

**Standard Deviation**

Name: Key

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

**Who is better at texting?**

My prediction:

\_\_\_\_\_

Data Collection:

Table 1: Speed & Number of Trials (Only record Attempt/Speed for an accurate text—once per person)

Attempt Number	My Speed (in seconds)

Record your data in the group data chart.

Table 2: Class Data for Number of Attempts & Time

Team Left		Team Right	
Number of Attempts	Time in Seconds	Number of Attempts	Time in Seconds
1	64	1	41
1	76	1	41
1	50	1	49
1	40	1	44
1	34	2	40
2	37	1	56
1	45	1	40
2	57	1	45
		1	55
		2	42
		1	155
		1	38
		1	76
		1	34
Mean: 1.25	Mean: 50.375	Mean: 1.143	Mean: 54

Create dot plots for Number of Trials & Time in Seconds for Team Left and Team Right, and then answer questions below.

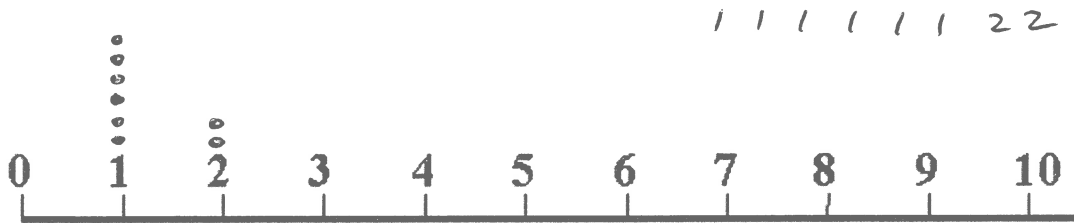
34 37 40 45 50 57 64 76

Times(s) – Team Left



Median: 47.5      Shape: fairly uniform      Spread: data are fairly close together  
 Range: 42

Number of Trials – Team Left



Median: 1      Shape: single peak, skewed right      Spread: very close together  
 Range: 1

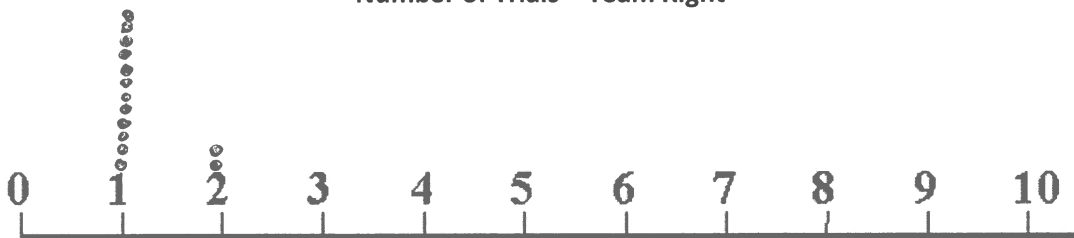
Times(s) – Team Right

34 38 40 40 41 41 42 44 45 49 55 56 76 155



Median: 43      Shape: cluster 34-49      Spread: data are close together w/ two exceptions  
 Range: 121

Number of Trials – Team Right



Median: 1      Shape: single peak, skewed right      Spread: very close together  
 Range: 1

Table 3: Standard Deviation, Team Left & Team Right's Time(s)

Team Left's Time(s)				Team Right's Time(s)			
$x$	$\bar{x}$	$x - \bar{x}$	$(x - \bar{x})^2$	$x$	$\bar{x}$	$x - \bar{x}$	$(x - \bar{x})^2$
64	50.375	13.625	185.641	41	54	-13	169
76	↓	25.625	656.641	41	↓	-13	169
50		-3.375	.141	49		-5	25
40		-10.375	107.641	44		-10	100
34		-16.375	268.141	40		-14	196
37		-13.375	178.891	56		2	4
45		-5.375	28.891	40		-14	196
57		6.625	43.891	45		-9	81
				55		1	1
				42		-12	144
				155		101	10201
			38	-16	256		
			76	22	484		
			34	-20	400		
Sum of $(x - \bar{x})^2$			1469.878	Sum of $(x - \bar{x})^2$			12426
$n - 1$ (number of data values - 1)			7	$n - 1$ (number of data values - 1)			13
$SD = \sqrt{\frac{\sum(x - \bar{x})^2}{n - 1}}$			14.491	$SD = \sqrt{\frac{\sum(x - \bar{x})^2}{n - 1}}$			30.917

Table 4: Comparison of Team Left's and Team Right's Texting Results

	Number of Trials			Time of Text (s)		
	Mean	Median	Standard Deviation	Mean	Median	Standard Deviation
Team Left	1.25	1	0.463	50.375	47.5	14.491
Team Right	1.143	1	0.363	54	43	30.917

**Interpreting Results:**

- 1. On average, how much did the time for Team Left and Team Right differ?

The times differed by < 4 seconds, team left being a little bit faster (Left: 50.4 sec, Right: 54 sec)

- 2. What is the relationship between the number of trials and the time to type the text?

Difficult to tell here since most people were successful on attempt #1. My expectation: more attempts would lead to a slower time (desire for an accurate text).

- 3. What percentage of Team Left members was within one standard deviation of the mean for time to type the text?

$50.375 \pm 14.491$   
 $= (35.884, 64.866)$  } 75% of the data

- 4. What percentage of Team Right members was within one standard deviation of the mean for time to type the text?

$54 \pm 30.917$   
 $= (23.083, 84.917)$  } 93% of the data

- 5. What generalizations, if any, can we make using this data?

Left: lower average time, minimal spread in data  
Right: higher " " , greater dispersion in data

- 6. What is the maximum time for

a. Team Right: 155 sec

b. Team Left: 76 sec

- 7. Using the information provided in Table 4, determine if Team Right outperformed Team Left, Team Left outperformed Team Right, or both performed equally.

Tricky! While Team Left had a lower average (mean) suggesting they outperformed Team Right, this statement is reversed when looking at the median of each data set (Team Right Med = 43 vs. Team Left Med = 47.5). This is (truly) a toss up & we need more detailed testing to draw a definitive conclusion (confidence interval, hypothesis testing, etc.)