

DO NOW

Enter the following data into your calculator.

30, 67, 67, 68, 68, 69, 71, 71, 71, 72, 73, 74, 74, 75, 80

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Box-Plots on the Calculator

CTRL + page

5 Add Data & Statistics

Choose a variable on horizontal axis

MENU

1 Plot Type

2 Box-Plot

Page 2

10.3 Sample Variance and Standard Deviation

1. Use the data to complete the following:

20, 27, 28, 29, 30, 31, 33, 33, 37, 39, 55 outlier

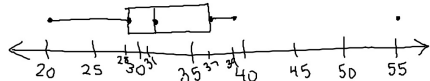
a. Find the five-number summary

b. Create a box plot for the data.

a. min = 20
 $Q_1 = 28$
 median = 31
 $Q_3 = 37$
 max = 55

IQR = 9
 $1.5(IQR) = 13.5$
 $Q_1 - 13.5 = 14.5$
 $Q_3 + 13.5 = 50.5$

b.



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Consider the data regarding temperatures below:

City	Spring	Summer	Fall	Winter
Rio de Janeiro	25	29	26	24
Taipei	25	33	27	19

2. What is the mean temperature for each city?

Rio de Janeiro:

$$\frac{25+29+26+24}{4}$$

$$\frac{104}{4}$$

$$26$$

Taipei:

$$\frac{25+33+27+19}{4}$$

$$\frac{104}{4}$$

$$26$$

* The mean is the same. We need more info to be able to compare.

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variance - deals with spread of the data

sample standard deviation - measure based on the distance of each value from the mean.

$$S = \sqrt{\frac{(x_1 - \bar{x})^2 + (x_2 - \bar{x})^2 + \dots + (x_n - \bar{x})^2}{n-1}}$$

$\bar{x} \leftarrow$ mean

* We will use the calculator.

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Using the calculator for standard deviation:

* Enter data

* Go to the One-Variable Summary

$\bar{x} \leftarrow$ mean

$\sum x \leftarrow$ sum of all items

$\sum x^2 \leftarrow$ sum of all items squared

** $Sx \leftarrow$ Sample standard deviation

$\sigma x \leftarrow$ Population standard deviation (WE DON'T USE THIS!)

$n \leftarrow$ total # of items

min \leftarrow minimum

$Q_1 \leftarrow$ lower quartile

median \leftarrow median

$Q_3 \leftarrow$ upper quartile

max \leftarrow maximum

$SSX \leftarrow$ sum of the squared deviations

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City	Spring	Summer	Fall	Winter
Rio de Janeiro	25	29	26	24
Taipei	25	33	27	19

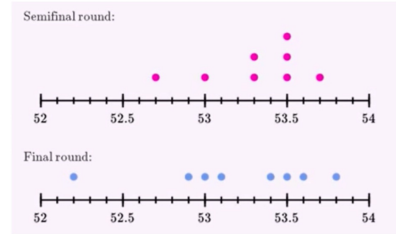
3. Find the standard deviation of the temperature for each city.

Rio de Janeiro - 2.16

Taipei - 5.77

*Taipei's temperatures vary more.
(The standard deviation is higher.)

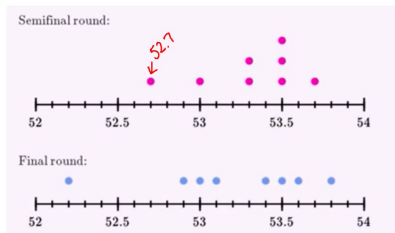
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4. Before doing any calculations, during which of the rounds would you predict the swimmers had a bigger standard deviation between their times? Why?

Final round because the times are more spread out.

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5. What was the standard deviation for the semifinals?

0.32

6. What was the standard deviation for the finals?

0.51

7. Was your prediction correct?

Yes. The standard deviation is bigger for the finals.

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Bowling scores for the last 10 years are shown below.

men: 823, 837, 858, 791, 812, 814, 832, 862, 833, 826

women: 752, 764, 754, 774, 771, 745, 736, 816, 792, 793

8. Find the range and standard deviation for both data sets.

men: range = 71

standard deviation = 21.14

Women: range = 80

standard deviation = 24.82

9. Which set of data is more variable?

women

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HOMEWORK

Worksheet - HW 10.3 - Day 2

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