Classes: Categories for grouping data.
Frequency (class frequency)**:** The number of data values in a class.
Relative frequency: The ratio of the frequency of a class to the total number of pieces of data.
Frequency distribution: A listing of classes and their frequencies.
Relative Frequency distribution: A listing of classes and their relative frequencies.
Upper class limit: The largest value that can go in a class.
Lower class limit: The smallest value that can go in a class.
Class width: The difference between the lower class limit of the given class and the lower class limit of the next higher class.
Class midpoint (class mark): The midpoint of a class.

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Guidelines for grouping data:
(for quantitative variable)

- There should be between five and twenty classes.
- Each piece of data must belong to one, and only one, class.(Mutually Exclusive)
- Whenever feasible, all classes should have the same width.

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To build a Frequency Table:

- Find the range of the data:
  Range = Largest value – smallest value
- Use the **range** and **try different class width** to determine how many classes you need to make frequency table or histogram.

Student data example:

Range = 285 – 106 = 179/20 ≈ 9

If using a class width of 20, there'll be about 9 classes which is good.

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Sturge's Rule

- A rule for determining number of classes to use in a histogram or frequency distribution table.
- Sturge's Rule: $k = 1 + 3.322(\log_{10} n)$,
  k is the number of classes,
  n is the size of the data.
- $k = 1 + 3.322(\log_{10} 21) = 5.4$

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Frequency Distribution Table

(From data sheet)

Class	Frequency	Relative Freq.	Cumulative R.F.
100< - 120	3	3/22 = .136	3/22
120< - 140	3	3/22 = .136	6/22
140< - 160	3	3/22 = .136	9/22
160< - 180	5	5/22 = .227	14/22
180< - 200	5	5/22 = .227	19/22
200< - 220	2	2/22 = .091	21/22
220< - 240	0	0/22 = .000	21/22
240< - 260	0	0/22 = .000	21/22
260< - 280	0	0/22 = .000	21/22
280< - 300	1	1/22 = .045	22/22
Total	**22**	**1.000**	

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Frequency Distribution Table

(From data sheet with different boundaries)

Class	Frequency	Relative Freq.	Cumulative R.F.
100 - <120	3	3/22 = .136	3/22
120 - <140	3	3/22 = .136	6/22
140 - <160	2	2/22 = .091	8/22
160 - <180	4	4/22 = .182	12/22
180 - <200	7	7/22 = .318	19/22
200 - <220	1	1/22 = .045	20/22
220 - <240	1	1/22 = .045	21/22
240 - <260	0	0/22 = .000	21/22
260 - <280	0	0/22 = .000	21/22
280 - <300	1	1/22 = .045	22/22
Total	**22**	**1.000**	

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