

Name: \_\_\_\_\_

Date: \_\_\_\_\_

So far in this unit we have explored:

Today we are going to look at another way of describing dispersion, what is the spread in the data.

Let's consider the following situation:

Juliana is going into business selling bags of chocolate covered marshmallows. She contacts two different companies that are offering to do the packaging for her. She receives 10 samples from each company and counts the number of marshmallows in each bag:

Company #1	Wrap 'em Up	15	15	16	16	17	18	18	19	21	23
Company #2	Bags of Fun	15	15	16	18	18	18	18	18	19	23

1. Make a line plot of the number of marshmallows in a bag for the two companies

2. Calculate the three measures of central tendency and the range for each company

Company	Mean	Median	Mode	Range

Based on your measures calculated above, which company is more consistent? Did any of our summary statistics capture this?

Standard Deviation

Let's calculate the standard deviation for the marshmallow packages.

Wrap 'em up			Bags of Fun		
Observation	Distance from mean		Observation	Distance from mean	
15			15		
15			15		
16			16		
16			18		
17			18		
18			18		
18			18		
19			18		
21			19		
23			23		
Total			Total		

Which data was more spread out?

How does this relate to standard deviation?

Standard Deviation: 
$$\sigma = \sqrt{\sum_{i=1}^n \frac{(x_i - \bar{x})^2}{n}}$$

	Wrap 'em Up	$(x - \bar{x})^2$	Bags of Fun	$(x - \bar{x})^2$
	15		15	
	15		15	
	16		16	
	16		18	
	17		18	
	18		18	
	18		18	
	19		18	
	21		19	
	23		23	
$\sum x$				
$\bar{x}$		---		---
$\sqrt{\frac{\sum(x - \bar{x})^2}{n}}$				