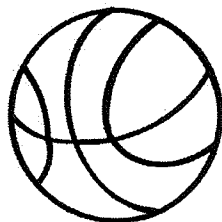


## Statistics – Central Tendency & Box and Whiskers Plots

The tables below show points scored for a random sample of 10 boy's basketball games from Lyons Township and Hinsdale Central from the 2014-15 season. Enter the data into your graphing calculator using L<sub>1</sub> for LT and L<sub>2</sub> for Hinsdale.

LT	GAME	PTS
43	vs. Argo	63
55	vs. Hinsdale South	83
59	@Downers North	65
62	vs. RB	64
63	@ York	59
63	vs. Oak Park	43
64	vs. Glenbard West	62
65	vs. St Viator	65
65	vs. Proviso West	55
83	vs. Morton	63



Hinsdale	GAME	PTS
38	vs. Sandburg	74
47	vs. Hinsdale South	71
50	@ OPRF	75
60	@ Proviso East	60
66	vs. LT	66
71	@ Glenbard North	77
72	@ York	50
74	vs. St. Joseph HS	72
75	vs. OPRF	47
77	@ LT	38

**Measures of Central Tendency** – tell you what the center of the data is

- 1.) Mean – average  $\frac{\text{add up all the data values}}{\# \text{ of values}}$
- 2.) Median – middle data value when data are listed smallest to largest
- 3.) Mode – most occurring data value

Find the mean, median, and mode of each team's points scored.

	<u>LT</u>	<u>Hinsdale</u>
Mean:	62.2	63
Median:	63	68.5
Mode:	63, 65	none

Based on these measures of center, what is a typical number of points scored per game for each team?

Typically LT scores between 62-63 points per game and Hinsdale scores about 68 points per game.

Who tends to score more points per game?

Hinsdale

**Measures of Variance (aka Measures of Dispersion)** – tell you how spread out the data are; tell you how data vary from one another

1.) Range – difference between the largest and smallest values  
largest – smallest

2.) Standard Deviation – how spread out the numbers are about the mean

$S_x$

Find the range and standard deviation of LT's points scored in the 10 games.

40 Range:  $83 - 43 = 40$

$S_x = 9.9$  Standard Deviation: Typically LT scores within 10 points of their mean.

Find the range and standard deviation of Hinsdale's points scored in the 10 games.

39 Range:  $77 - 38 = 39$

$S_x = 13.63$  Standard Deviation: Typically Hinsdale scores within 14 points of their mean.

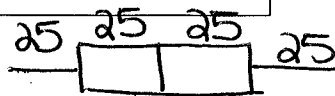
Which team has the most variability in number of points scored per game? Explain your reasoning.

Hinsdale b/c larger standard deviation.

Although statistics are useful in describing a data set, sometimes a graph of the data can be more informative.

Types of Statistical Graphs include: boxplots, histograms, stem and leaf, dot plots, and pie charts

Draw box and whisker plots of LT's and Hinsdale's points scored for the 10 games.



\* 5 number summary \*

Minimum -

Q1 Lower Quartile (First Quartile; 25<sup>th</sup> Percentile) -

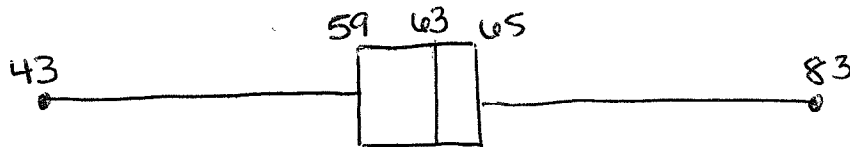
Median (Second Quartile; 50<sup>th</sup> Percentile) -

Q3 Upper Quartile (Third Quartile; 75<sup>th</sup> Percentile) -

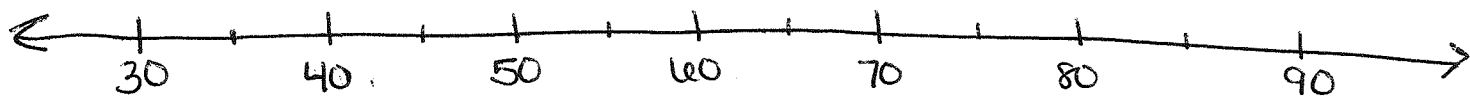
Maximum -

LT	Hinsdale
43	38
59	50
63	68.5
65	74
83	77

LT



Hinsdale



The interquartile range (IQR) is the width of an interval which contains the middle 50% of the data set. The IQR is computed by subtracting the first quartile from the third quartile. The IQR is more resistant to outliers than the standard deviation.

Use your boxplots to compare LT's data to Hinsdale's data.

Whose data is more spread out overall?

Hinsdale

Whose data is more spread out about the mean?

Hinsdale

Which player has the smallest interquartile range? What does this mean?

LT  $65 - 59 = 6$

Hinsdale  $74 - 50 = 24$

LT, middle 50% is not very spread out