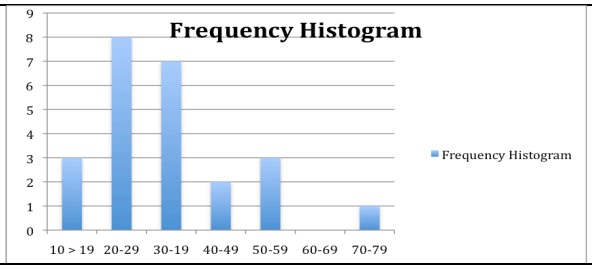
(A) Lesson Context

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 Activity ➔ Fitting Data to Central Tendencies

Your job will be to create a data set that matches the mean, median, mode, and frequency table given.	
Mean: 34	
Median: 31	
Mode: 25	
Data:	
Story Behind the Data:	

(D)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
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.

(E) 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	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	Frequency	Cumulative Frequency
(5:00 – 5: 20]	1	
(5:20 – 5:40]	0	
(5:40 – 6:00]	3	
(6:00 – 6:20]	2	
(6:20 – 6:40]	5	
(6:40 – 7:00]	4	
(7:00 – 7:20]	8	
(7:20 – 7:40]	15	
(7:40 – 8:00]	12	

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

Mean:

Median:

Modal Class/Interval:

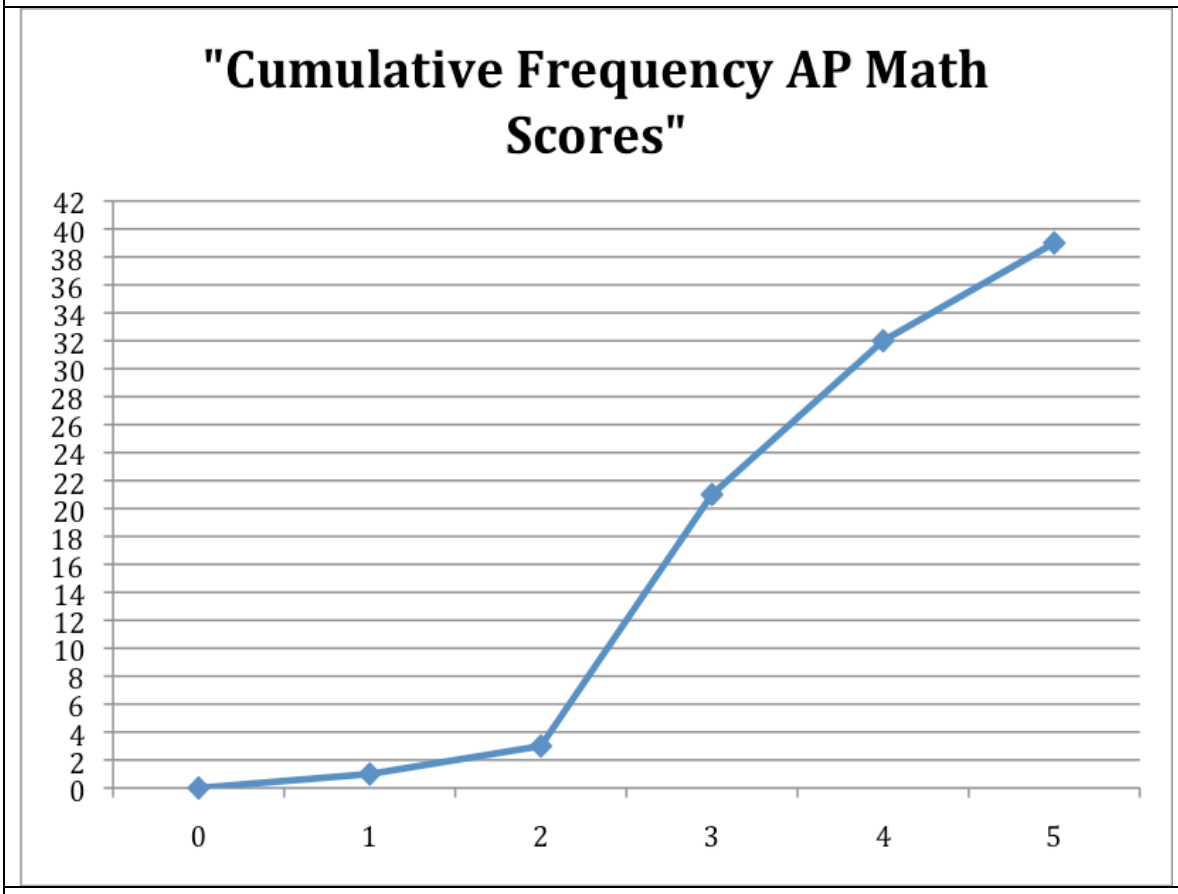
(a) How many students does Mr. S. have in his P.E. Classes?

