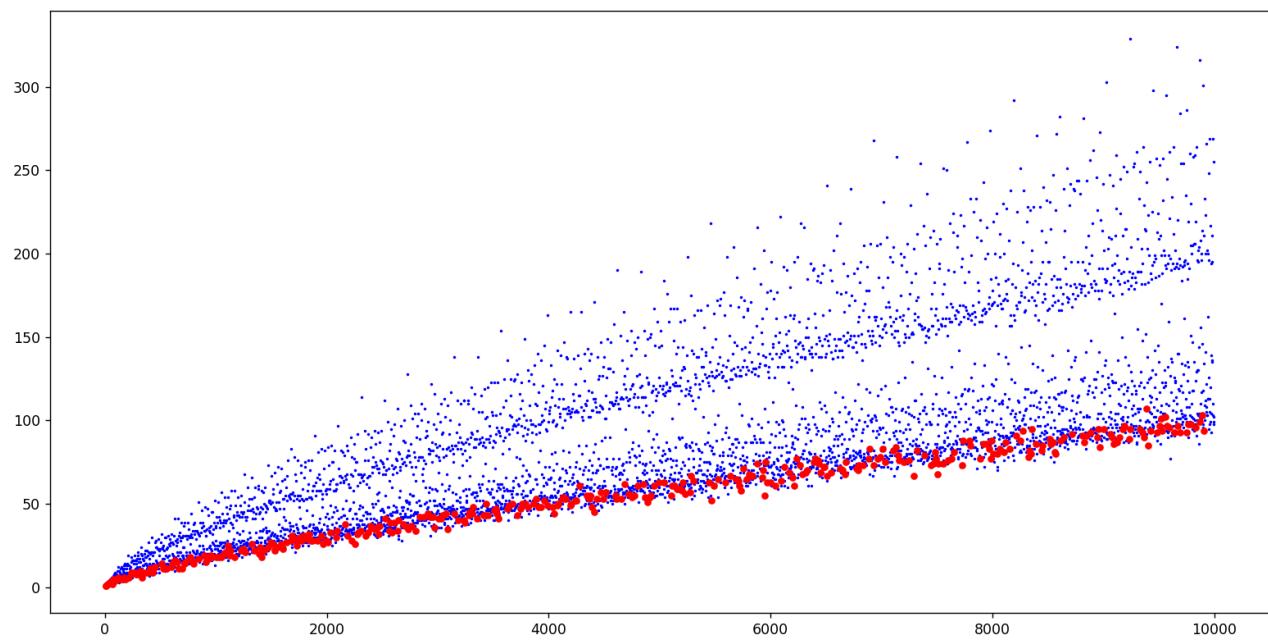
```

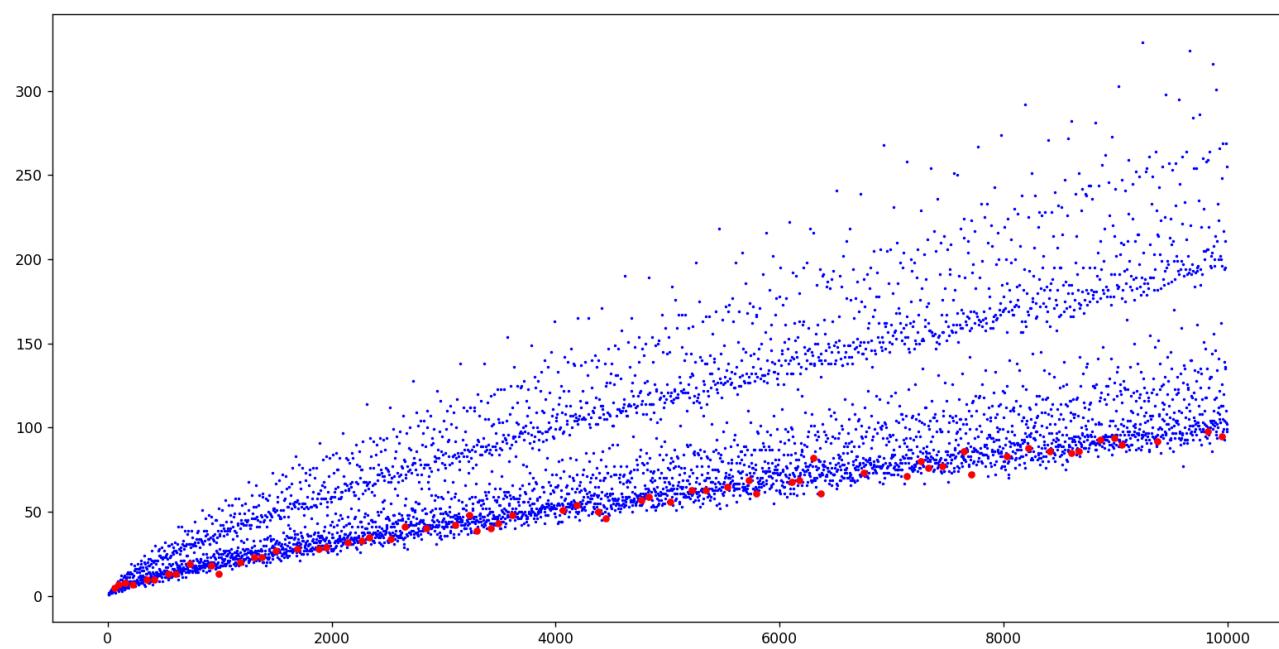
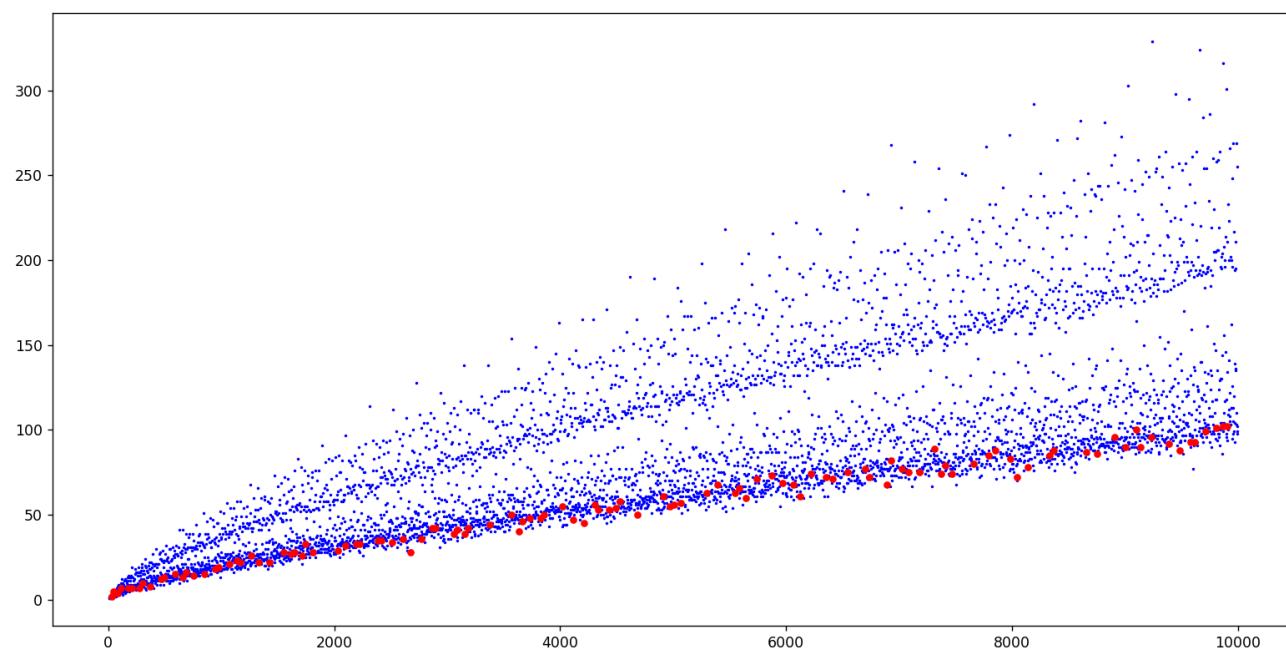


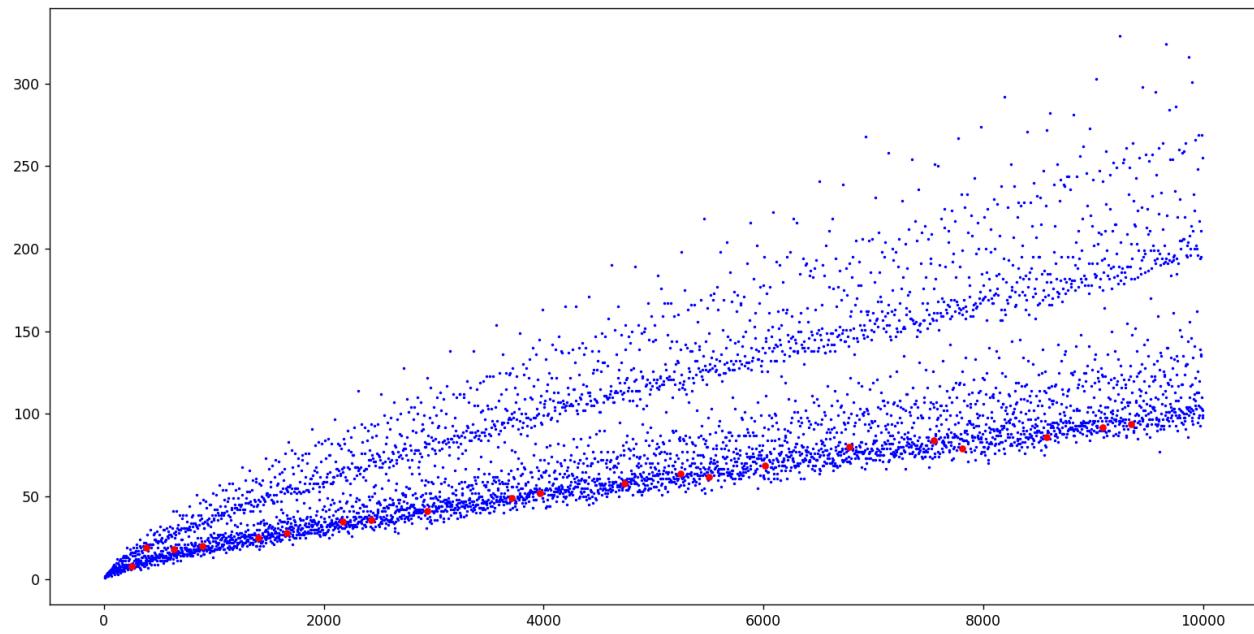
