

BEGIN: BASIC STATS (DESCRIPTIVE)

↓
PROBABILITY (RANDOM EVENTS)

↓
RETURN TO STATISTICS (INFERENTIAL)

Def: STATISTICS IS THE STUDY OF ANALYZING DATA
(i.e. OBSERVATIONS, MEASUREMENTS, ETC.)

Def: DESCRIPTIVE STATS

- SUMMARIZE &
DESCRIBE
IMPORTANT CHARACTERISTICS
OF A SET OF DATA

Def: INFERENCEAL STATS

- MAKE INFERENCES (CONCLUSIONS, PREDICTIONS, ETC.)
ABOUT POPULATION CHARACTERISTICS FROM
DATA OBTAINED FROM A SAMPLE

POPULATION ← WHAT YOU WANT TO STUDY.
ex. ALL LIGHTBULBS PRODUCED BY COMP. X

SAMPLE ← WHAT YOU ACTUALLY STUDY.
ex. RANDOM SAMPLE OF 100 LIGHTBULBS.

MORE EXAMPLES

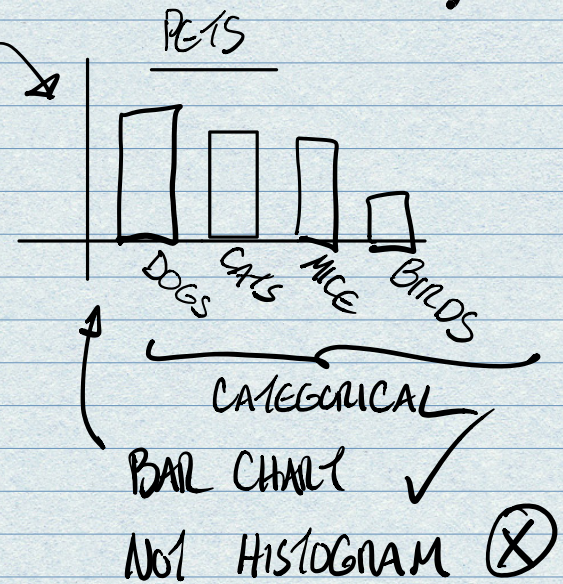
	POPULATION	SAMPLE
HUMAN BODY TEMP. (98.6°F)	ALL HUMANS	ALL SOLDIERS IN A PARTICULAR TROOP.
AVE CCNY GPA	ALL CCNY STUDENTS	ONE CCNY CLASS



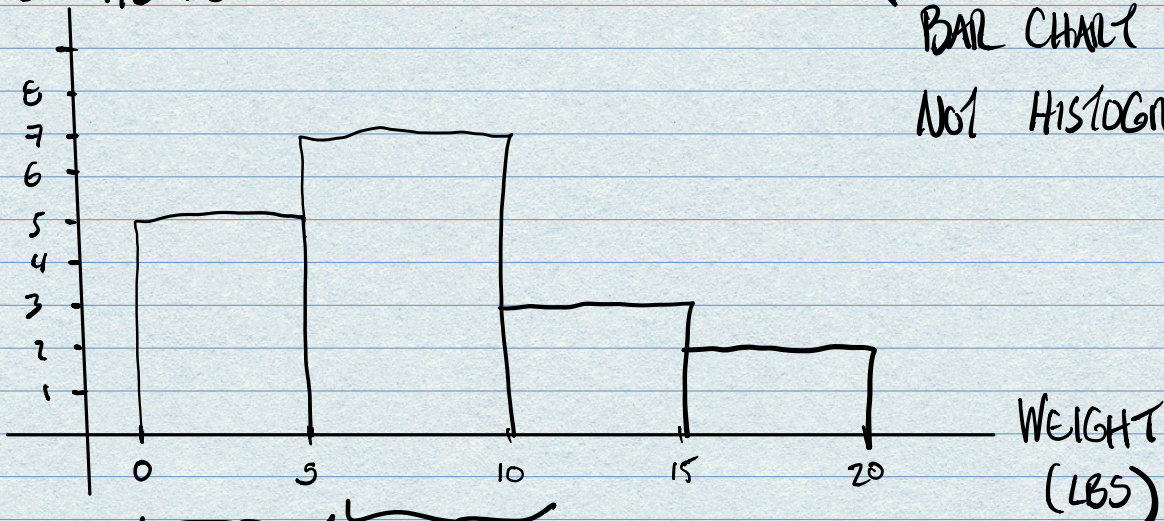
MAKE PREDICTIONS
ABOUT THE POP.
(LAST PART OF
COURSE)

§1.5 REL. FREQ. HISTOGRAMS

Def: A HISTOGRAM IS A BAR CHART
WHERE THE HORIZONTAL AXIS
IS A PARTITIONED NUMBER LINE.
QUANTITATIVE



PETS IN 173-F6



$0 \leq \text{WEIGHT} < 5$

2nd CLASS

$5 \leq \text{WEIGHT} < 10$

HISTOGRAM ✓

EACH MEASUREMENT (WEIGHT OF PET) IS PLACED INTO
A CLASS, DETERMINED BY THE PARTITION BEING USED.

