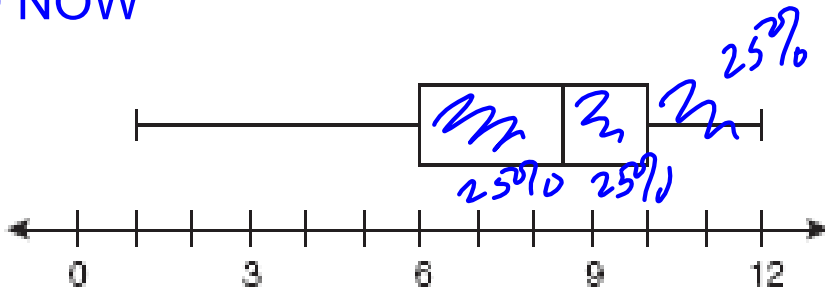


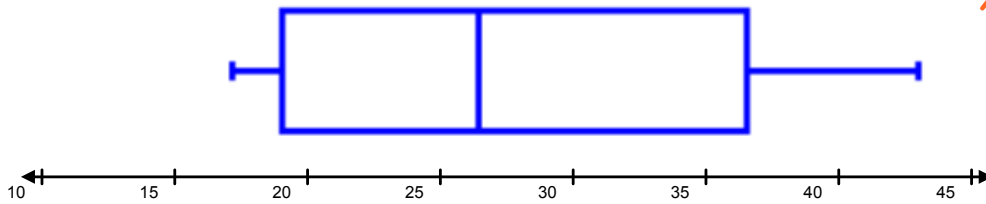
DO NOW



- 1) What is the range of the data shown in the box and whisker plot?
MAX = 12 12 - 1
MIN = 1 11
- 2) True or False: 75% of the data falls between 6 and 12.
True

May 21-7:19 AM

3. Min = 16, $Q_1 = 18$, Med = 26, $Q_3 = 37$, Max = 44



HW Answers

4. (a) 71
 (b) 84 - 53
 31
 (c) 76
 (d) 64
5. 2

May 11-9:44 AM

Measures of Spread

Measures of central tendency give us information about the center of data.

Measures of spread

- give us information about the variation in our data.
- include the range, quartiles and the interquartile range and standard deviation

Interquartile Range

The Value of Quartile 3 - The Value of Quartile 1

May 4-9:09 AM

Standard Deviation

- Tells us, on **average**, how **far a data point** is **away** from the **mean** of the data set.

-The **larger** the **standard deviation**, the **greater** the **variation** within the data set.

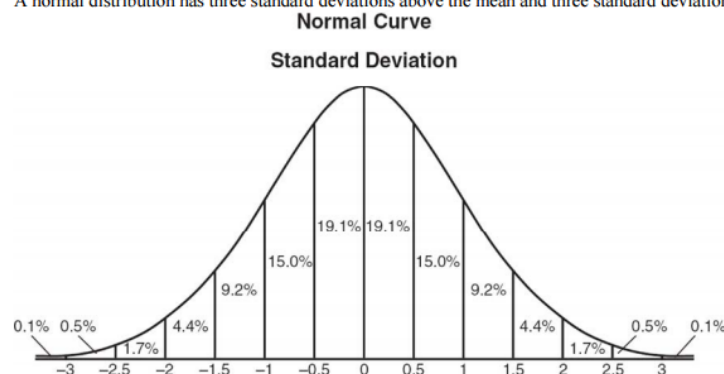
Population Standard Deviation

shown as σ_x on the calculator

Sample Standard Deviation

shown as S_x on the calculator

A normal distribution has three standard deviations above the mean and three standard deviations below the mean.




May 13-12:49 PM

Exercise #1: The two data sets below each have equal means but differ in the variation within the data set. Determine the **Interquartile Range (IQR)** of each data set.

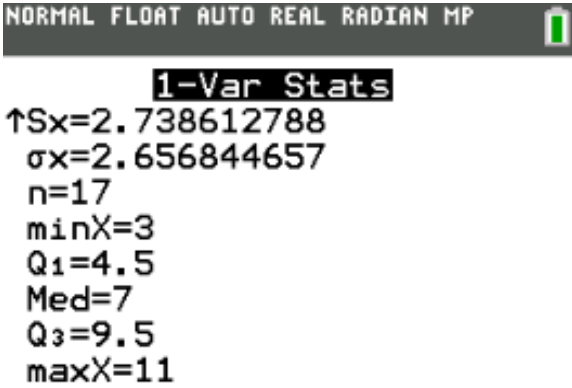
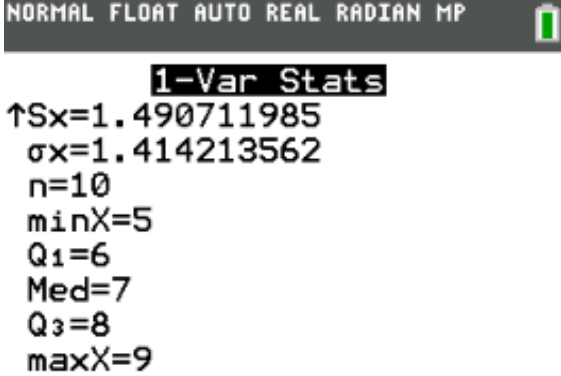
Data Set #1: 3, 3, 4, 4, 5, 5, 6, 6, 7, 8, 8, 9, 9, 10, 10, 11, 11