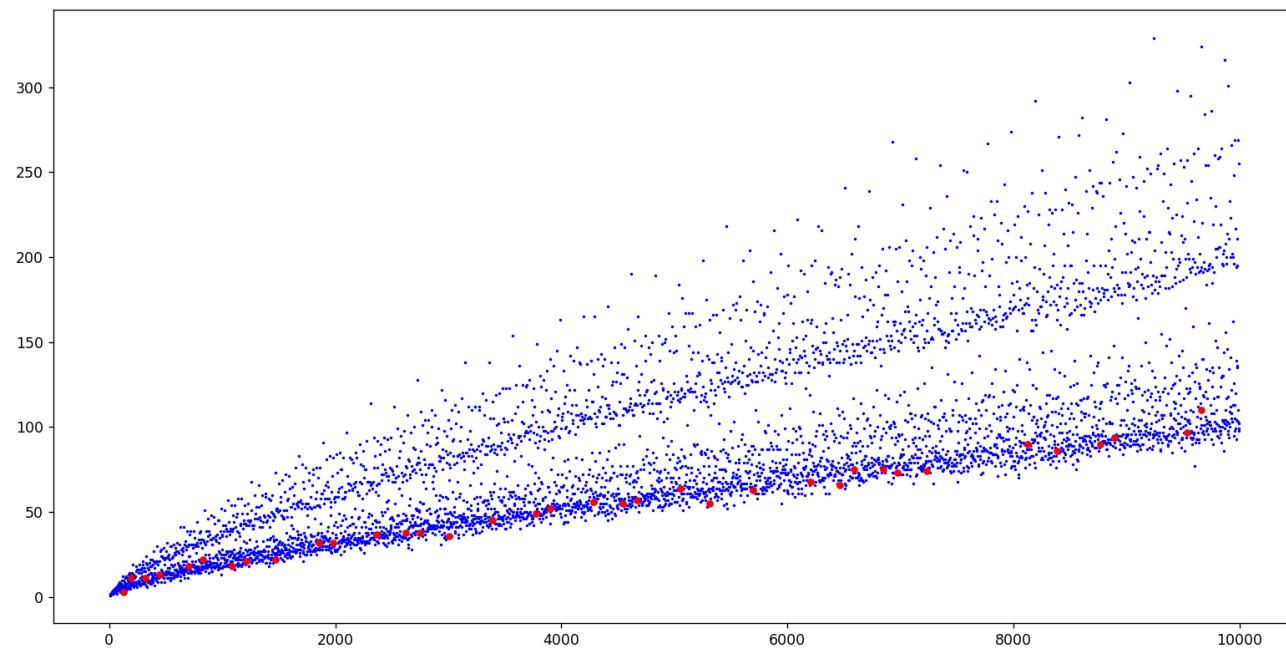




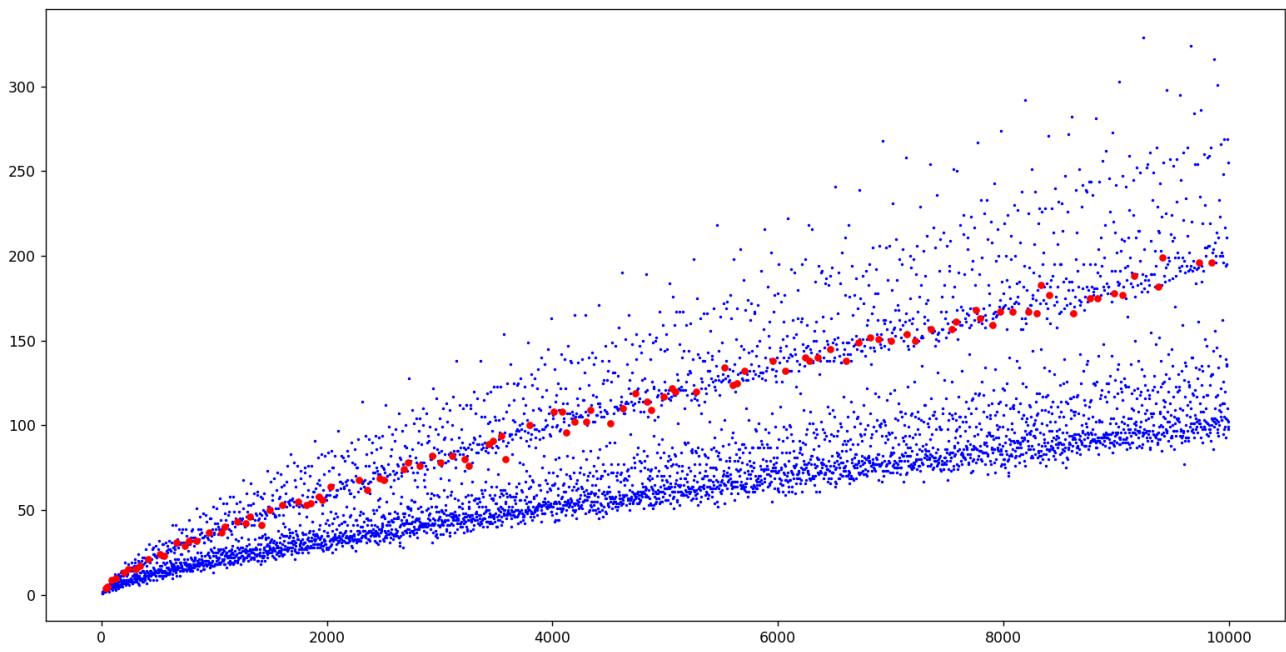
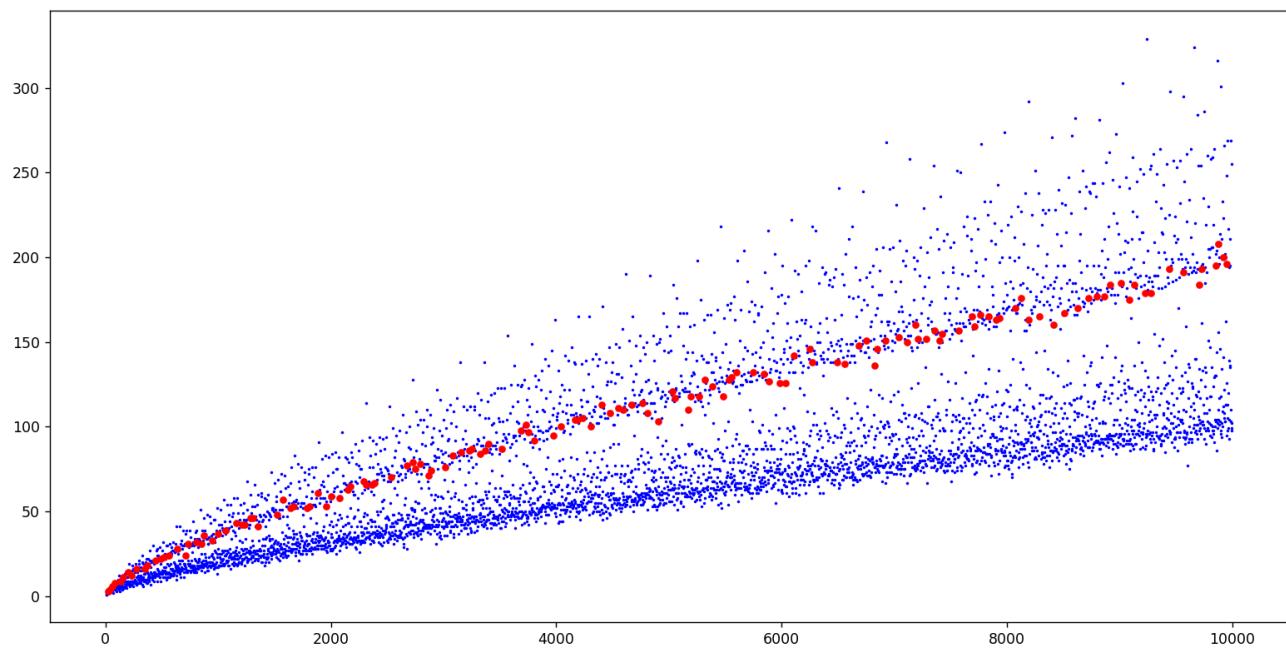
2) Comètes de visualisation des puissances de 2 (en