Daily Quiz

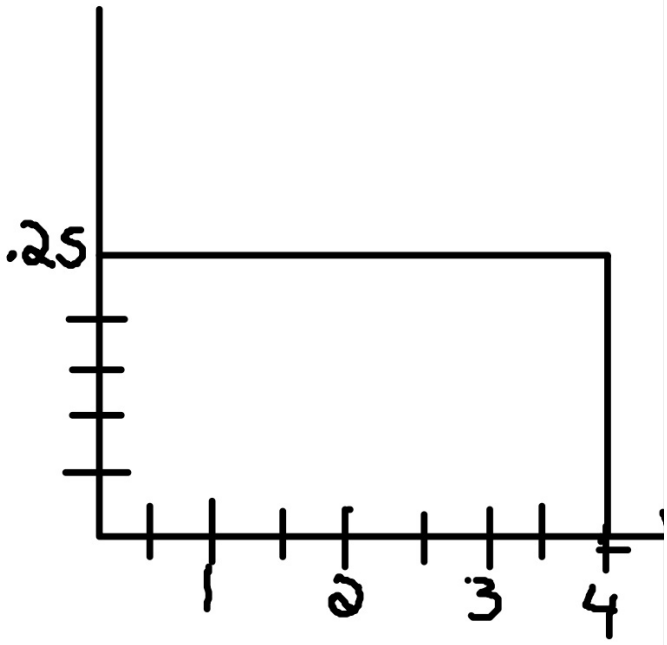
1)P(x>3)

2)P(x<1.5)

3)P(1<x<3)

4)P(2<x<4.5)

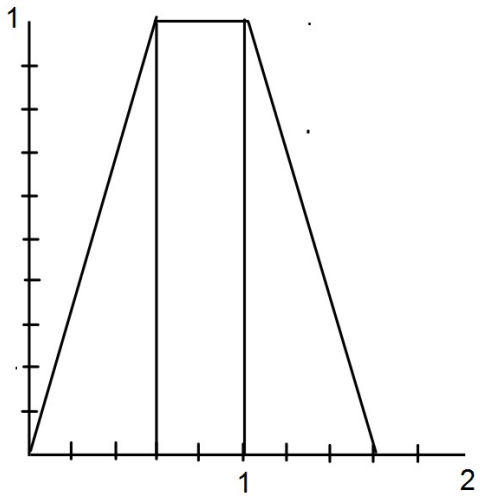
5)P(1.5<x<3)



Objective - SWBAT calculate probabilities from a normal curve using the 68-95-99.7 Rule

Density Curves

- Area must equal one
- Area equals probability



Find the probability for each of the following

P(x<.3)

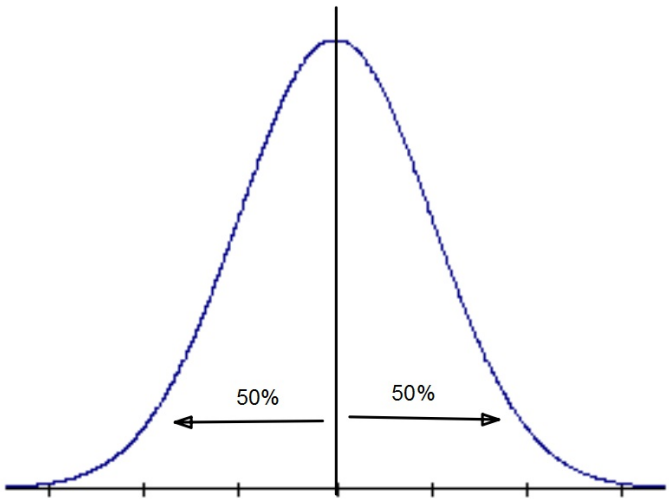
P(x>1)

P(.3<x<.8)

