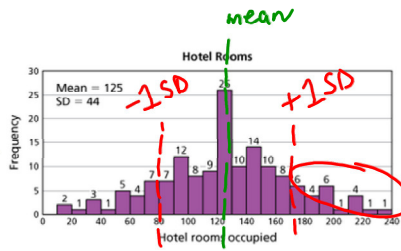p. 68-69   Standard Deviation

p. 68

Standard Deviation: A measure of the amount of variation and dispersion there is from the mean.

Example 1
The histogram at the right shows the distribution of the number of hotel rooms occupied on given days.

**The mean is 125 hotel rooms occupied.
The standard deviation is 44.**

Answer the questions below:

mean (125)
SD = 44
Hotel Rooms
-1 SD   +1 SD

a. What is the range for ONE standard deviation around the mean of number of hotel rooms occupied in each direction?

mean $\pm (1\ sd)$
125 ± 44 81 to 169

b. How many days was the number of hotel rooms occupied **within** 1 standard deviation from the mean? $7 + 12 + 8 + 9 + 26 + 10 + 14 + 10 + 8$

104 days

c. How many days was the number of hotel rooms occupied **higher than** 1 standard deviation from the mean? $6 + 4 + 6 + 1 + 4 + 1 + 1$
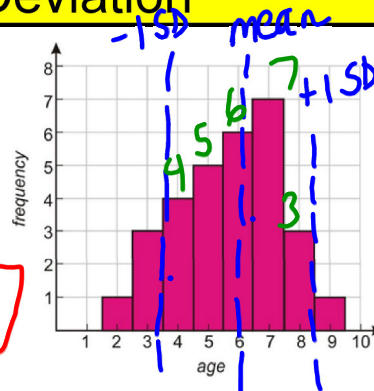
23 days

p. 68-69   Standard Deviation

p. 69

Example 2
The histogram at the right relates the number of children of particular ages who visited a face-painting booth.

The mean is 6. The standard deviation is 2.

-1 SD   mean   +1 SD

Answer the questions below:

a. What is the range for ONE standard deviation around the mean of 6?

mean $\pm$ SD
6 ± 2 4 to 8

b. How many children had ages that fell **within** 1 standard deviation of the mean?

25 children

p. 68-69   Standard Deviation

p. 69

Example 3 - The table gives the student-to-teacher ratios for public elementary and secondary schools in some states.

State	IL	IN	KS	KY	LA	MA	MD	ME	MI	MN
Ratio	16.5	16.9	14.4	16.1	16.6	13.6	15.8	11.5	18.1	16.3

The mean is 15.6 and the standard deviation is 1.9

a. What is the range for ONE standard deviation around the mean of 15.6?

mean $\pm$ (*1 sd*)

$$15.6 \pm 1.9 \quad 13.7 \text{ to } 17.5$$

b. Which state(s) have student-to-teacher ratios that are **higher** than 1 standard deviation away from the mean?

higher than 17.5 → MI

c. What is the range for TWO standard deviations around the mean of 15.6?

mean $\pm$ (*2 sd*)

$$\overset{3.8}{15.6 \pm 2(1.9)} \quad 11.8 \text{ to } 19.4$$

d. Which state(s) have student-to-teacher ratios that are **lower** than 2 standard deviations away from the mean?

lower than 11.8 → ME

Assignment: Standard Deviation Homework