rouge, sur comète générale en bleu, p un nombre premier) des $4p$, des $8p$, des $16p$, des $32p$, des $64p$, des $128p$:

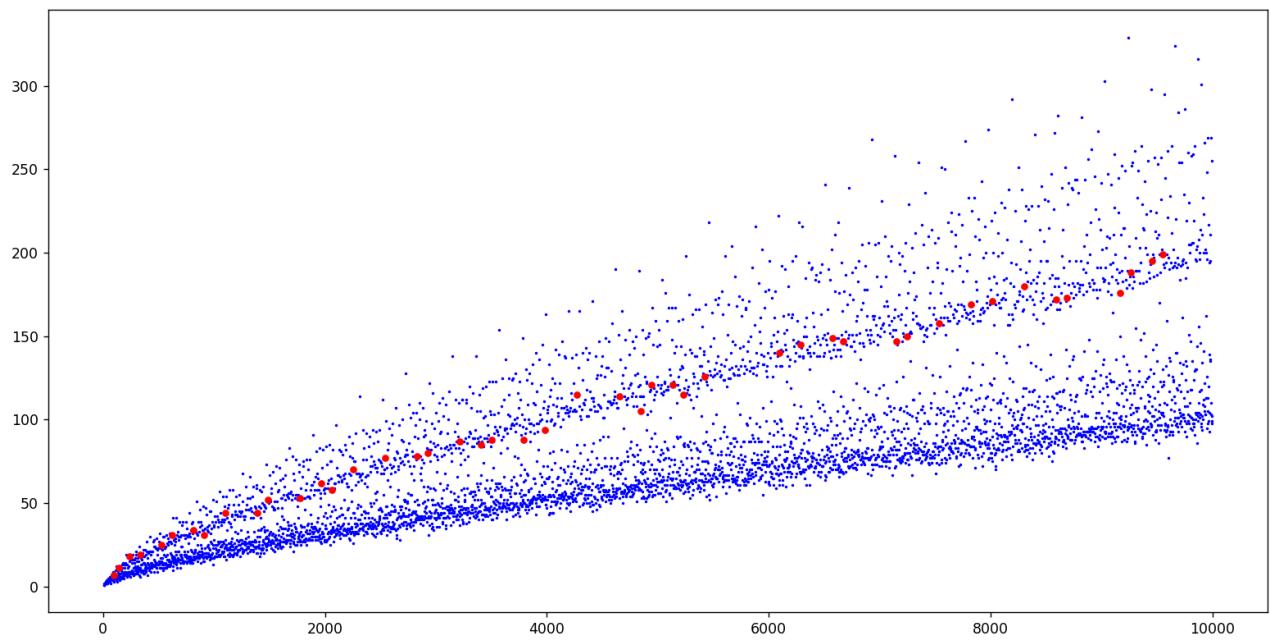
