Packet 5: Data and Statistics

Dear Parents/Guardians,

Packet 5 introduces students to statistics. Students will collect, organize, graphically display, and interpret data. Students will calculate different measures of center and spread for data sets. Finally, students will examine data in order to develop and answer statistical questions.

Measures of Center

A <u>measure of center</u> is a statistic describing the middle of a data set. The three common measures of center are the mean, the median, and the mode.

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The Mean (Or Average)	The Median	The Mode		
The mean is calculated	When the values of the	The mode is the value		
by adding the values in	data set are placed in	(or values) that occurs		
the data set and	order from least to	most often. A set of		
dividing by the number	greatest, the median is	data may have more		
of data values.	the middle value.	than one mode.		
78+82+95+78+100+83	78, 78, 82, 83 95, 100	(
6	If there is an even	78, 78 82, 83, 95, 100		
516	number of data values,			
$=\frac{3}{6}$	take the average of the	mode = 78		
$m_{\text{org}} = 96$	two middle values.			
meun = 86	median = 82.5			

The Five Number Summary

The five number summary of a data set consists of its minimum, maximum, and the data divided into quartiles. The five-number summary is usually written in the form (min, Q_1 , Q_2 or median, Q_3 , max).

Exan	nple:											~
(2)) 3	3	4	4	9	9	9	12	16	16	16	(20)
Minii Valu dato	mum e of th a set.	ne	Q ₁ is the middle of the of the set	ne e value first half data		There is o number values. B middle v 9. Med =	an even of data oth alues al	re	Q ₃ is th middle of the s half of data se	e value second the et.	Max valu the o set (imum e of data max)

The five number summary for this data set is (2, 4, 9, 16, 20).

Data Displays: Box Plots

A box plot (or box-and-whiskers plot) is a graphical representation of the five number summary. A box is formed from the first quartile (Q_1) to the third quartile (Q_3) , with whiskers reaching out from the box to the minimum and maximum. The median is indicated by a vertical dash inside the box.

Example: Using the five number summary from above, create a box plot. (min, Q_1 , med, Q_3 , max) = (2, 4, 9, 16, 20)





By the end of the packet, your student should know...

How to find measures of center and spread for a data set Lessons 5.1, 5.2, and 5.3

How to construct dot plots, histograms and box plots Lessons 5.2 and 5.3

How to describe the distribution of a data set by examining its center, spread, and overall shape Lessons 5.2 and 5.3

Additional Resources

Resource Guide (RG) Part 1, pages 53-59

Khan Academy video: Construct a Box and Whiskers Plot: <u>https://goo.gl/EzzV4J</u>