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

(F) Measures of Central Tendency from a Cumulative Frequency Graph

Example #1: Below is a Cumulative Frequency Graph for the AP Math Scores from the past two year at CAC.

(a) Estimate the mean given the following CFG. Discuss what are good methods for doing this.



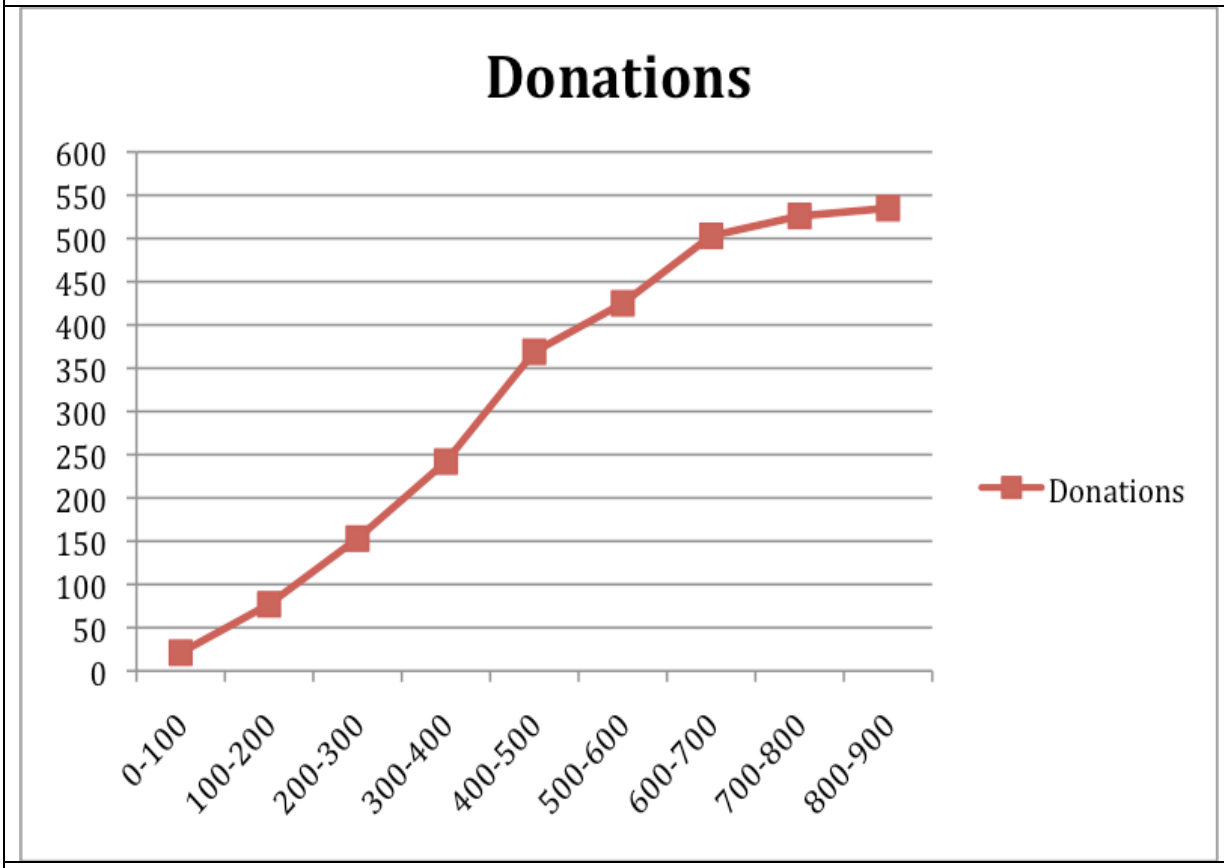
From the CFG, prepare a frequency table, then use your frequency table to list all the AP Scores for the last two years:

Score	Frequency
0	
1	
2	
3	
4	
5	

(b) From your list, determine the mean, median & mode

Example #2: The High School has just finished a fundraiser for a local charity during the latest Spirit Week. This fundraiser brought in quite a lot of money. Below is a cumulative Frequency table showing the amount of donations that came in.

(a) Estimate the mean given the following CFG. Discuss what are good methods for doing this.



(b) From the CFG, prepare a frequency table.

(b) Use the CFG to estimate the donation amount given by the lower 25% of the donors	(c) Use the CFG to estimate the donation amount given by the upper 25% of the donors