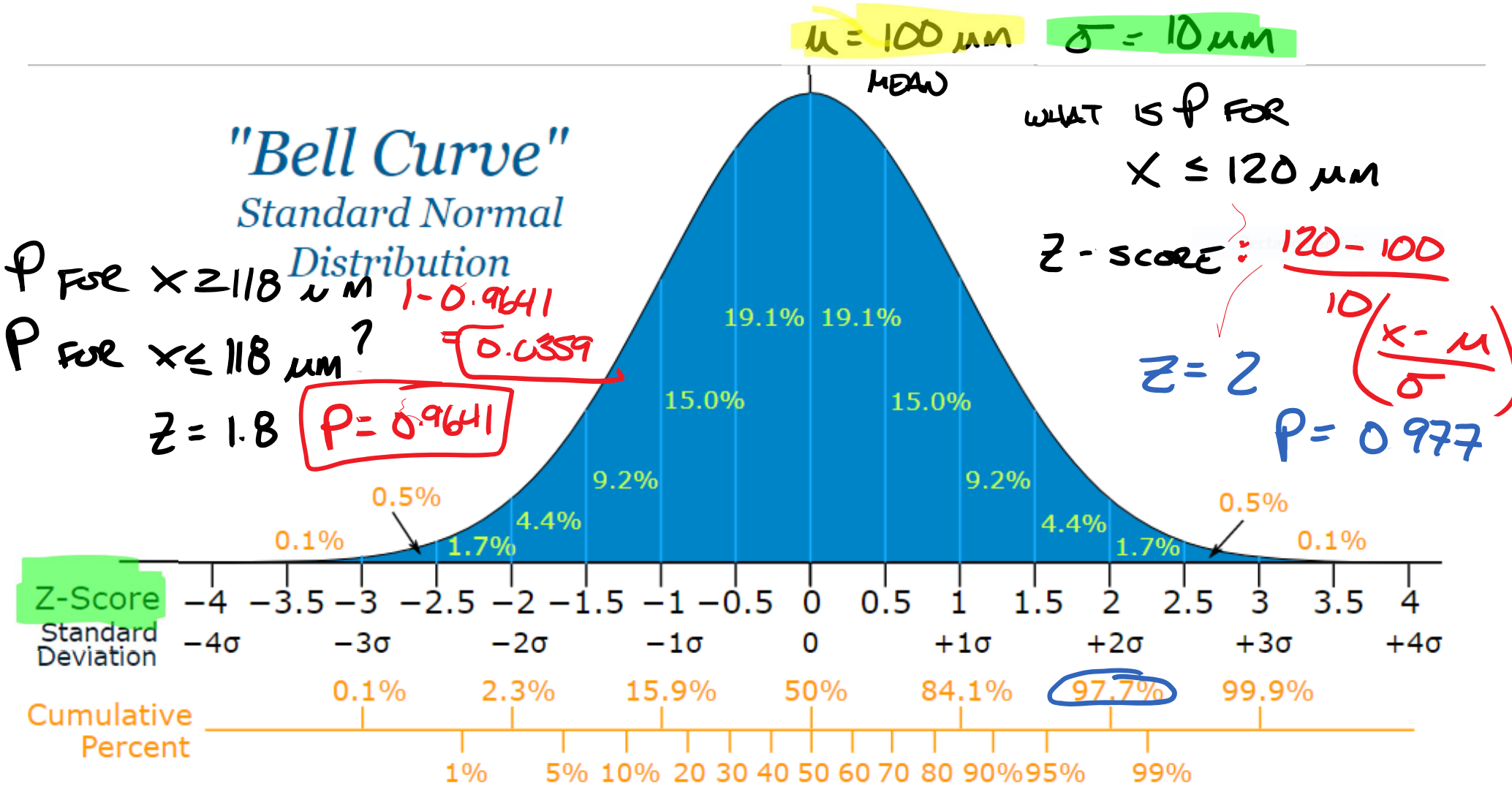