NOTE: EACH CLASS IS AN INTERVAL OF REAL NUMBERS
THAT CONTAINS ITS LEFT ENDPOINT, AND
DOES NOT CONTAIN ITS RIGHT ENDPOINT.

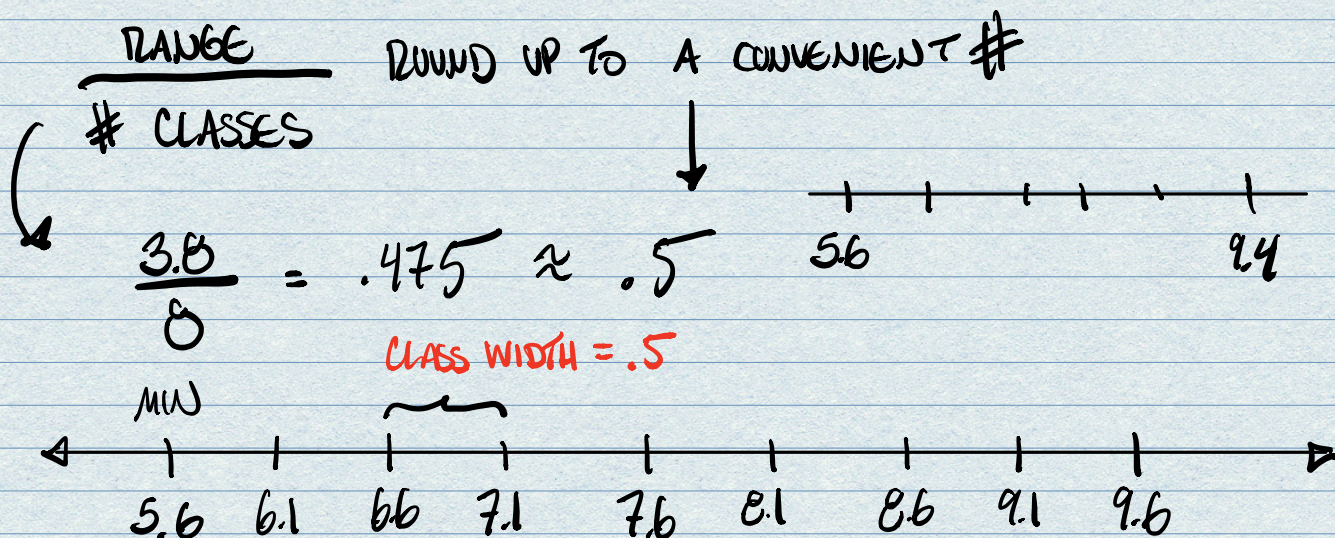
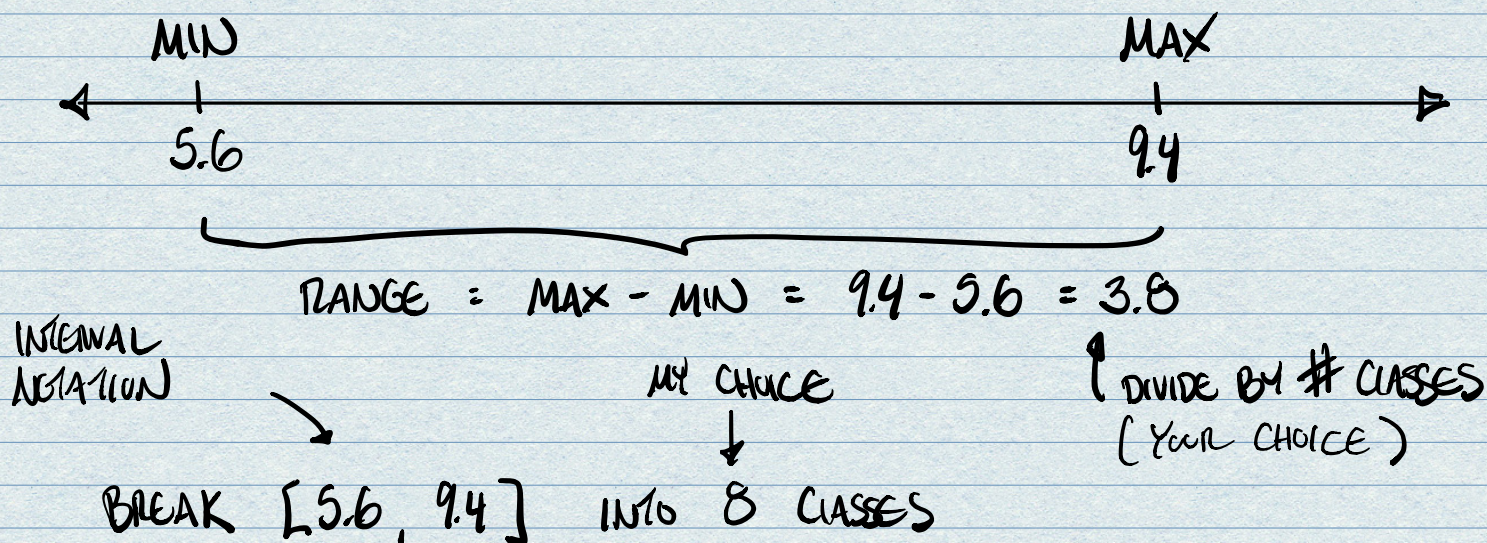
EX.

