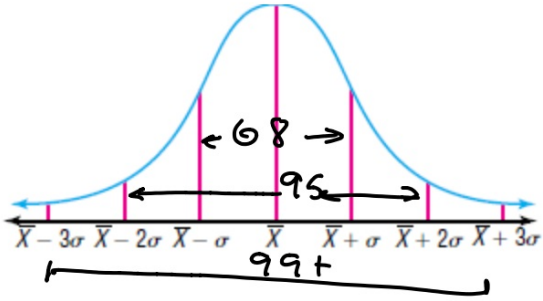
Precalc14.4

Use the normal distribution

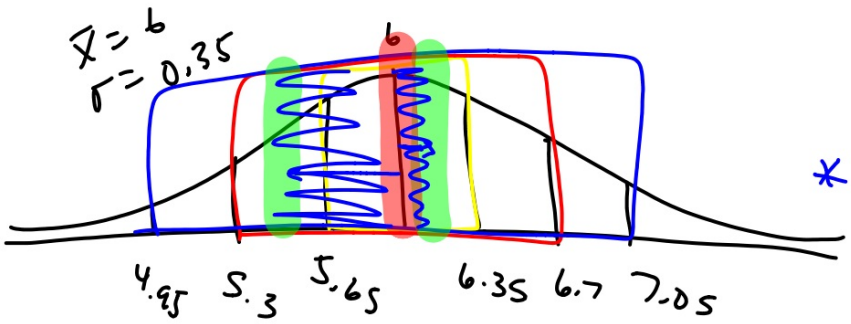
68-95-99+

normal distribution



Quiz 14.4 Thurs.

14 b



5.5 - 6.2

* $6 \to 6.2 \quad \sigma = +0.57$

$6 \to 5.5 \quad \sigma = -1.43$

$\pm 0.57 = 45.1\% \Rightarrow 22.6$

$\pm 1\sigma = 83.8\% \Rightarrow 41.9$

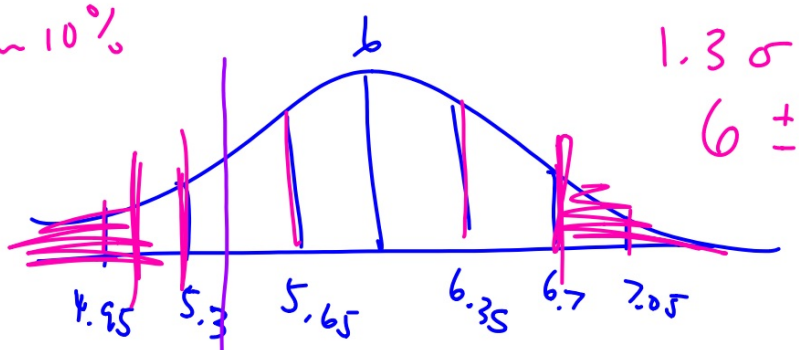
64.5%

$0.2 = 0.35\sigma$

$0.5 = 0.35\sigma$

14. C

Bottom 10%



$\delta 0\% = 5.545$

$x \leq 5.545$

1.3 σ

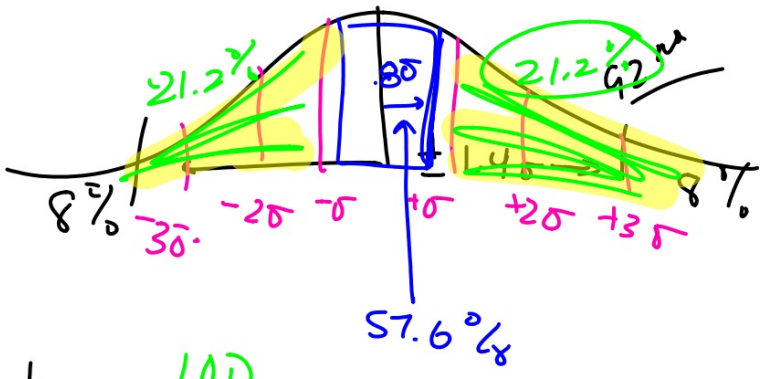
$6 \pm 1.3(.35)$

$6 \pm .455$

$5.545 \leftrightarrow 6.455$

16.

a.



