# 5 4 3 1 2 3 4 5 3 2 2 1 6 6 2 2 1 1 2 6  
# Задание 1.  
import matplotlib.pyplot as plt  
list = []  
  
while len(list) < 20:  
try:  
inp = int(input())  
list.append(inp)  
except:  
print("Только целые числа")  
  
  
o = int()  
a1 = sum(True for i in list if i == 1)  
b2 = sum(True for i in list if i == 2)  
c3 = sum(True for i in list if i == 3)  
d4 = sum(True for i in list if i == 4)  
e5 = sum(True for i in list if i == 5)  
f6 = sum(True for i in list if i == 6)  
  
  
print(list)  
print('ВАРИАЦИОННЫЙ РЯД')  
print(a1, ' - 1')  
print(b2, ' - 2')  
print(c3, ' - 3')  
print(d4, ' - 4')  
print(e5, ' - 5')  
print(f6, ' - 6')  
  
  
x = ('0', '1', '2', '3', '4', '5', '6')  
y = (o, a1, b2, c3, d4, e5, f6)  
  
# гистограмма частот  
fig, axes = plt.subplots()  
[axes.bar](https://vk.com/away.php?utf=1&to=http%3A%2F%2Faxes.bar)(x, y)  
plt.xlabel('Варианты')  
plt.ylabel('Частота')  
[plt.show](https://vk.com/away.php?utf=1&to=http%3A%2F%2Fplt.show)()  
  
# Полигон частот  
plt.axis([0, 7, 0, 7])  
plt.xlabel('Варианты')  
plt.ylabel('Частота')  
plt.plot(x, y)  
[plt.show](https://vk.com/away.php?utf=1&to=http%3A%2F%2Fplt.show)()  
  
  
l\_s = sorted(list)  
summa\_chastot = a1 + b2 + c3 + d4 + e5 + f6  
sr\_qv = ((1 \*\* 2) \* a1 + (2 \*\* 2) \* b2 + (3 \*\* 2) \* c3 + (4 \*\* 2) \* d4 + (5 \*\* 2) \* e5 + (6 \*\* 2) \* f6)/summa\_chastot  
v\_srednya = (1 \* a1 + 2 \* b2 + 3 \* c3 + 4 \* d4 + 5 \* e5 + 6 \* f6)/summa\_chastot  
v\_dispersia = (sr\_qv - (v\_srednya \*\* 2)) \* summa\_chastot / (summa\_chastot - 1)  
st\_otcl = v\_dispersia \*\* 0.5  
one\_proc = st\_otcl / 100  
kf\_v = (st\_otcl / v\_srednya \* 100)  
print('Сумма частот - ', summa\_chastot)  
print('Выборочная средняя - ', v\_srednya)  
  
if (a1 > b2) and (a1 > c3) and (a1 > d4) and (a1 > e5) and (a1 > f6):  
print('Мода = 1')  
if (b2 > a1) and (b2 > c3) and (b2 > d4) and (b2 > e5) and (b2 > f6):  
print('Мода = 2')  
if (c3 > b2) and (c3 > a1 ) and (c3 > d4) and (c3 > e5) and (c3 > f6):  
print('Мода = 3')  
if (d4 > b2) and (d4 > c3) and (d4 > a1) and (d4 > e5) and (d4 > f6):  
print('Мода = 4')  
if (e5 > b2) and (e5 > c3) and (e5 > d4) and (e5 > a1) and (e5 > f6):  
print('Мода = 5')  
if (f6 > b2) and (f6 > c3) and (f6 > d4) and (f6 > e5) and (f6 > a1):  
print('Мода = 6')  
  
print('Средняя квадратов - ', sr\_qv)  
print('Выборочная дисперсия (Dв) - ', v\_dispersia)  
print('Среднее отклонение - ', st\_otcl)  
print('Коэффициент вариации - ', kf\_v)  
print('Медиана - ', (l\_s[9] + l\_s[10])/2)  
  
  
# Задание 2.  
x1 = v\_srednya - st\_otcl  
x2 = v\_srednya + st\_otcl  
print(x1, '<', 3.5, '<', x2)