UNIT 12: DATA ANALYSIS & DISPLAYS

Part A: Video Tutorial Section

Videos 1 and 2:

https://www.youtube.com/watch?v=D7GbLd88omI (**Measures of Central Tendency Mean, Mode, Median)**

https://www.youtube.com/watch?v=_dE1zDbFAbQ **(More Examples of Measures of Central Tendency Mean, Mode, Median)**

Videos3 and 4:

https://www.youtube.com/watch?v=E4HAYd0QnRc (**Measures of Central Tendency Range, Standard Deviation)**

https://www.youtube.com/watch?v=k17_euuiTKw **(More Examples of Measures of Central Tendency Range, Standard Deviation)**

Videos 5 and 6:

https://www.youtube.com/watch?v=fJZv9YeQ-qQ (**Box-and-Whisker Plots)**

https://www.youtube.com/watch?v=09Cx7xuIXig **(More Examples of Box-and-Whisker Plots)**

Videos 7 and 8:

https://www.youtube.com/watch?v=2oJldeE4JcU (**Shapes of Distributions**

Basic Idea of this Concept)

https://www.youtube.com/watch?v=Y53_8WRrPzg (**More Examples of Shapes of Distributions)**

Videos 9 and 10:

https://www.youtube.com/watch?v=Y53_8WRrPzg **(Shapes of Distributions: Right Tailed, Left Tailed, Symmetrical)**

(https://www.youtube.com/watch?v=CT3tx9pWiSo **(More Examples of Shapes of Distributions: Right Tailed, Left Tailed, Symmetrical)**

Video 11:

https://www.youtube.com/watch?v=InDf8RBa8eA **(Quick Explanation of Scatter Plots)**

Videos 12 and 13:

https://www.youtube.com/watch?v=LPFrV-QhQE4 **(Finding a Line of Fit by Hand)**

https://www.youtube.com/watch?v=DmGLQkUm-4g **(More Examples of Finding Line of Fit by Hand)**

Videos 14:

https://www.youtube.com/watch?v=CNSB2yBrt2Q (F**inding a Line of Fit Using a Graphing Calculator)**

Videos 15 and 16:

https://www.youtube.com/watch?v=CWnfwZRAuaY (P**ositive Correlation, Negative Correlation, No Relationship)**

https://www.youtube.com/watch?v=cBGULKJ-p5c (**More Examples of Positive Correlation, Negative Correlation, No Relationship)**

Video 17 and 18:

https://www.youtube.com/watch?v=5P9nab26NrY **(Using Residuals)**

https://www.youtube.com/watch?v=-qIb_nZvN_U **(More Examples of Residuals)**

Videos 19 and 20:

https://www.youtube.com/watch?v=P713upqFce0 **(Finding Marginal Frequencies)**

https://www.youtube.com/watch?v=ZVXNpro8EBI (**More Examples of Marginal Frequencies)**

Videos 21 and 22:

https://www.youtube.com/watch?v=k8xFH6fCIWs **(Making a Two-Way Table)**

https://www.youtube.com/watch?v=_ETPMszULXc **(More Examples of Two-Way Table)**

Videos 23 and 24:

https://www.youtube.com/watch?v=Ka5pGmHJENI **(How to Choose What Kind of Graph is Need for Specific Data Given)**

https://www.youtube.com/watch?v=5RKpsCqmh0I **(More Examples of How to Choose What Kind of Graph is Need for Specific Data Given)**

Part B : Vocabulary, Hints and Explanations

measure of central tendency	the measure of the center of a data set (mean, medium, mode)
mean	sum (+) of the data divided by the number of data values
median	order of data
mode	value(s) occurring the most often
measure of dispersion	measure that describes the spread of data set
range	difference between the greatest and least value (subtract these numbers)
standard deviation	measure of how much a typical value in the data set differs from the mean
box-and-whisker plot	using a number line to represent data.
scatter plot	graph that shows the relationship between 2 data sets. • positive relationship (as X increases, Y increases) • negative relationship (as X increases, Y decreases) • no relationship (graph has no pattern)
line of best fit	a line drawn on a scatter plot that models a data set most accurately
residuals	the difference between the y-value of a data point and the corresponding y-value found using the line of fit
two-way table	displays 2 categories of data collected from the same source
marginal frequencies	the sum (+) of the rows and columns

Mean:

Students may have learned that the mean is the "mean one" because you must do more work! To find the mean you add the data set and divide by the number of data points. (you may think of this as averaging).

Mode:

The mode appears the most. The two words sound similar and may help a student recall the mode is most.

Median:

The median is the middle number. If the student does not understand the calculator function to determine this, have the student put the data set in order. Then tick off one point from each side to read the middle number.

Students may recall past teaching that stated the median is the medium or middle size when you think small, medium, large.

Outlier:

The outliers are those numbers that are far outside the data set. Many times an outlier is easily seen as "not belonging" with that set of data.

Example: A class scores the following on a test:

37 , 85, 87, 88, 88, 90, 90, 90, 91, 95

The number 37 is the outlier.

Measure of Dispersion:

A measure of dispersion is a measure that describes the spread of a data set

Range: The simplest measure is range. That is the distance from the smallest to the largest and can be found by subtracting smallest from largest.

Standard deviation: A measure of how much a value in the data set differs from the mean.

To find standard deviation: 1) Find the mean

2) Subtract the mean from each data point (some will be negative numbers)

3) Square each difference

4) Find the mean of the squares

Box and Whisker Plot

A box and whisker plot orders the data in numerical order and creates a number line of that data. The student will then find the median of the full set of data, the median of the lower set of data, and the median of the upper set of data.

These three points for the “box”. The lower data point is the first quartile. The upper data point it the third quartile.

The whiskers are formed at the point of the least value and the point of the greatest value.

When comparing two sets of data on a box and whisker plot, a student will be able to determine the median of each set and the range of data. They will not be able to determine the mode or the mean, because they will not know how many times a number is represented by a data point.