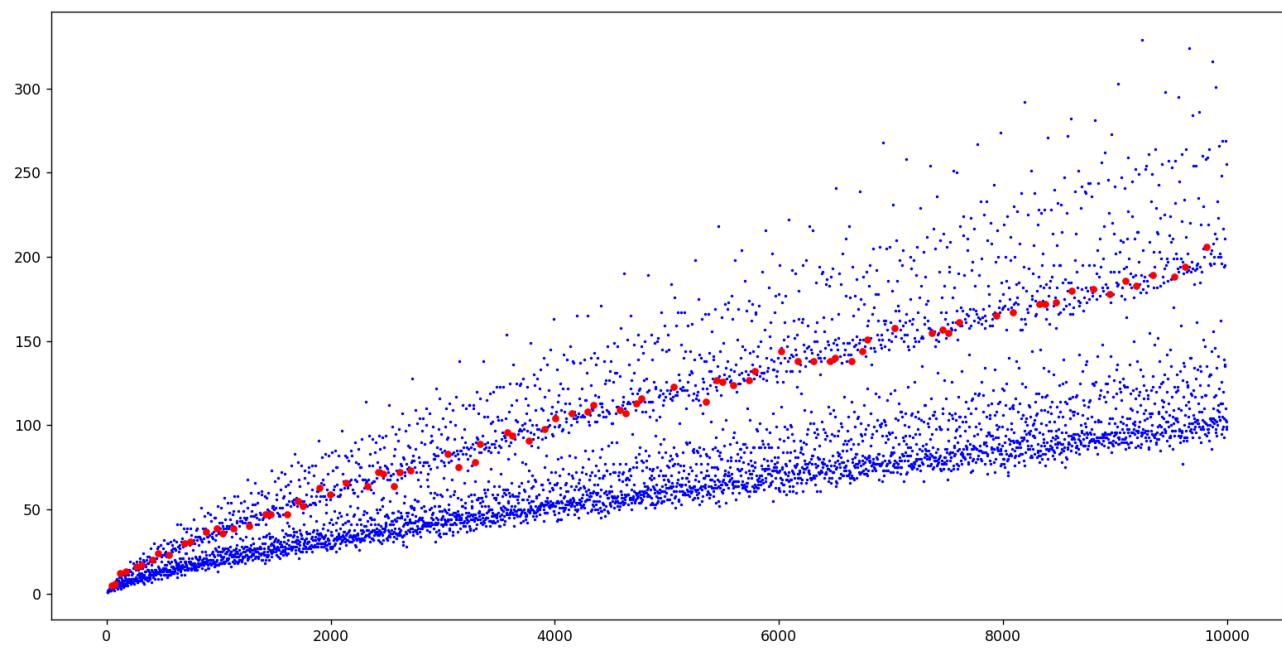


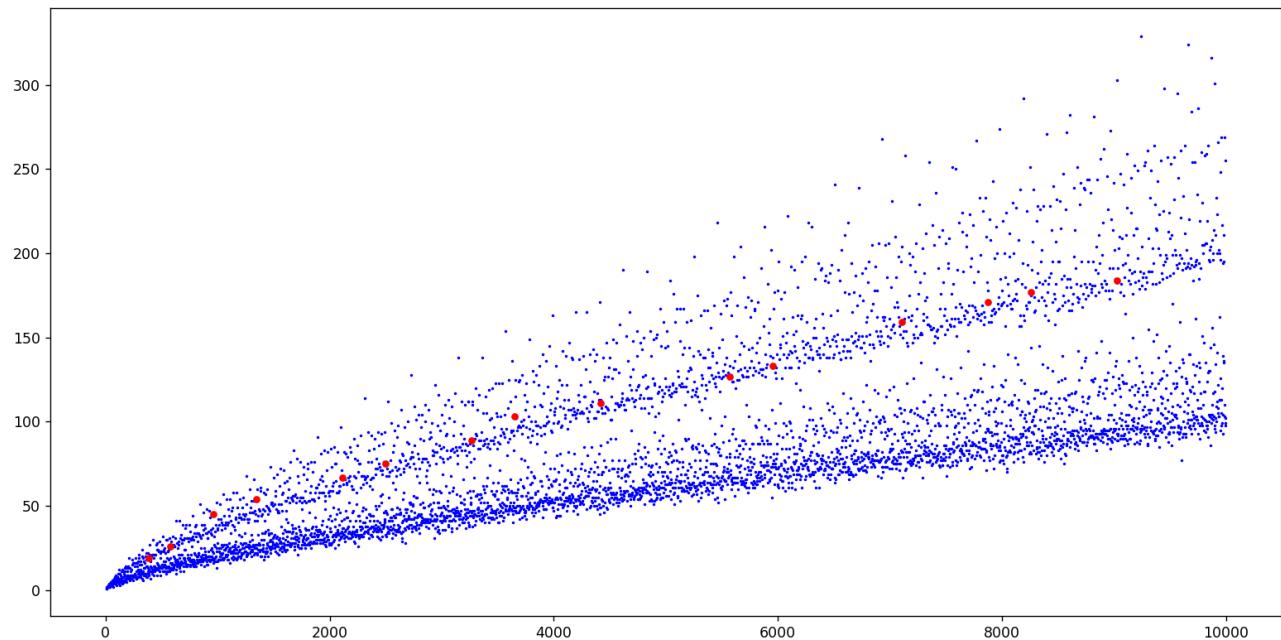
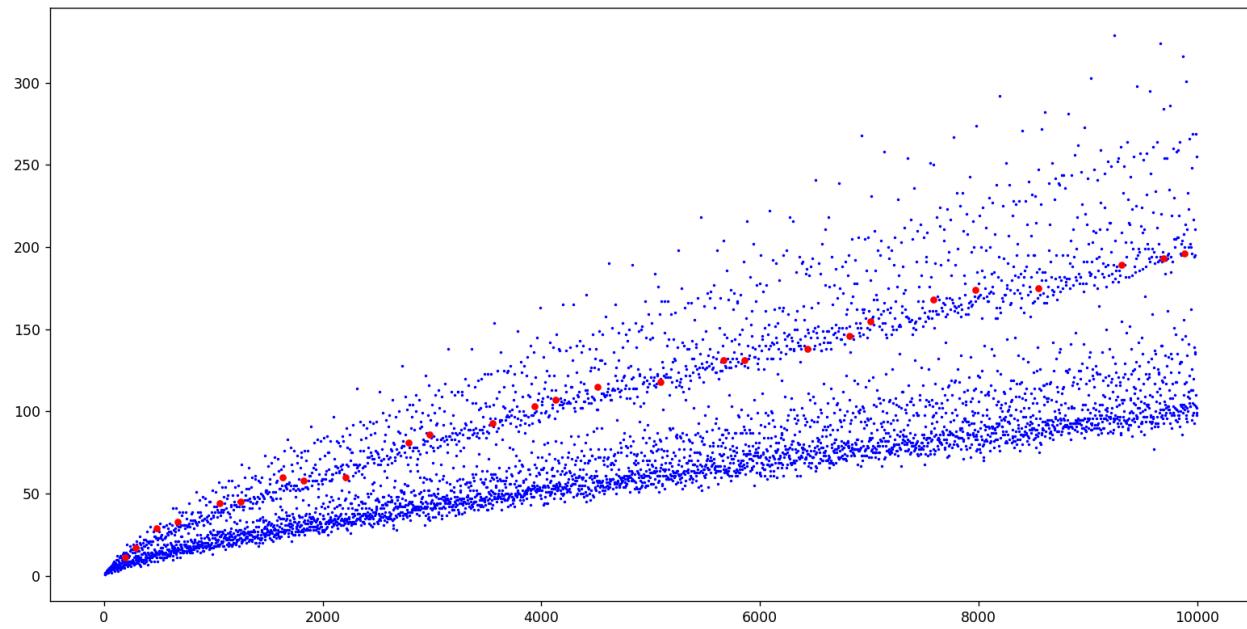




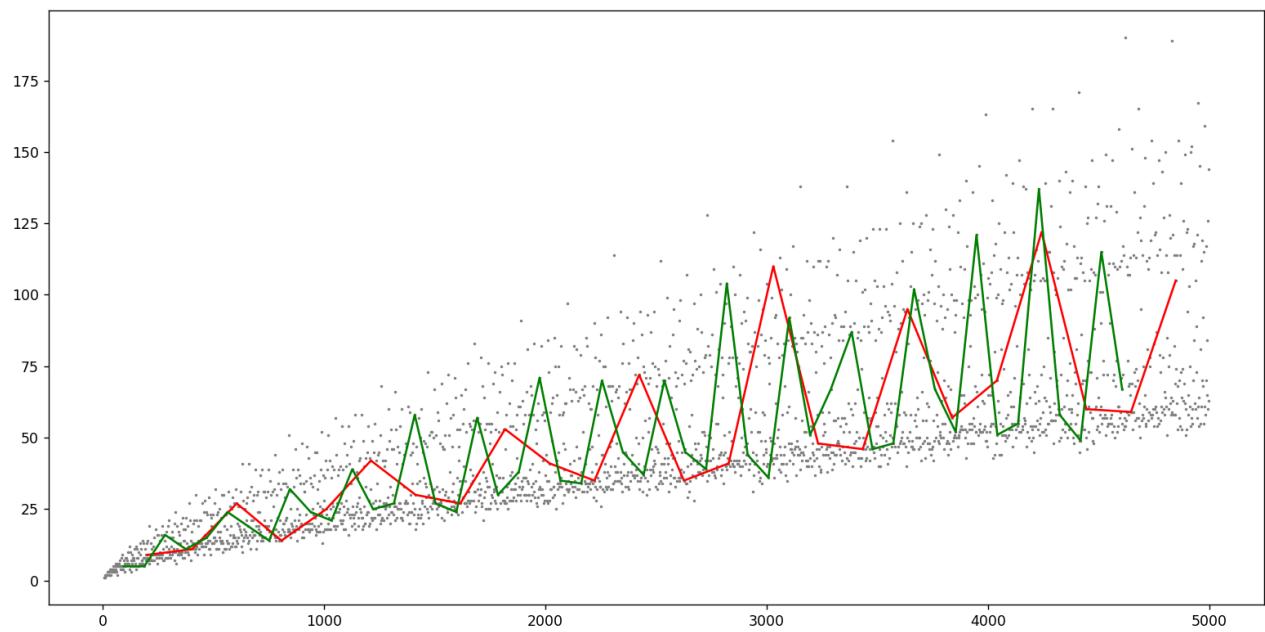
