(A) Lesson Context

BIG PICTURE of this UNIT:	• How do we analyze and then make conclusions from a data set? • How do I present my data and the outcomes of my analysis? • How do I use data & statistics to make decisions? • How do I decide on the validity/reliability of my data? Of my analysis? Of my conclusions? Of my decision?		
CONTEXT of this LESSON:	Where we've been Prepare and analyze frequency histograms, frequency polygons and cumulative frequency graphs	Where we are One set of numbers we can calculate in order to analyze a data set is the measures of central tendency … how do you find the "center" of a data set?	Where we are heading How do I analyze and make conclusions from a data set, in whatever way this data gets presented?

(B) Lesson Objectives:

a. Starting from a frequency table for discrete data, calculate three measures of central tendency (mean, median & mode)

b. Starting from a grouped frequency table for continuous data, calculate three measures of central tendency (mean, median & mode)

c. Starting from a cumulative frequency graph, calculate three measures of central tendency (mean, median & mode)

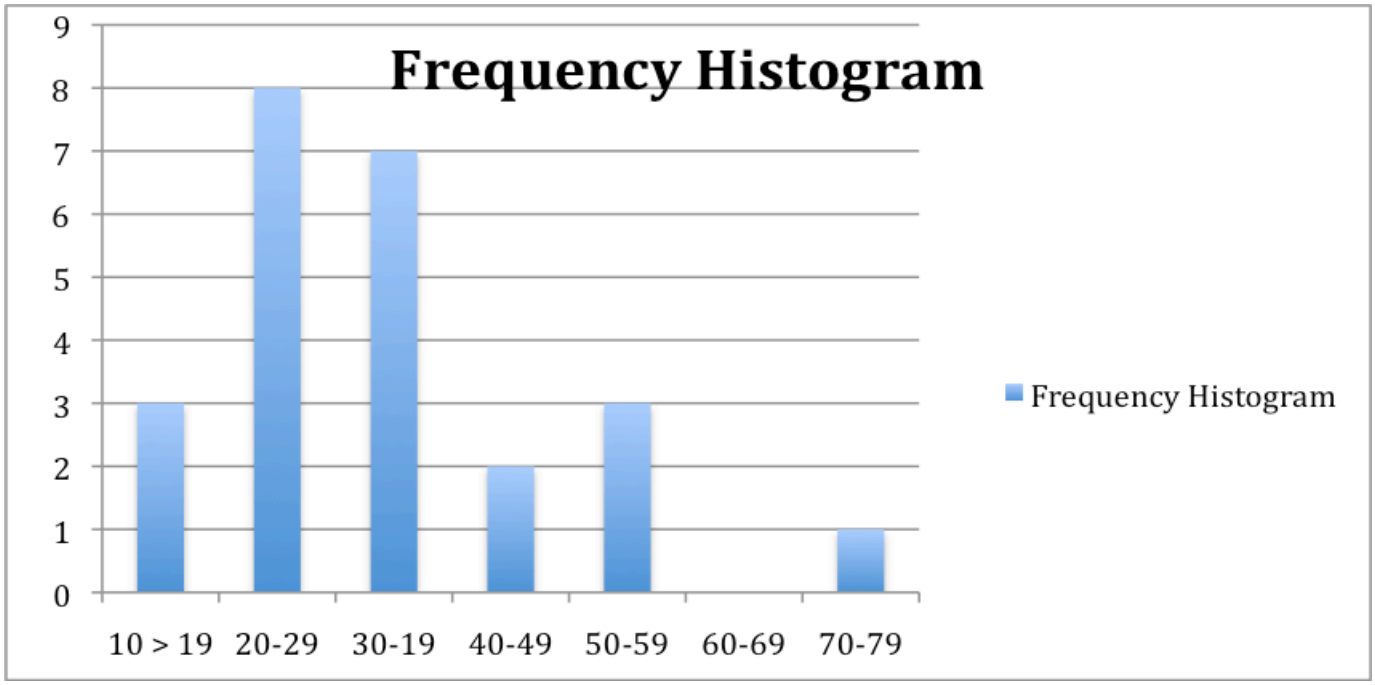
(C) Opening Exercise #1:

Matching Exercise ➔ You are given a set of "cards" that represent the measures of central tendency (mean, median & mode) as well as a second set of "cards" that show frequency histograms. Your task is to match a card showing a frequency histogram with a matching card showing a set of central tendency measures.