Data Set #2: 5, 5, 6, 6, 7, 7, 8, 8, 9, 9

[Calculator Instructions](#)

- STAT
- 1: Edit...
- Type data into L1
- STAT
-  CALC
- 1: 1-Var Stats

May 8-12:39 PM

<p>Data Set #1</p> <p><i>Q3 - Q1</i> <i>9.5 - 4.5</i> <i>IQR = 5</i></p>	 <p>NORMAL FLOAT AUTO REAL RADIAN MP</p> <p>1-Var Stats</p> <p>↑Sx=2.738612788 σx=2.656844657 n=17 minX=3 Q1=4.5 Med=7 Q3=9.5 maxX=11</p>
<p>Data Set #2</p> <p><i>Q3 - Q1</i> <i>8 - 6</i> <i>2</i></p>	 <p>NORMAL FLOAT AUTO REAL RADIAN MP</p> <p>1-Var Stats</p> <p>↑Sx=1.490711985 σx=1.414213562 n=10 minX=5 Q1=6 Med=7 Q3=8 maxX=9</p>

May 13-8:13 AM

Exercise #2: Using the same data sets above, use your calculator to produce the standard deviation of the two data sets. Round your answers to the nearest tenth.

Data Set #1: 3, 3, 4, 4, 5, 5, 6, 6, 7, 8, 8, 9, 9, 10, 10, 11, 11

Data Set #2: 5, 5, 6, 6, 7, 7, 8, 8, 9, 9

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Data Set #1

$$\sigma_x = 2.7$$

NORMAL FLOAT AUTO REAL RADIAN MP

1-Var Stats

$\bar{x}=7$
 $\Sigma x=119$
 $\Sigma x^2=953$
 $Sx=2.738612788$
 $\sigma x=2.656844657$
 $n=17$
 $\min X=3$
 $\downarrow Q_1=4.5$

Data Set #2

$$\sigma_x = 1.4$$

NORMAL FLOAT AUTO REAL RADIAN MP

1-Var Stats

$\bar{x}=7$
 $\Sigma x=70$
 $\Sigma x^2=510$
 $Sx=1.490711985$
 $\sigma x=1.414213562$
 $n=10$
 $\min X=5$
 $\downarrow Q_1=6$

May 13-8:17 AM

Exercise #3: A farm is studying the weight of baby chickens (chicks) after 1 week of growth. They find the weight, in ounces, of 20 chicks. The weights are shown below. Find the mean, the interquartile range and the standard deviation for this data set. Round any non-integer values to the nearest tenth. Include appropriate units in your answers. Give an interpretation of the standard deviation.

2, 1, 3, 4, 2, 2, 3, 1, 5, 3, 4, 4, 5, 6, 3, 8, 5, 4, 6, 3

<u>mean</u>	<u>interquartile range (IQR)</u>	<u>standard deviation</u>
-------------	----------------------------------	---------------------------

\bar{x}	$Q3 - Q1$	σ_x
3.7oz	5 - 2.5	1.73.....
	2.5oz	1.7

Standard Deviation is 1.7 which low then the spread is small

May 8-12:42 PM

Exercise #4: A marketing company is trying to determine how much diversity there is in the age of people who drink different soft drinks. They take a sample of people and ask them which soda they prefer. For the two sodas, the age of those people who preferred them is given below.

Soda A: 18, 16, 22, 16, 28, 18, 21, 38, 22, 29, 25, 44, 36, 27, 40

Soda B: 25, 22, 18, 30, 27, 19, 22, 28, 25, 19, 23, 29, 26, 18, 20

(a) Explain why standard deviation is a better measure of the diversity in age than the mean.

Diversity means variety or a range of different ages which is what standard deviation measures. Mean would only tell you the average age

(b) Which soda appears to have a greater diversity in the age of people who prefer it? How did you decide on this?

Soda A has more diversity because the min age is 16 and max age is 44

(c) Use your calculator to determine the **sample standard deviation**, normally given as s_x , for both data sets. Round your answers to the nearest tenth. Did this answer reinforce your pick from (b)? How?

May 8-12:44 PM