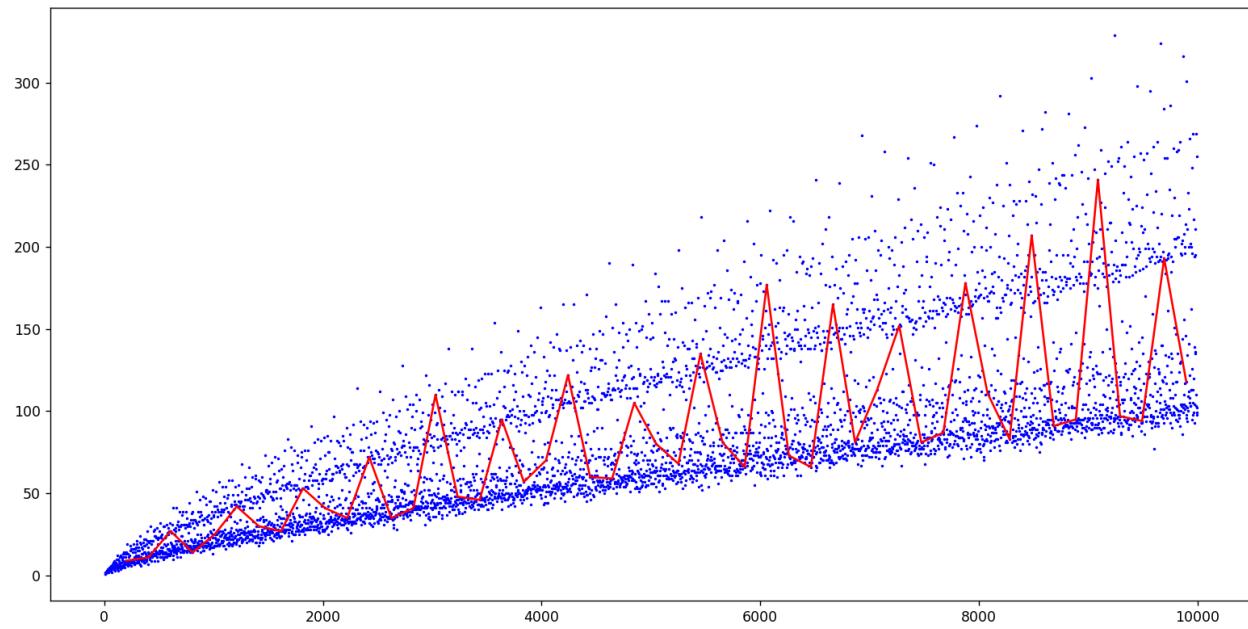
3) Comètes de visualisation (en rouge, sur comète générale en bleu, p, q deux nombres premiers) des $12p$, des $18p$, des $24p$, des $48p$, des $96p$, des $192p$:



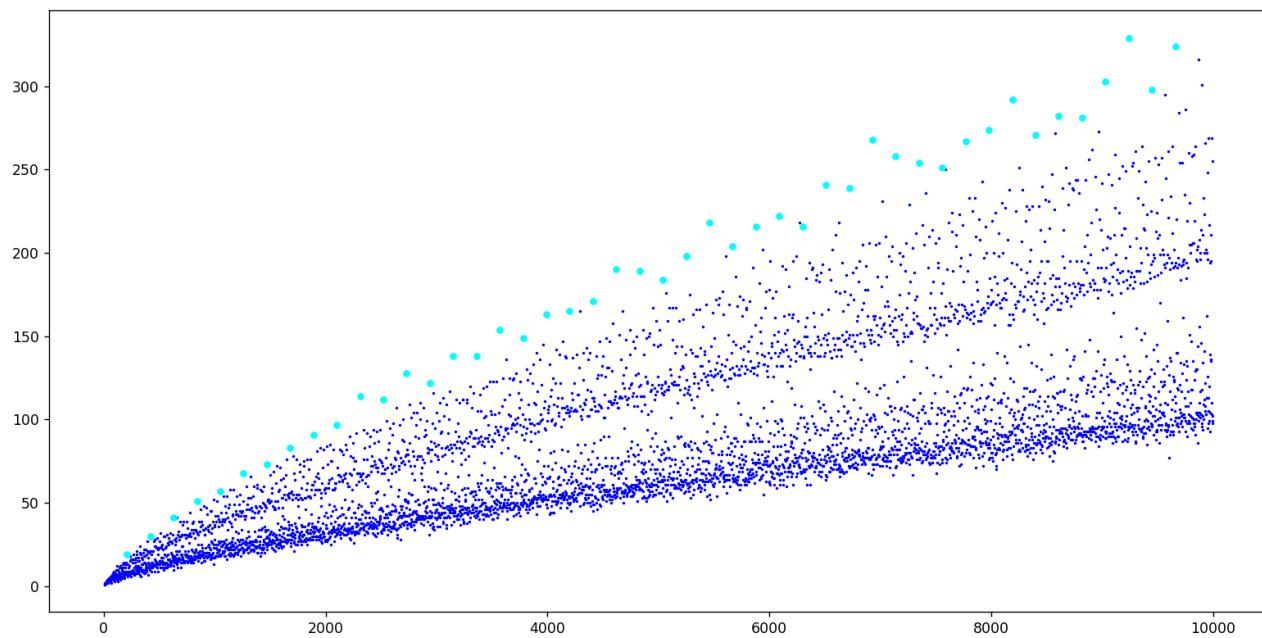
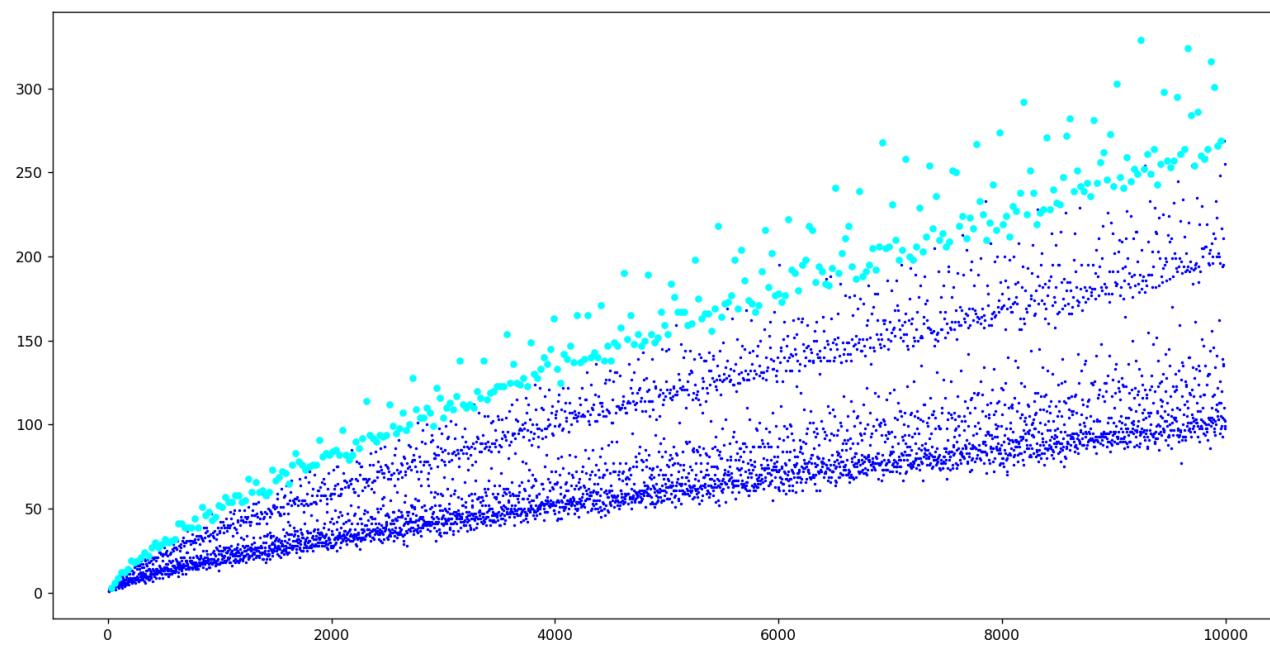


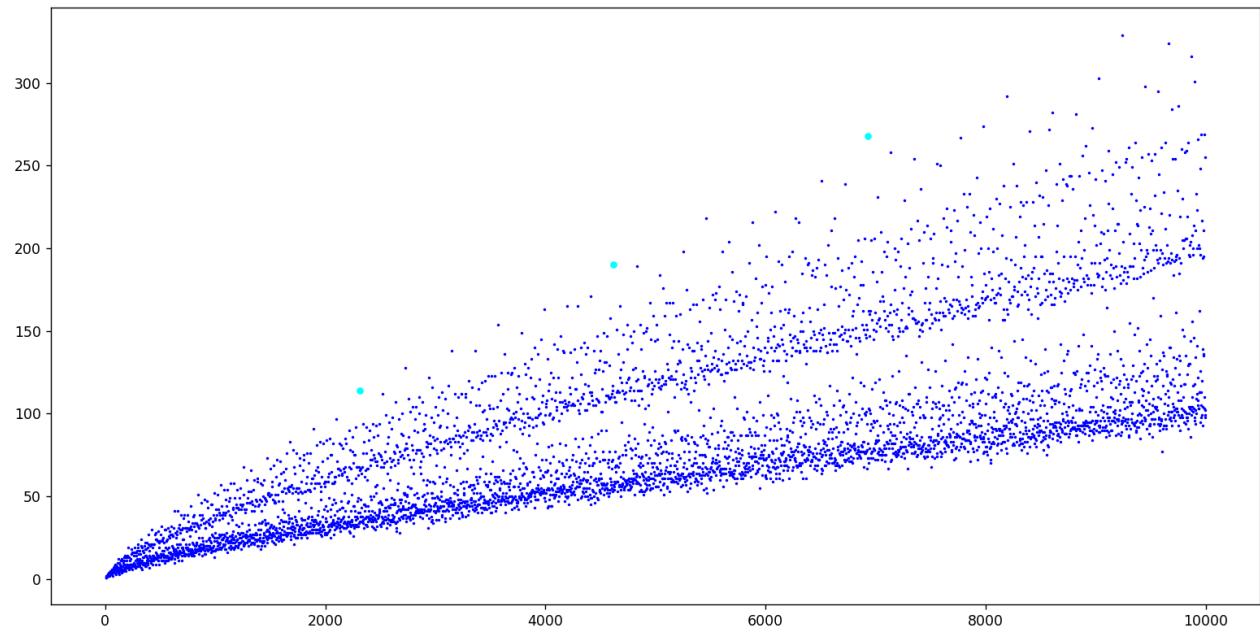


4) Comètes de visualisation des multiples de 202 (double de 101 premier), puis des multiples de 202 et des multiples de 94 (double de 47 premier) :



5) Comètes de visualisation des abondants (les multiples de 30, de 210, ou de 2310) :





6) Comètes de visualisation des premiers à 3, des premiers à 5, des premiers à 7, des premiers à 15, des premiers à 21, des premiers à 35 :