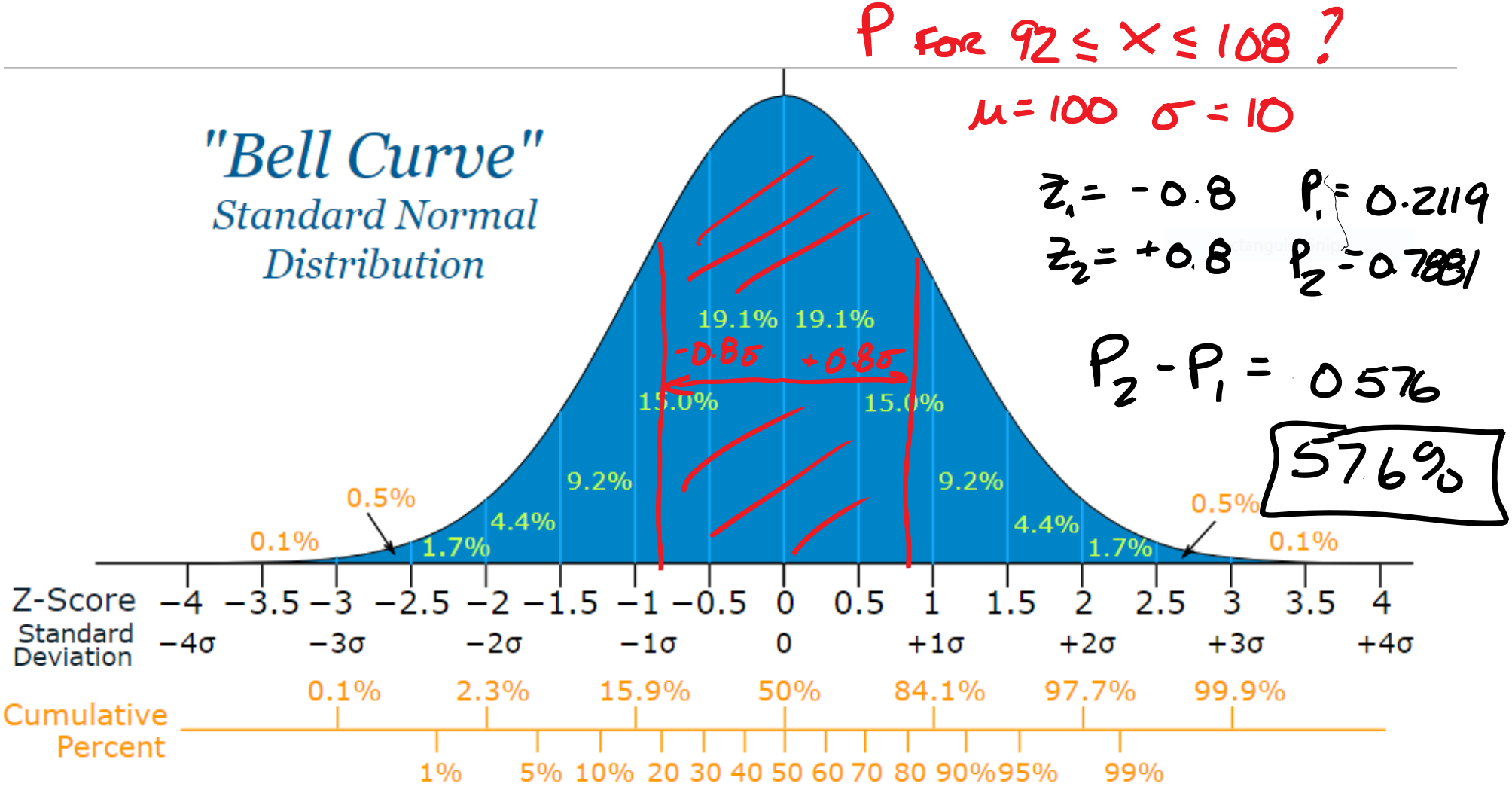