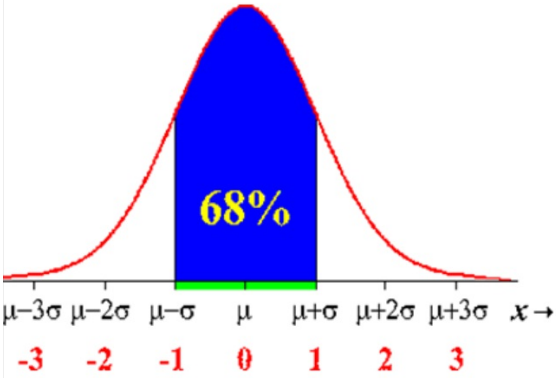
P(.3<x<1)

Normal Curve

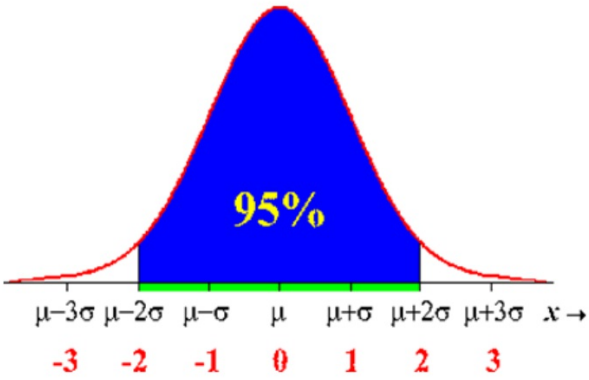
A symmetrical curve with an area of one centered around the mean of a set of data. Remember area equals probability. We count out 3 standard deviatons on either side of the mean to solve most problems.