Bar Chart A	Bar Chart B	Bar Chart C
Bar Chart D	Bar Chart E	Bar Chart F
Bar Chart G	Bar Chart H	Bar Chart I
Bar Chart J	Bar Chart K	Bar Chart L

(D)Opening Exercise #2: Create an Original Data set from a Frequency Histogram

Your job will be to create a data set that matches this frequency table given.



(a) POSSIBLE Data Set: (Criteria ➔ your data set MUST be different than any one elses at your table)

(b) Story behind the data:

(c) Find the mean and median and range of your original data set.

MEAN = MEDIAN = RANGE =

(d) Explain why your mean, median and range are only **estimates** of the actual mean, median & range.

(e) Now, compare your mean and median and range to those at your table. How different or similar are the results (for mean, median, range) of the 4 people at your table?

(f) Would you **expect** these measures to be similar or different? Explain your thinking.

(g) EXIT TICKET ➔ AT THE END OF THE LESSON, use the frequency histogram to determine an estimate of the mean and median and range using the method(s) learned in this lesson.

(E) Measures of Central Tendency of Discrete Data from a Frequency Table

Example #1: Here are the scores for the last season for Mr. S's Football team.

Football Score	Frequency
0	2
1	2
2	10
3	12
4	5
5	1
6	0
7	2
8	0

List data **in order**:

Mean:

Median:

Mode:

(a) What percentage of their games did they score more than 3 Points?

(b) If they had an average of 3.1 points scored against them per game, estimate what percentage of games they won.

Example #2: A survey was given to a random sample of freshman at a local college asking their ages. This is the data that came back.

Age	Frequency		"Totals"
17	6		
18	34		
19	59		
20	81		
21	16		
22	11		
23	5		
24	8		
25	2		

Find the following. Discuss what are good methods for doing this.

Mean:

Median:

Mode:

(a) What percentage of students are over 19?

(b) If the entire freshman class consists of 15,698 students, estimate how many people on campus are under the age of 21.

(F) Measures of Central Tendency of Continuous Data from a Grouped Frequency Table

Example #1: Mr. Mello's class went on a field trip to the Amazon Jungle. While exploring their class took some height samples for local plant life. Here is the data they recorded.

Length in cm	mid interval length	Frequency	Cumulative Frequency
[0 – 10]		6	
(10 – 20]		34	
(20 – 30]		81	
(30 – 40]		59	
(40 – 50]		16	
(50 – 60]		11	
(60 – 70]		5	
(70 – 80]		8	
(80 – 90]		2	

Find the following. Discuss what are good methods for doing this.

Mean:

Median:

Modal Class/Interval:

Which measure of central tendency best reflects the height of an "average" plant in the Amazon? Explain

Example #2: Below are the times recorded for Grade 9 students' mile run in Mr. S's PE Classes.

Time in minutes	mid-interval time	Frequency	Cumulative Frequency
(5:00 – 5:20]	5.167	1	
(5:20 – 5:40]	5.5	0	
(5:40 – 6:00]	5.833	3	
(6:00 – 6:20]	6.167	2	
(6:20 – 6:40]	6.5	5	
(6:40 – 7:00]	6.833	4	
(7:00 – 7:20]	7.167	8	
(7:20 – 7:40]	7.5	15	
(7:40 – 8:00]	7.833	12	

Estimate the following. Discuss what are good methods for doing this.

Mean:

Median:

Modal Class/Interval:

(a) How many students does Mr. S. have in his P.E. Classes?

(b) Which measure of central tendency best reflects the mile run time of an "average" student in Grade 9 . Explain.