

Lesson 59 – Working With Frequency Distribution Tables & Grouped Data

(A) Lesson Objectives

- Prepare visual representations from a frequency distribution table and from grouped data → histograms & ogives (cumulative frequency distributions)
- Determine the mean, median and mode from a frequency distribution table & from grouped data
- Determine measures of dispersion from a frequency distribution table & from grouped data → the 5 number summary

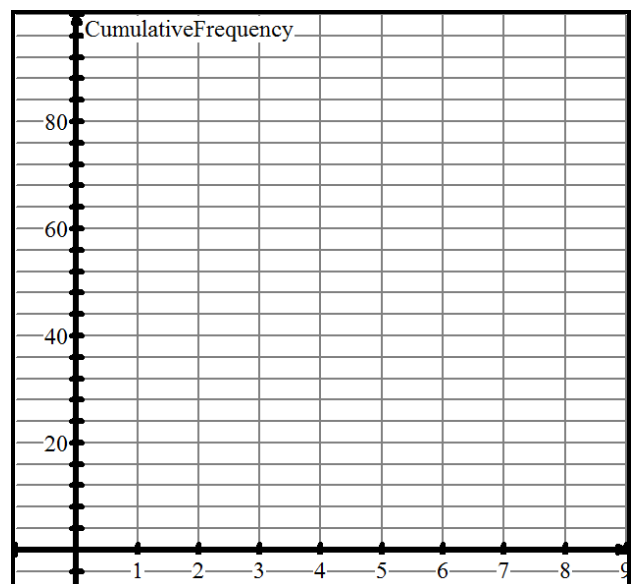
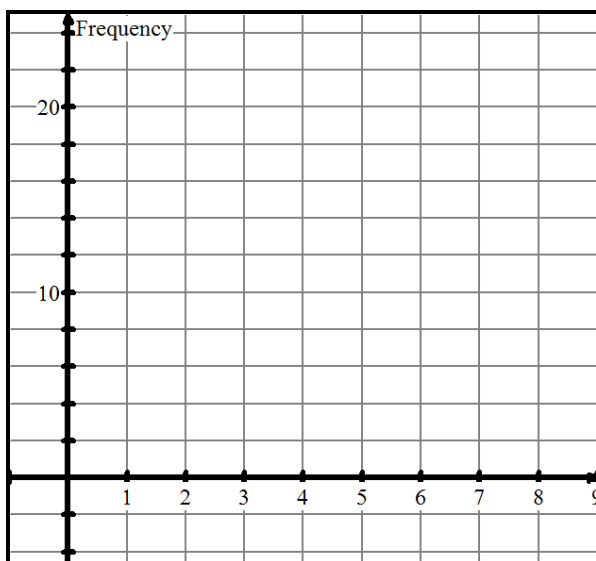
(B) Opening Exercise → Who's the Best

(C) Working From a Frequency Distribution Table

- Use modified Q3 on p127 from HH textbook as a context → A hotel with 8 total suites over a summer period of 90 days

# of Rooms Rented	Frequency		Relative Frequency	Cumulative Frequency	Cumulative Relative Frequency
0	3				
1	11				
2	14				
3	17				
4	20				
5	9				
6	7				
7	4				
8	5				

- Visual Representations → Histograms & Ogives (Cumulative Frequency Distributions)



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- c. Measures of Central Tendency from FDT → Now determine the mean, median and mode from this FDT in our example above:
- i. Mean →

 - ii. Median →

 - iii. Mode →
- d. Measures of Dispersion from FDT → Now determine the 5 number summary in order to get an idea about the spread (or dispersion) of the data → We need to use the ogive (CFD)
- i. Min →

 - ii. Max →

 - iii. Q1 →

 - iv. Q2 →

 - v. Q3 →

 - vi. IQR →

(D) Practice:

- a. <http://www.subtangent.com/math/resources/cum-freq.pdf>

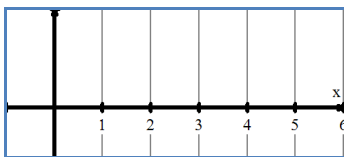
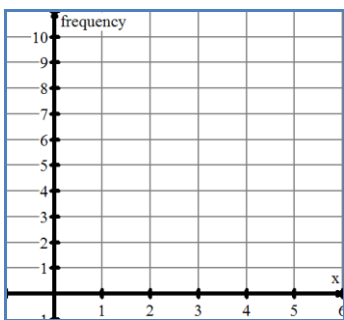
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Working With Frequency Distribution Tables (FDT) – Examples