μ = 100 μm
σ = 10 μm
MEAN
"Bell Curve"
Standard Normal Distribution
P FOR X ≤ 118 μm
P FOR X ≤ 118 μm ?
Z = 1.8
P = 0.9641
1 - 0.9641
= 0.0359
WHAT IS P FOR
X ≤ 120 μm
Z - SCORE : 120 - 100 / 10
Z = 2
P = 0.977
0.1%
0.5%
1.7%
4.4%
9.2%
15.0%
19.1%
19.1%
15.0%
9.2%
4.4%
1.7%
0.5%
0.1%
Z-Score
−4 −3.5 −3 −2.5 −2 −1.5 −1 −0.5 0 0.5 1 1.5 2 2.5 3 3.5 4
Standard Deviation
−4σ −3σ −2σ −1σ 0 +1σ +2σ +3σ +4σ
Cumulative Percent
0.1% 2.3% 15.9% 50% 84.1% 97.7% 99.9%
1% 5% 10% 20 30 40 50 60 70 80 90% 95% 99%



P for $92 \le X \le 108$?

$\mu = 100 \quad \sigma = 10$

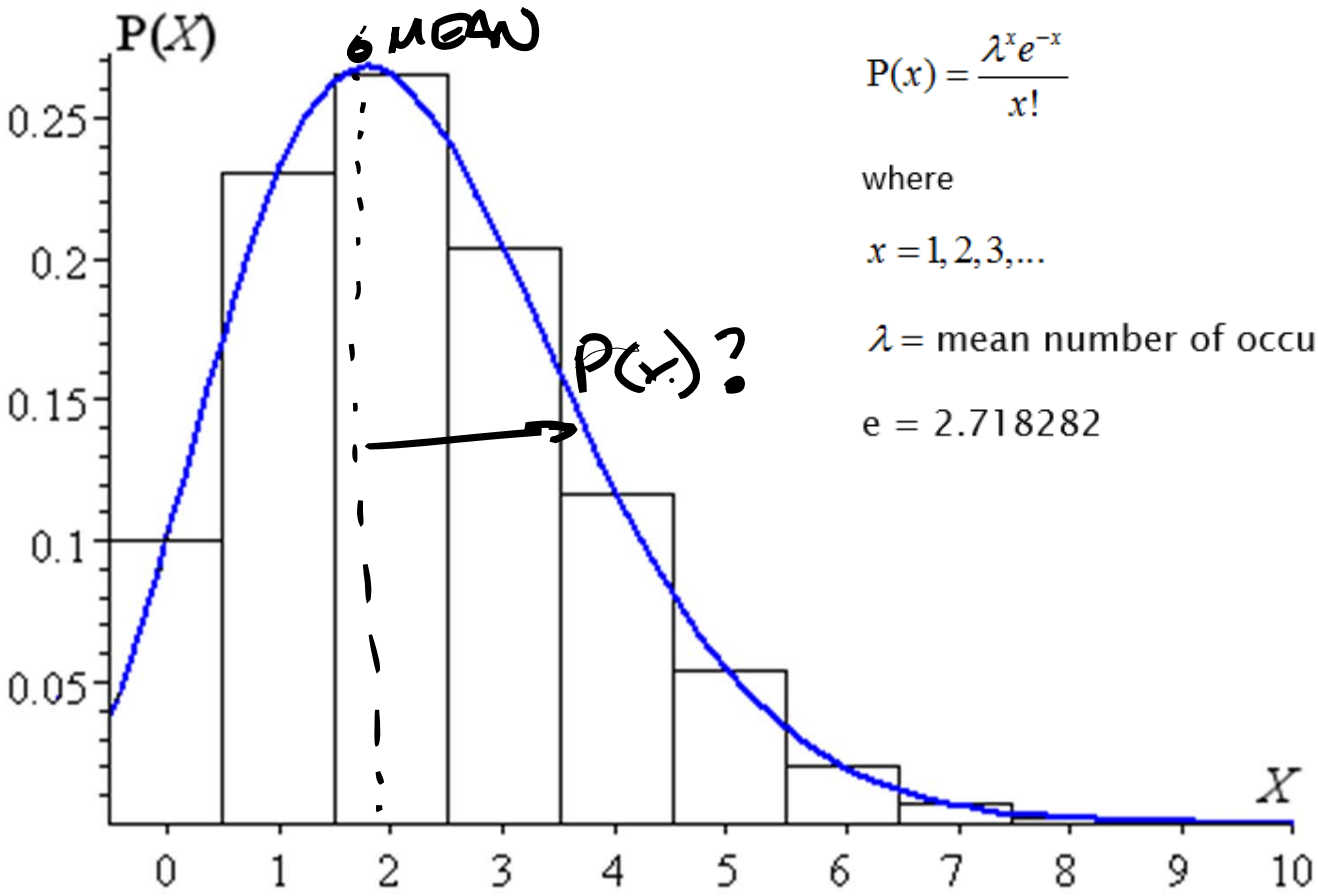
$z_1 = -0.8 \quad P_1 = 0.2119$

$z_2 = +0.8 \quad P_2 = 0.7881$

$P_2 - P_1 = 0.576$

57.6%

POISSON DISTRIBUTION



Poisson Distribution Formula

$$P(x) = \frac{\lambda^x e^{-x}}{x!}$$

where

$x = 1, 2, 3, \ldots$

λ = mean number of occurrences in the interval

e = 2.718282

DECK OF CARDS

52 CARDS 13 ♠ 13 ♦

13 ♣ 13 ♥

SHUFFLE CARDS AT RANDOM... HOW MANY WAYS CAN WE SHUFFLE A DECK OF CARDS

$52!$ $52 \times 51 \times 50 \times 49 \ldots \times 2 \times 1$

8×10^{67} NO TWO DECK SHUFFLED HAVE EVER OR EVER WILL BE THE SAME!

10^{111} TO 10^{123} GAMES OF CHESS

10^{81} ATOMS IN OBSERVABLE UNIVERSE

BEAT A COMPUTER AT CHESS?