

Math 104

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Sections 2.1 & 2.2 of text

Part 1 : Qualitative Data

Birds @ my feeder

Frequency

Relative Frequency

classes

titmouse

9

$$9/30 = 0.3$$

wren

6

$$6/30 = 0.2$$

chickadee

8

$$8/30 = 0.267$$

nut hatch

3

$$3/30 = 0.1$$

sparrow

3

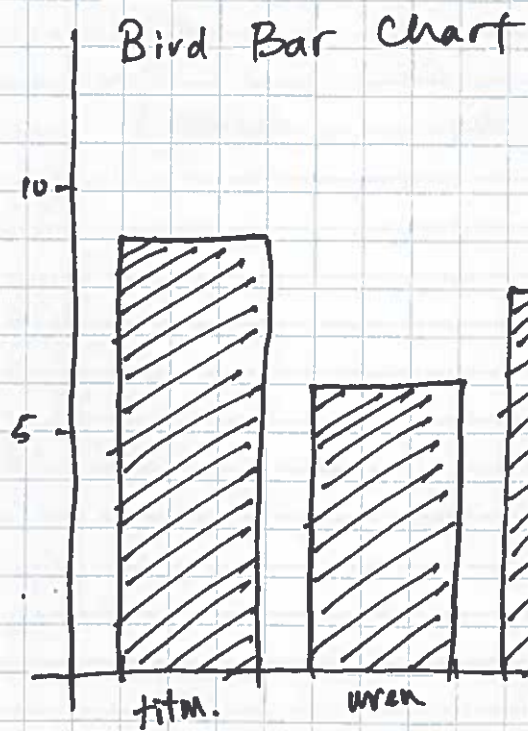
$$3/30 = 0.1$$

cardinal

1

$$1/30 = 0.033$$

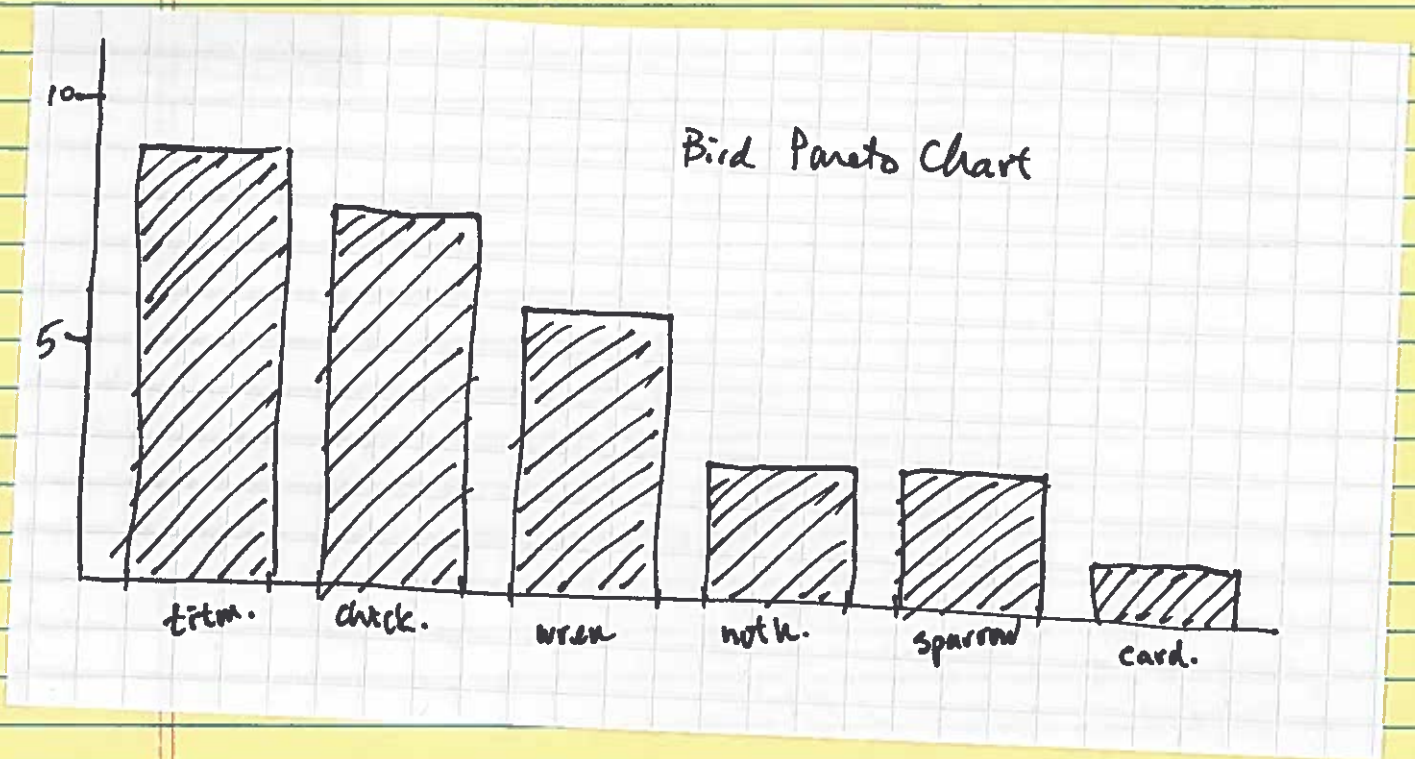
total 30



add: relative freq.

Pareto chart:

bar graph w/ classes are in decreasing order of frequency

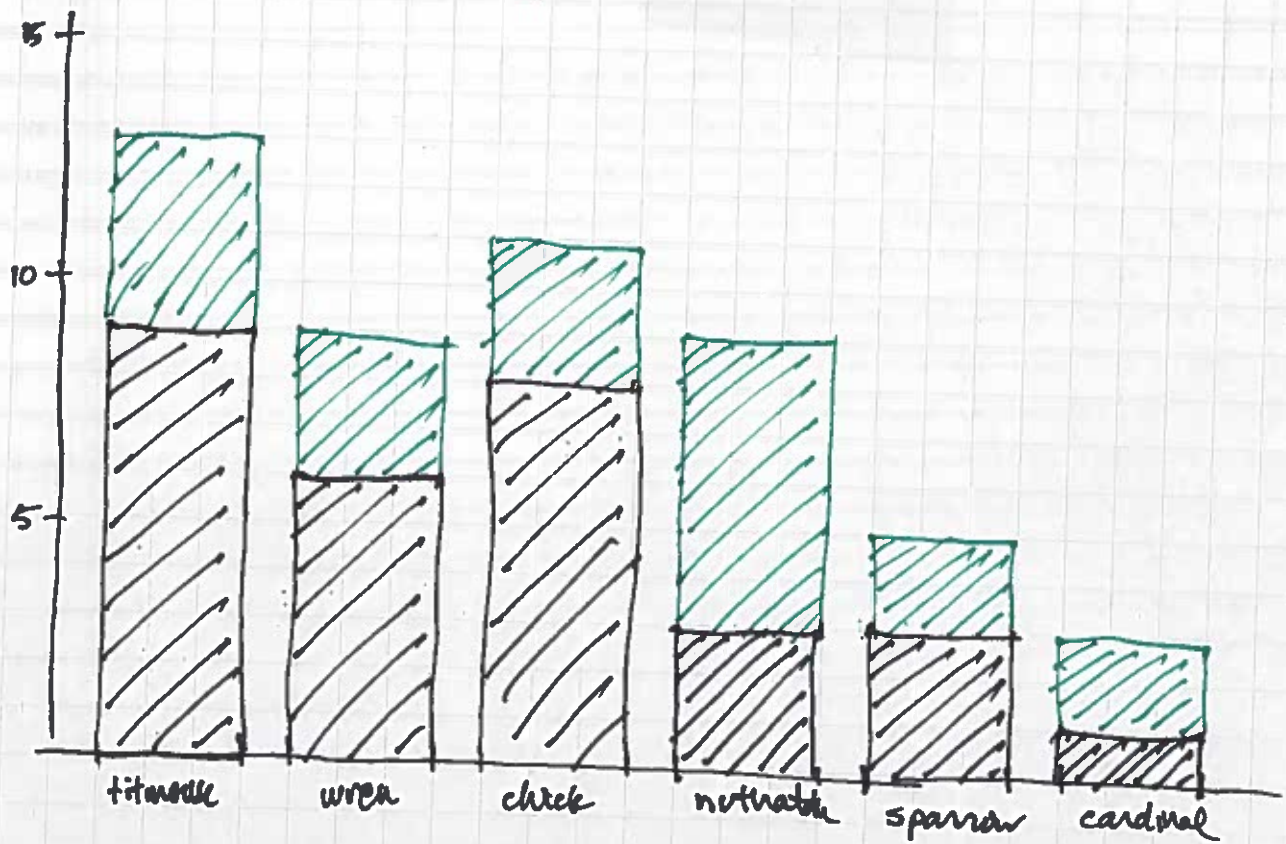


Angles for a pie chart:

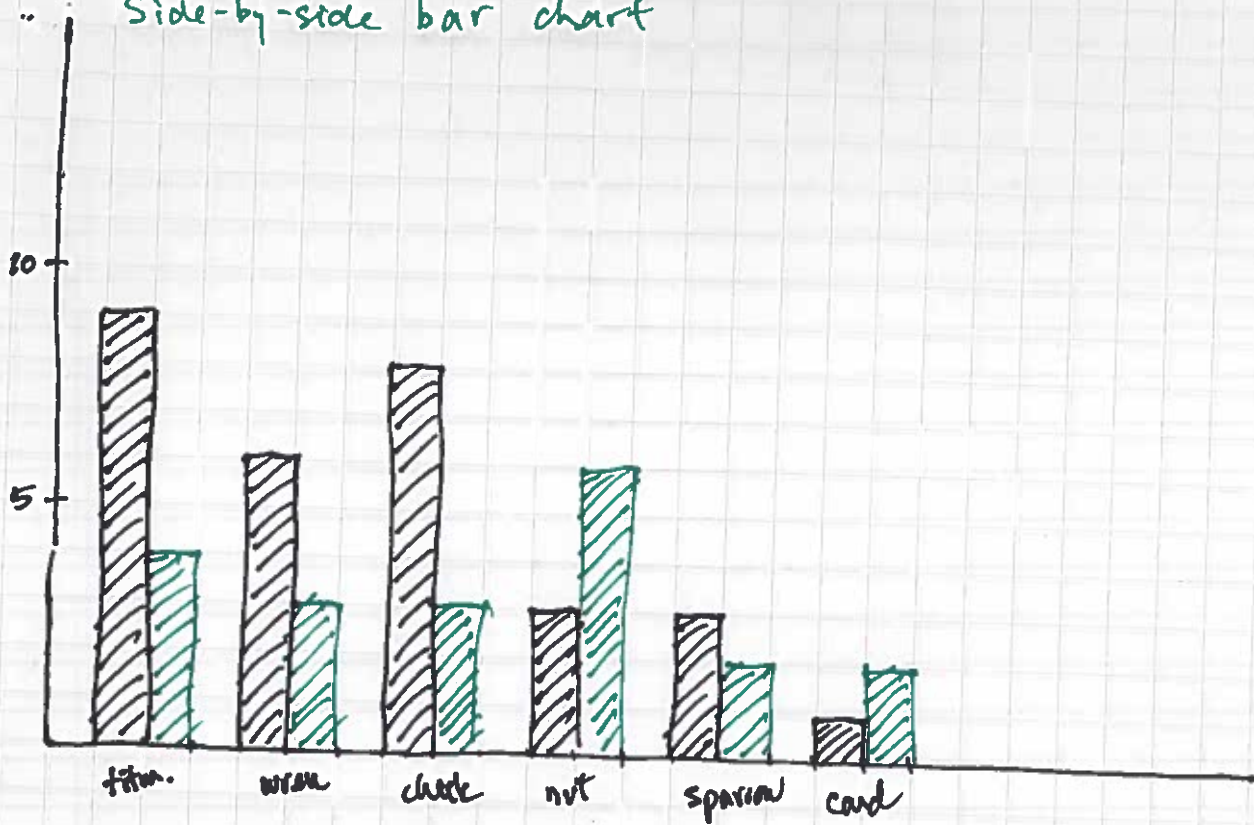
	relative frequency	degree
titmouse	$\frac{9}{30}$	$\frac{9}{30} \cdot 360^\circ = 108^\circ$
wren	$\frac{6}{30}$	$\frac{2}{10} \cdot 360^\circ = 72^\circ$
chickadee	$\frac{8}{30}$	$\frac{8}{30} \cdot 360^\circ = 96^\circ$
nuthatch	$\frac{3}{30} = \frac{1}{10}$	$\frac{1}{10} \cdot 360^\circ = 36^\circ$
sparrow	$\frac{3}{30}$	$\frac{3}{30} \cdot 360^\circ = 36^\circ$
cardinal	$\frac{1}{30}$	$\frac{1}{30} \cdot 360^\circ = 12^\circ$