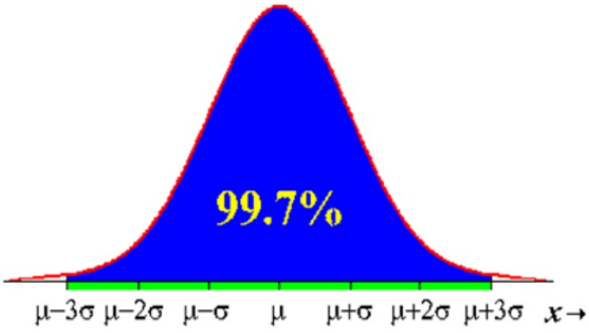
68-95-99.7 Rule



68% - 1 Standard deviation on either side of the mean

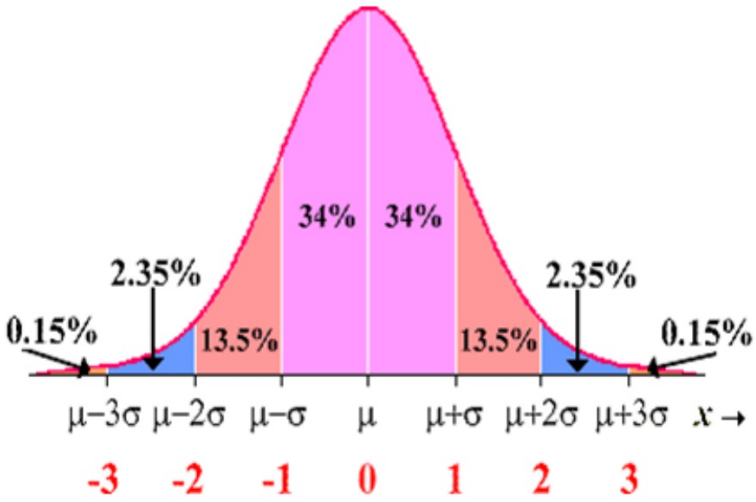


95% - 2 standard deviation on either side of the mean



99.7% - 3 standard deviation on either side of the mean

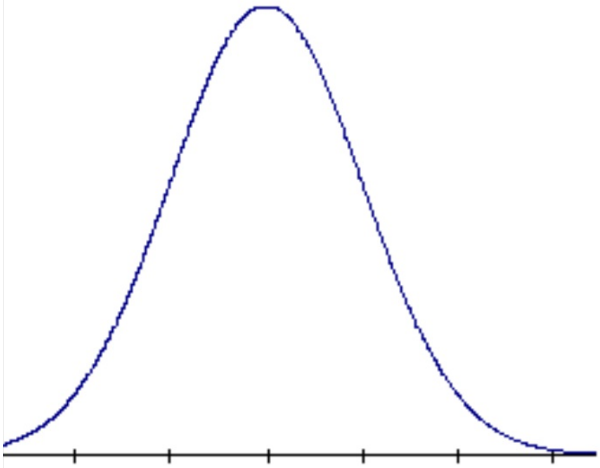
68-95-99.7 Rule



Since the area of the entire curve must equal one and the mean is in the middle each section can be divided into smaller pieces.

68% / 2 = 34%
(95% - 68%) / 2 = 13.5%
(99.7% - 95%) / 2 = 2.35%
(100% - 99.7) / 2 = 0.15%

68-95-99.7 Rule



Using rule to find probability:
Step 1 - Set-up picture using mean and standard deviation.

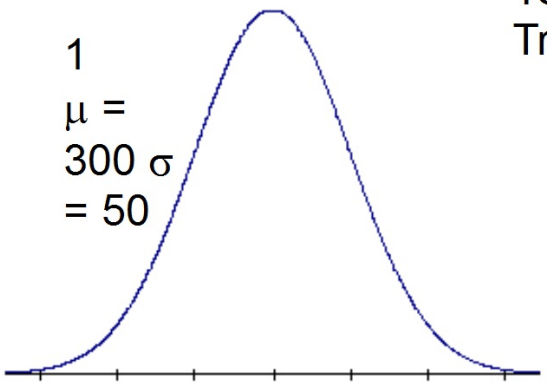
- Center is mean
- Add the standard devation to the mean to mark to the right
- Subtract the standard deviation to the mean to mark to the left