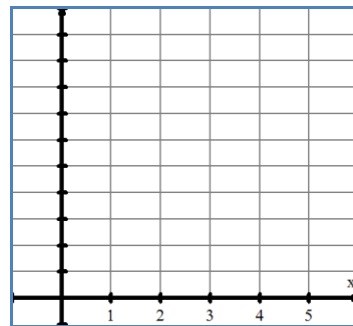
Here is a frequency distribution table:

x	0	1	2	3	4	5
frequency	1	3	6	6	7	1
Relative frequency						
Cumulative frequency						

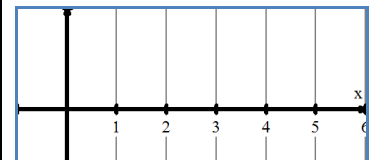
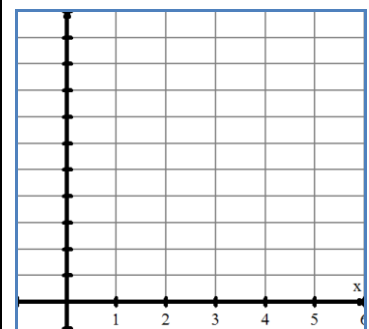
(a) Construct a frequency histogram



(b) Construct a relative frequency histogram

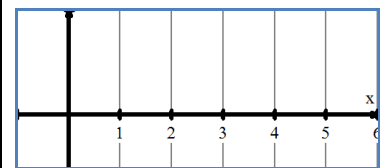


(c) Construct a “less than” ogive



(d) calculate the measures of central tendency

(f) construct a box-whisker plot



(e) Calculate the 5 number summary

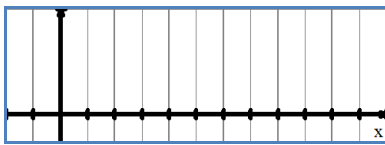
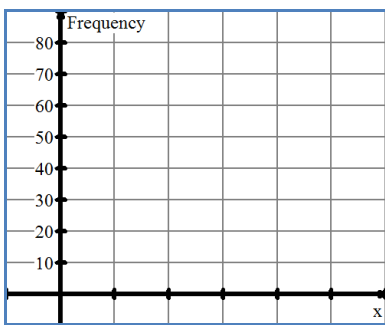
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EXAMPLE #2

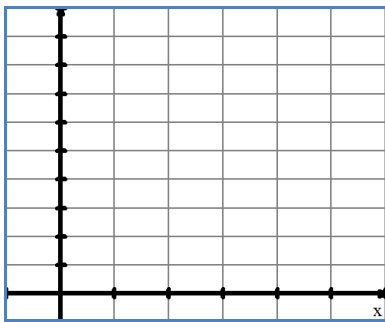
Here is a frequency distribution table:

x	10	11	12	13	14	15
frequency	12	45	56	78	42	17
Relative frequency						
Cumulative frequency						

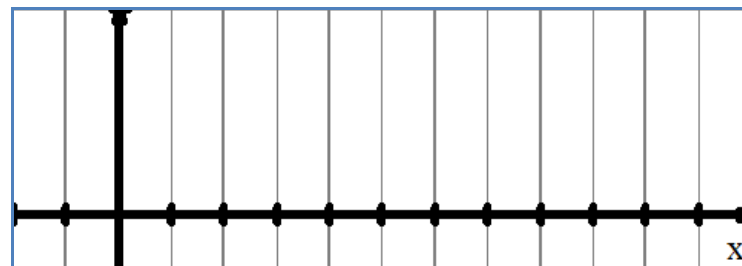
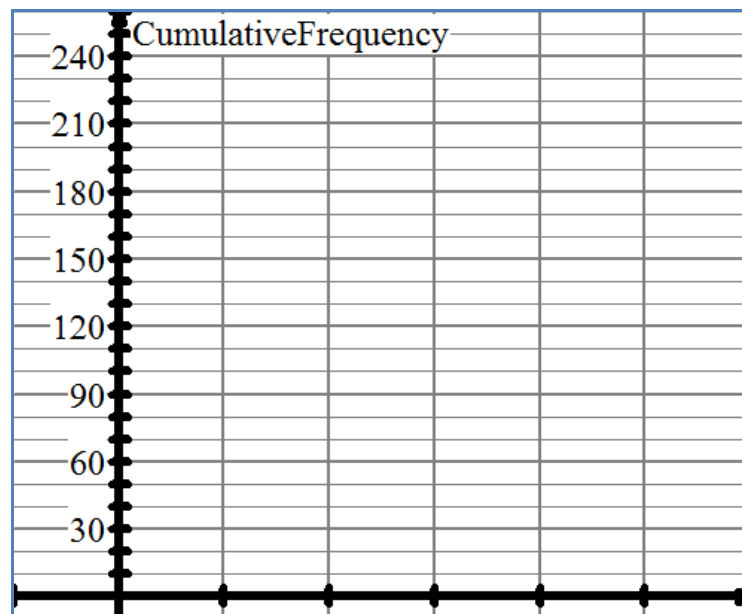
(a) Construct a frequency histogram