	Frequency	
	Front yard	Back yard
titmouse	9	4
wren	6	3
chickadee	8	3
nuthatch	3	6
sparrow	3	2
cardinal	1	2

Stacked bar graph



Side-by-side bar chart



## Part 2 : Quantitative Data

exam scores

71	88	72	29	71	42	72	68	69	53
67	71	94	58	70	84	90	25	64	97

sorted exam scores

25	29	42	53	58	64	67	68	69	70
71	71	71	72	72	84	88	90	94	97



making a histogram (bar chart for quantitative data) for exam scores.

Use class width = 10

limits  
lower upper  
class  
20-29

class	frequency	relative frequency	cumulative frequency	cumulative relative frequency	boundaries	midpoint
20-29	2	$\frac{2}{20} = .1$	2	.1	19.5 - 29.5	24.5
30-39	0	0	2	.1	29.5 - 39.5	34.5
40-49	1	.05	3	.15	39.5 - 49.5	44.5
50-59	2	.1	5	$\frac{5}{20} = .25$	49.5 - 59.5	54.5
60-69	4	$\frac{4}{20} = .2$	9	.45	59.5 - 69.5	64.5
70-79	6	$\frac{6}{20} = .3$	15	.75	69.5 - 79.5	74.5
80-89	2	.1	17	.85	79.5 - 89.5	84.5
90-99	3	.15	20	1.00	89.5 - 99.5	94.5
<u>total</u>	20					

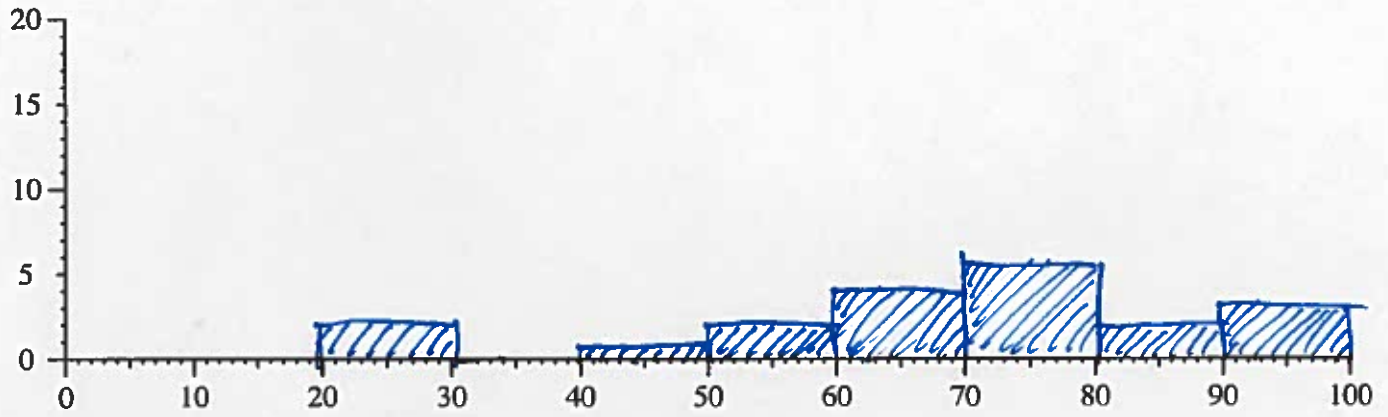
Approximate average:

$$\frac{1}{20} (2 \cdot 24.5 + 4 \cdot 44.5 + 2 \cdot 54.5 + 4 \cdot 64.5 + 6 \cdot 74.5 + 2 \cdot 84.5 + 3 \cdot 94.5)$$

