

2.2 Frequency Distributions and Histograms

Histograms - bar graph where:

1. The width of the bars are equal with no space between
2. The bars represent quantitative values
3. The height of the bar shows frequency

Creating a histogram

- 1) Determine # of classes (5-15 is typical)
- 2) Determine class width
 - a) $\frac{\text{largest data value} - \text{smallest}}{\text{number of classes}} = x$
 - b) round x to the nearest whole #
* Even if the result is a whole #, round up to next whole #
- 3) Determine class boundaries
 $\pm .5$ to upper/lower class limits

Class limits - lower and upper values of the class width

Class boundaries - $\pm .5$ to upper/lower limits to create the histogram
* ensures data points do not fall on boundary lines

$$\text{Class midpoint (class mark)} = \frac{\text{upper limit} + \text{lower limit}}{2}$$

Frequency table - table recording frequency of data within each class

Example 1 #3 pg. 55 Children as a percent of the population in Denver, CO

* Calculator
Tbl sort

lowest data point = 5

highest data point = 53

total data points = 50

of classes = 7 (given in problem)

* What does
5% vs 53%
look like?

* why 7
classes

$$\text{class width} = \frac{53-5}{7}$$

$$= 6.857$$

Round up to 7

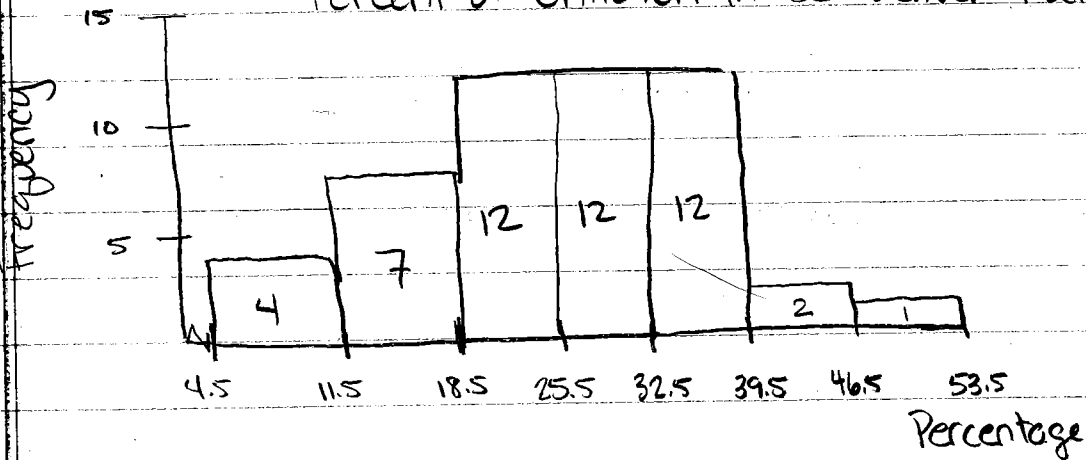
<u>Class Limits</u>	<u>Frequency</u>	<u>Boundaries (graph)</u>
5 - 11	(4)	4.5 - 11.5
12 - 18	(7)	11.5 - 18.5
19 - 25	(12)	18.5 - 25.5
26 - 32	(12)	25.5 - 32.5
33 - 39	(12)	32.5 - 39.5
40 - 46	(2)	39.5 - 46.5
47 - 53	(1)	46.5 - 53.5
	50	

2.2 cont'd

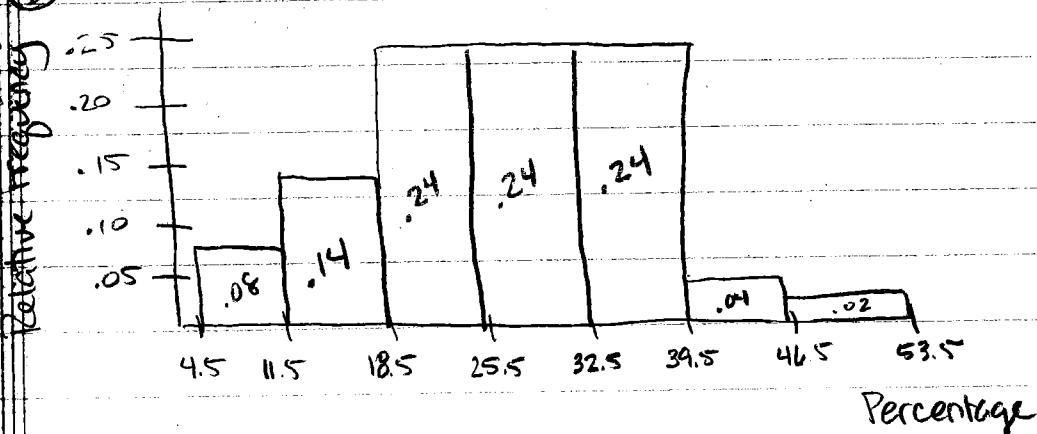
Class Limits	Midpoints	Frequency	Relative Freq
5 - 11	8	4	$4/50 = .08$
12 - 18	15	7	$7/50 = .14$
19 - 25	22	12	$12/50 = .24$
26 - 32	29	12	$12/50 = .24$
33 - 39	36	12	$12/50 = .24$
40 - 46	43	2	$2/50 = .04$
47 - 53	50	1	$1/50 = .02$

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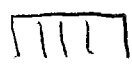

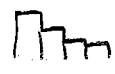
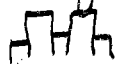
Percent of Children in 50 Denver Neighborhoods



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Distribution Shapes

Symmetrical 
uniform or rectangular 
skewed left 
skewed right 
bimodal - two or more large frequencies
at least one class apart 

Pareto Chart - bar graph where height represents frequency of an event and the bars are arranged left to right by decreasing height

Pg. 39