(b) Construct a relative frequency polygon



(c) Construct a "less than" ogive



(d) calculate the measures of central tendency

(f) construct a box-whisker plot

(e) Calculate the 5 number summary

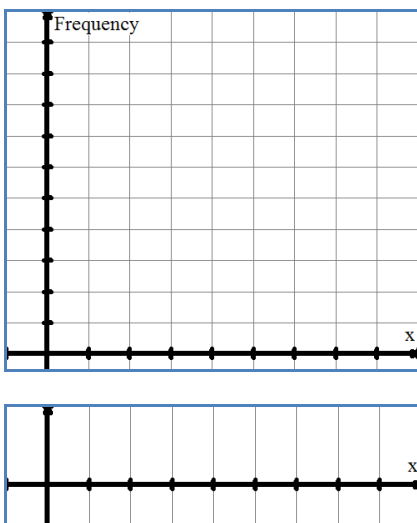
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EXAMPLE #3

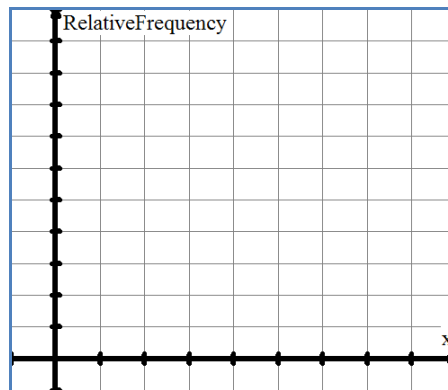
Here is a frequency distribution table:

x	1.0	1.5	2.0	2.5	3.0	3.5	4.0
frequency	3	8	3	4	2	8	2
Relative frequency							
Cumulative frequency							

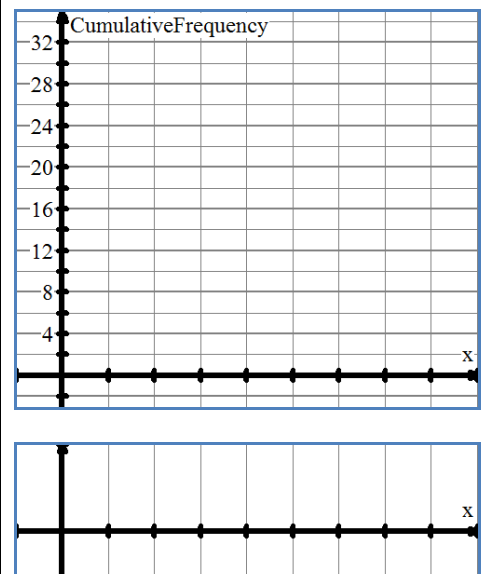
(a) Construct a frequency histogram



(b) Construct a relative frequency histogram

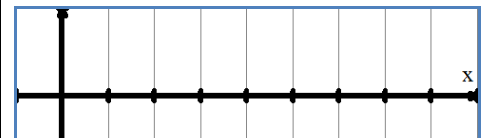


(c) Construct a "less than" ogive



(d) calculate the measures of central tendency

(f) construct a box-whisker plot



(e) Calculate the 5 number summary

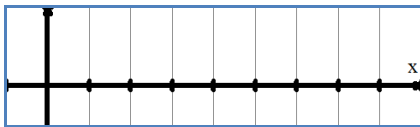
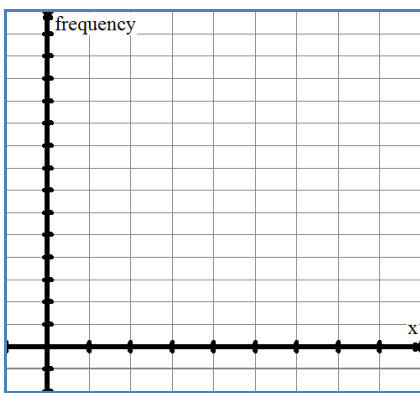
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EXAMPLE #4