$$= \frac{1}{20} (1360) = 68$$

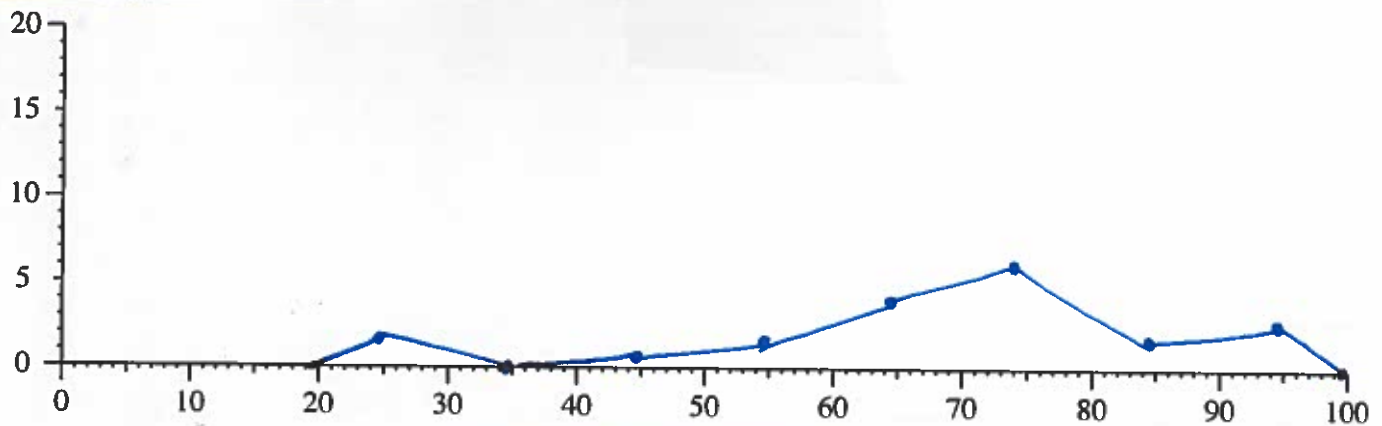
(In fact, the true average of the 20 exam scores is 67.7.)

Histogram (= bar chart for quantitative data)  
for exam scores

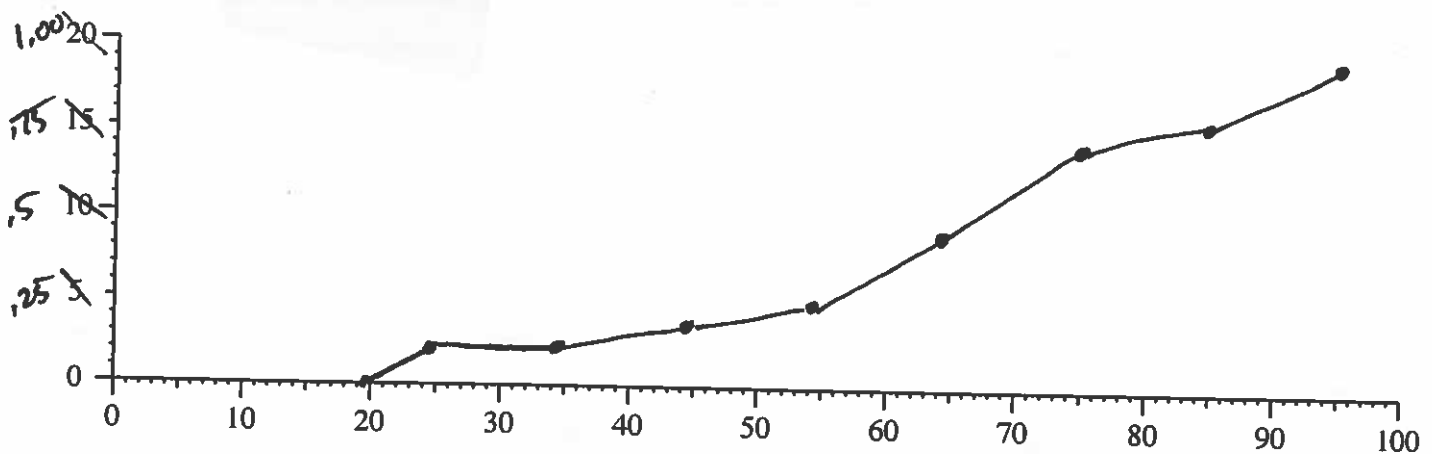




## Frequency Polygon



## Ogive (Cumulative Frequency Polygon)



End 2.1, 2.2



Find these notes at [kunkle.people.cofc.edu](http://kunkle.people.cofc.edu)