100
−16
84%

%-ile

+0.8

b. 100
−21.2
78.8

79th %-ile

Lesson 14-4 *(Pages 918–925)*

1. The mean of a set of normally distributed data is 10 and the standard deviation is 2.
   a. Find the interval about the mean that includes 25% of the data.
   b. What percent of the data is between 8 and 14?
   c. What percent of the data is between 7 and 10?
   d. Find the interval about the mean that includes 80% of the data.

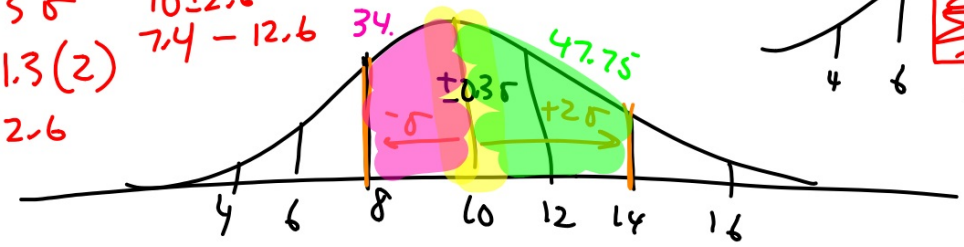
$10 \pm 0.3(2)$
10 ± 0.6
$9.4 - 10.6$

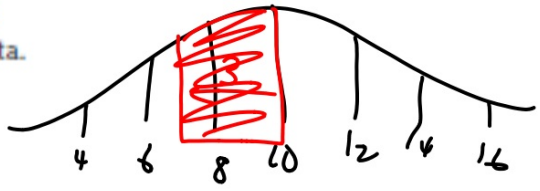
$\frac{2n}{2} = \frac{3}{2}$
$n = 1.5$

81.75%
43.3%

1.3 σ
$\pm 1.3(2)$
± 2.6

10 ± 2.6
$7.4 - 12.6$





95% 350-360 → 1.96 σ

21. Industry A machine is used to fill cans of cola. The amount of cola dispensed into each can varies slightly. Suppose the amount of cola dispensed into the cans is normally distributed.

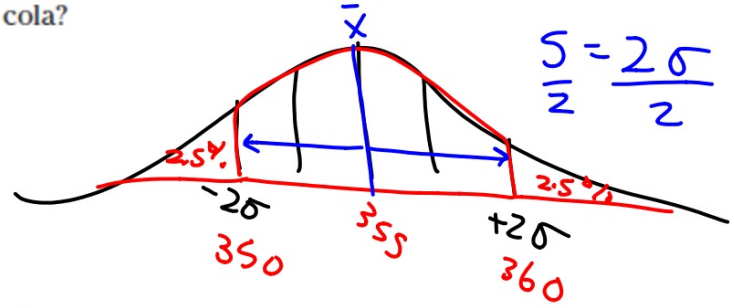
a. If at least 95% of the cans must have between 350 and 360 milliliters of cola, find the greatest standard deviation that can be allowed.

b. What percent of the cans will have between 353 and 357 milliliters of cola?

σ = 2.5

57.6%

WB 14.4

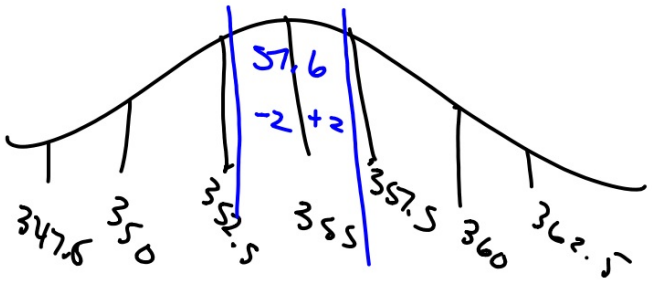


$\frac{5}{2} = \frac{2\sigma}{2}$

2.5σ =

2.5n = 2

±0.8σ



2. Suppose 400 values in a set of data are normally distributed.
   a. How many values are within one standard deviation of the mean?
   b. How many values are within two standard deviations of the mean?
   c. How many values fall in the interval between the mean and one standard deviation above the mean?