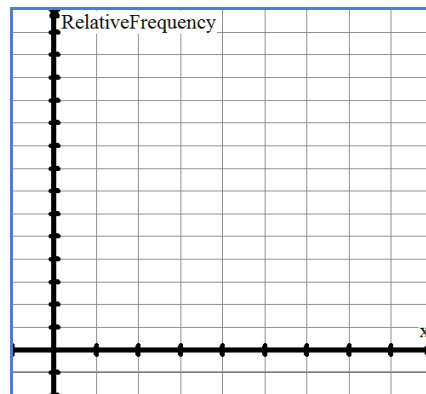
Here is a frequency distribution table for cars per week sold by a dealership over a year.

Cars Sold	0	1	2	3	4	5	6	7
Number of weeks	2	3	5	4	7	13	10	8
Relative frequency								
Cumulative frequency								

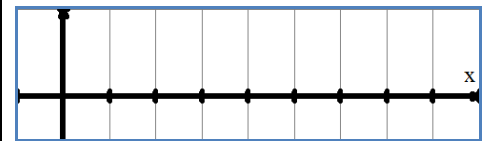
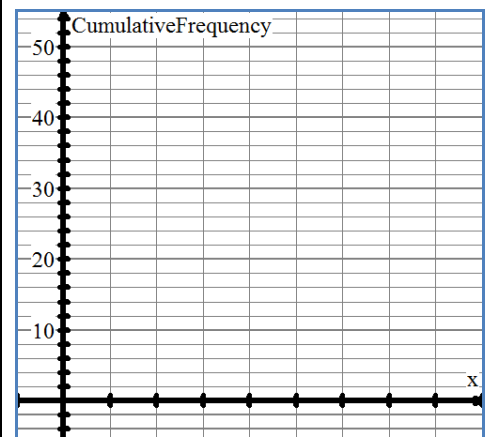
(a) Construct a frequency histogram



(b) Construct a relative frequency histogram polygon

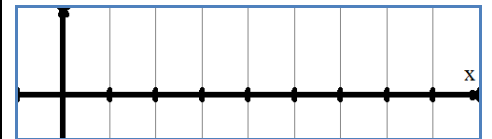


(c) Construct a "less than" ogive



(d) calculate the measures of central tendency

(f) construct a box-whisker plot



(e) Calculate the 5 number summary

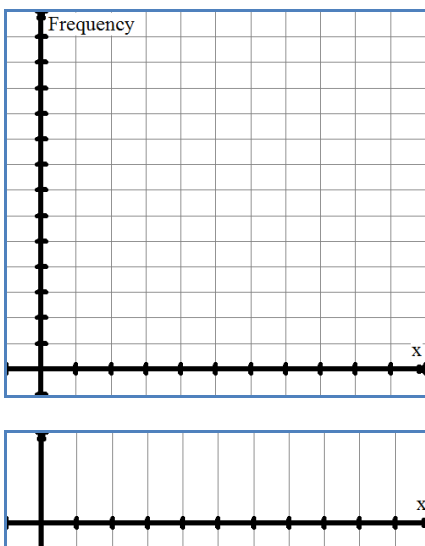
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EXAMPLE #5

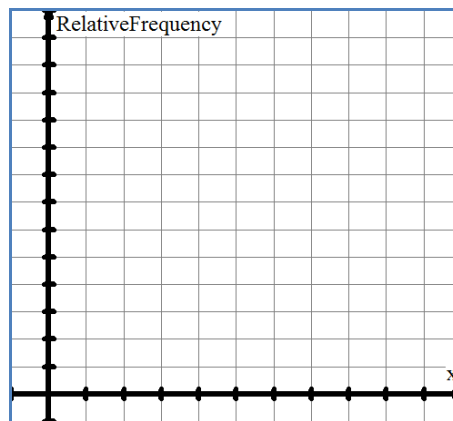
Here is a frequency distribution table for heights of bean plants (rounded to the nearest cm) after 5 weeks of growth.