Example
$\mu = 100$
$\sigma = 15$

You Try

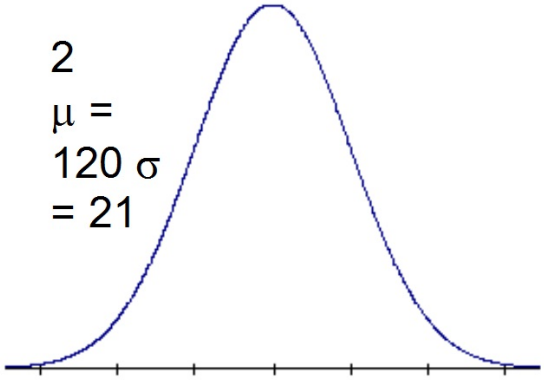
1

μ = 300 σ = 50



2

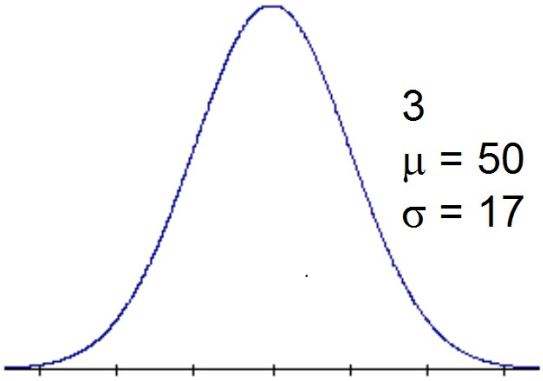
μ = 120 σ = 21

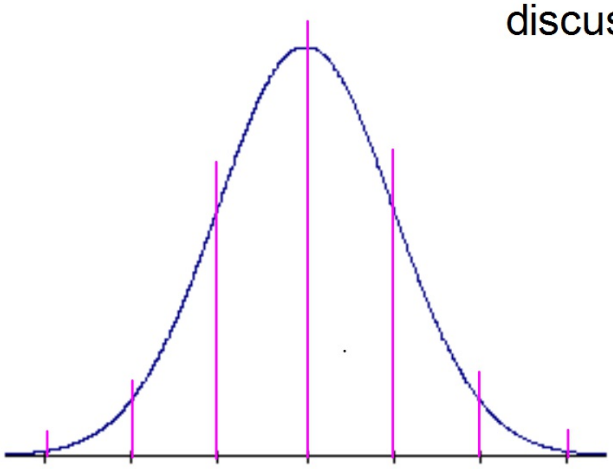


3

μ = 50

σ = 17

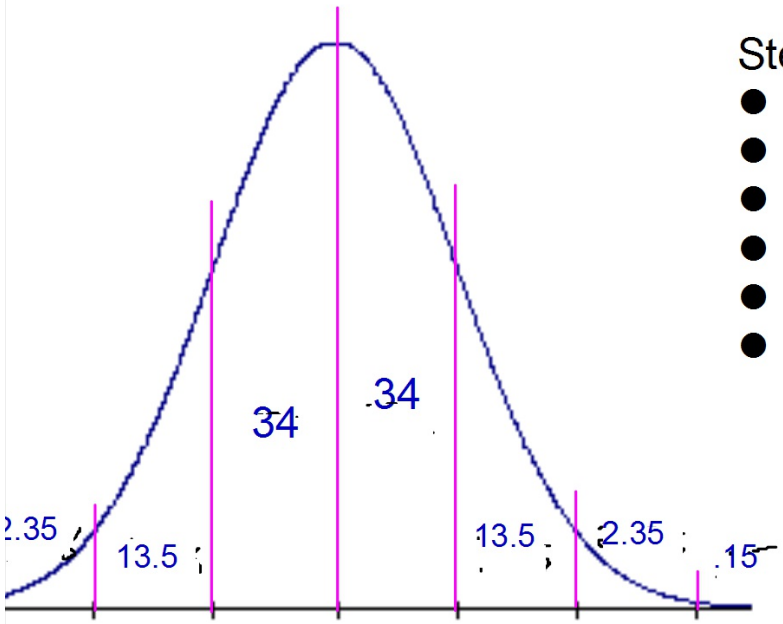




Step 2 Fill in the probabilities

- Draw vertical lines from each #
- Fill in the probabilities as we discussed before.

Example
$\mu = 600$ $\sigma = 65$



Step 3 Calculate probabilities

- Area equals probability
- Area under cureve equals 1
- Add pieces to find probability
- Less than count left
- Greater than count Right
- In Between count between

Example

$\mu = 150$

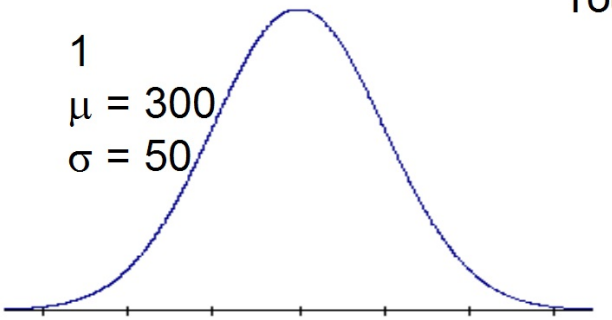
$\sigma = 25$

You Try

1

$\mu = 300$

$\sigma = 50$



P(250<x<350)

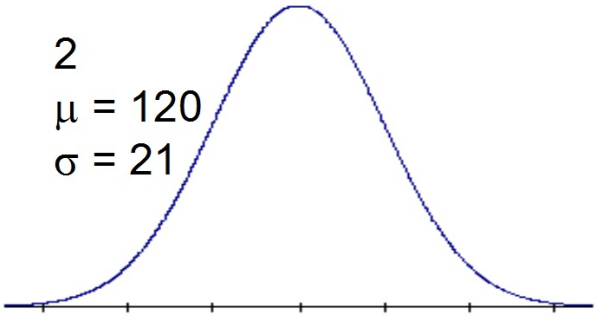
P(x<200)

P(x>350)

2

$\mu = 120$

$\sigma = 21$



P(78<x<162)

P(x<141)

P(x>78)