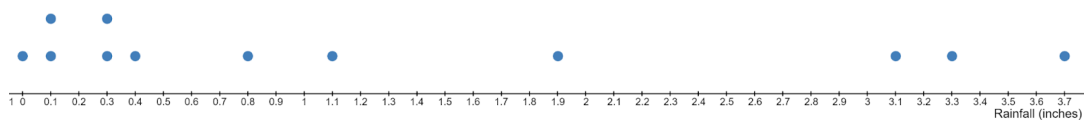


2.4.1: Exercises

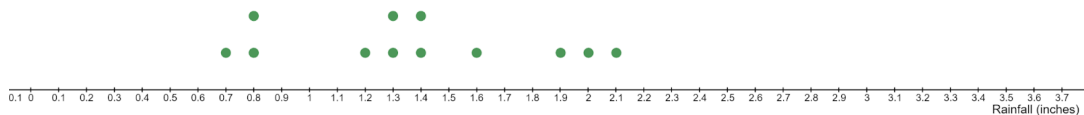
- The dotplots below summarize the average monthly rainfall in California and Utah.

California Rainfall



Images are created with the graphing calculator, used with permission from Desmos Studio PBC.

Utah Rainfall



Images are created with the graphing calculator, used with permission from Desmos Studio PBC.

- Which of the distributions have the most variation? Justify your answer.
- Decide which measure of spread (standard deviation or IQR) would be best to use to compare the variation in the rainfall of CA and UT. Explain.
- Select the value that best represents the standard deviation for Utah rainfall: 1 inch or 2 inches? Justify your answer.

2. Below is Bruno's calculation of the sample standard deviation for a sample of five pro basketball players by hand. Explain any errors he made and write a sentence or two explaining to Bruno how to fix his mistakes.

Bruno's work and solution:

Heights of 5 Pro Basketball Players

6.1	6.3	6.3	6.6	6.5
-----	-----	-----	-----	-----

The mean is $\frac{6.1 + 6.3 + 6.3 + 6.6 + 6.5}{5} = 6.36$ feet.

Height	6.1	6.3	6.3	6.6	6.5
Deviation	$6.1 - 6.36 = -2.6$	$6.3 - 6.36 = -0.06$	$6.3 - 6.36 = -0.06$	$6.6 - 6.36 = 0.24$	$6.5 - 6.36 = 0.14$
Squared Deviation	$-2.6^2 = -0.0676$	$-0.06^2 = -0.0036$	$-0.06^2 = -0.0036$	$0.24^2 = 0.0576$	$0.14^2 = 0.0196$

The sum of squared deviations is 0.0024. We divide by the sample size to get $\frac{0.0024}{5} = 0.00048$.

Then we square to get $\sqrt{0.00048} \approx 0.022$ feet.

3. Given below are the heights (in feet) of 5 randomly selected pro football and basketball players.

Heights of 5 Pro Football Players

6.7	6.3	6.2	6.5	5.9
-----	-----	-----	-----	-----

Heights of 5 Pro Basketball Players

6.1	6.3	6.3	6.6	6.5
-----	-----	-----	-----	-----

a. Compute the mean for each of the samples.

b. Compute the sample standard deviation for each set by hand. Round to three decimal places.

c. Compare the variation in the samples using the calculation from b.

d. Suppose an error was made when inputting the data for the sample of football players and 6.7 got recorded as 7.6. *Without doing any calculations*, decide which measures of center and spread will change. Explain how each measure is affected and why.

4. The following data represents miles per gallon gasoline consumption (highway) for a random sample of 55 makes and models of passenger cars.

30	25	33	18	30	20	29	25	13	35	28
27	24	52	20	24	25	27	24	13	32	28
22	15	49	23	24	27	24	28	21	33	25
25	35	10	24	24	24	27	33	28	29	29
24	35	27	25	18	32	26	30	37	31	31

- a. Use desmos to compute the mean and sample standard deviation for the miles per gallon. Round the mean to one decimal place and the sample standard deviation to two decimal places.

\bar{x} = _____

s = _____

- b. Interpret the standard deviation in context.

This page titled [2.4.1: Exercises](#) is shared under a [CC BY-NC-SA 4.0](#) license and was authored, remixed, and/or curated by [Hannah Seidler-Wright](#).

- [Current page](#) by Hannah Seidler-Wright is licensed [CC BY-NC-SA 4.0](#).
- [1.2: The Statistical Analysis Process](#) by Hannah Seidler-Wright is licensed [CC BY-NC-SA 4.0](#).