Cars Sold	2	3	4	5	6	7	8	9
Number of weeks	8	21	24	13	8	6	3	2
Relative frequency								
Cumulative frequency								

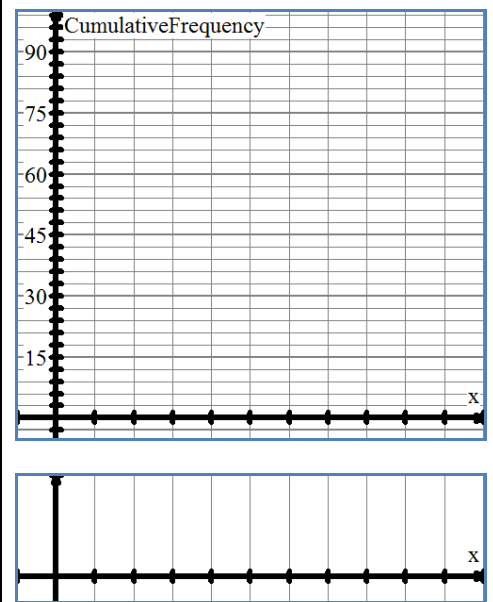
(a) Construct a frequency histogram



(b) Construct a relative frequency histogram polygon

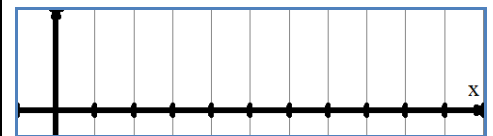


(c) Construct a "less than" ogive



(d) calculate the measures of central tendency

(f) construct a box-whisker plot



(e) Calculate the 5 number summary

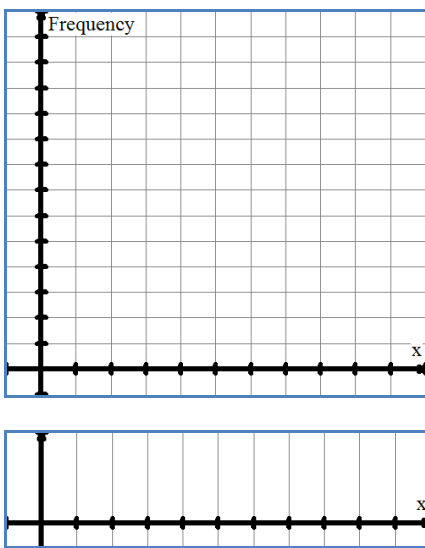
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EXAMPLE #6

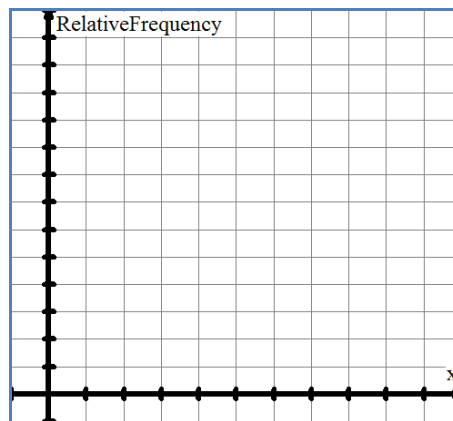
Here is a frequency distribution table number of piglets in a litter.

# of piglets	6	7	8	9	10	11	12	13	14
frequency	8	15	16	20	22	7	4	2	1
Relative frequency									
Cumulative frequency									

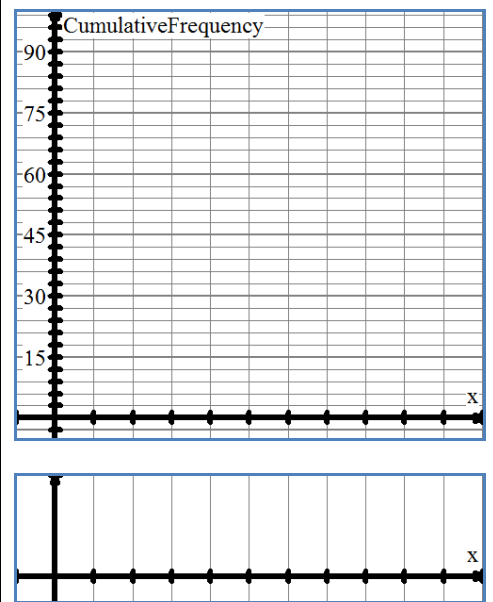
(a) Construct a frequency histogram



(b) Construct a relative frequency histogram polygon

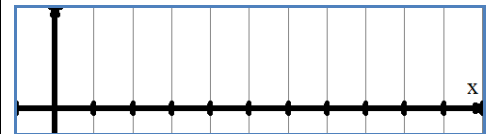


(c) Construct a "less than" ogive



(d) calculate the measures of central tendency

(f) construct a box-whisker plot



(e) Calculate the 5 number summary