Birth Weights of 30 Full-Term Newborn Babies

7.2	7.8	6.8	6.2	8.2
8.0	8.2	5.6	8.6	7.1
8.2	7.7	7.5	7.2	7.7
5.8	6.8	6.8	8.5	7.5
6.1	7.9	9.4	9.0	7.8
8.5	9.0	7.7	6.7	7.7

(HISTOGRAM GIVES A VISUALIZATION OF THE DATA.)

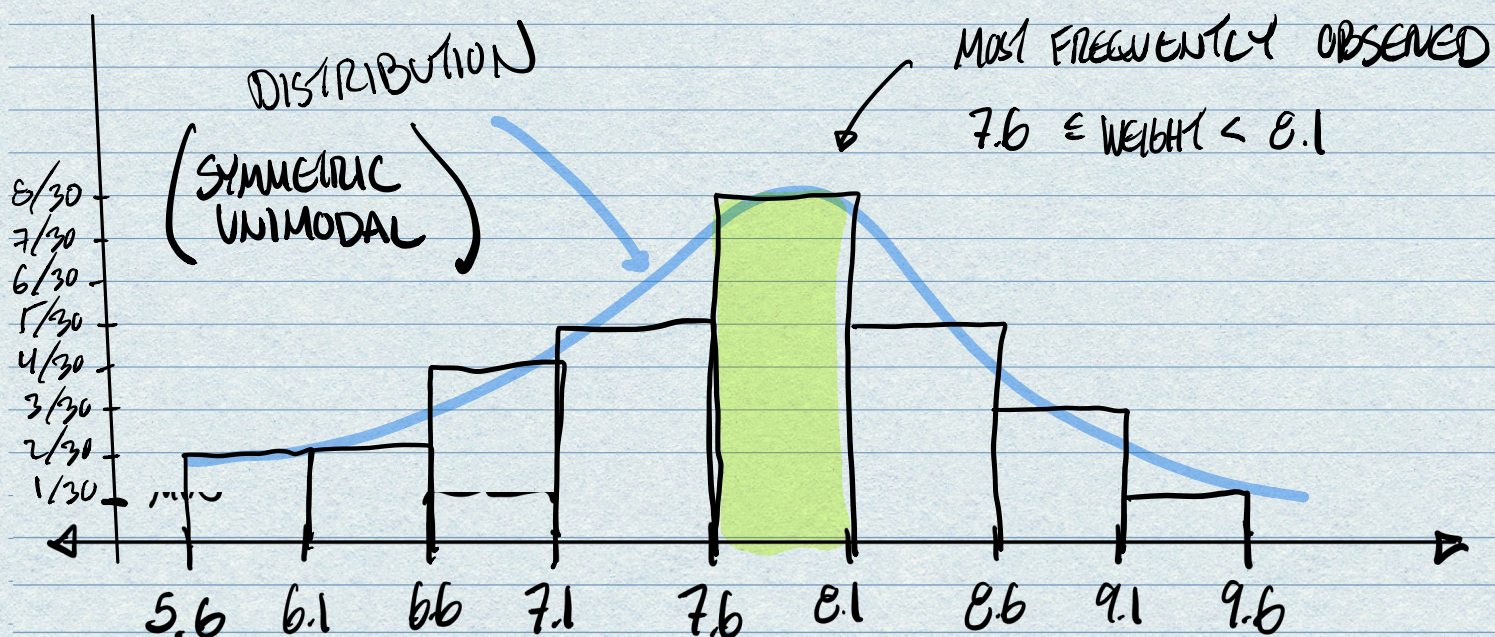
RULE OF THUMB: BREAK DATA INTO 5-12 CLASSES (BINS)
(THERE IS A LOT OF FREEDOM HERE!)



CLASS	TALLY	CLASS FREQUENCY	CLASS RELATIVE FREQUENCY

[5.6, 6.1)		2	2/30
[6.1, 6.6)		2	2/30
[6.6, 7.1)		4	4/30
[7.1, 7.6)		5	5/30
[7.6, 8.1)		8	8/30
[8.1, 8.6)		5	5/30
[8.6, 9.1)		3	3/30
[9.1, 9.6)		1	1/30
		+	+
		30	1

RELATIVE FREQUENCY HISTOGRAM



SUMMARY: PARTITION DATA INTO CLASSES.

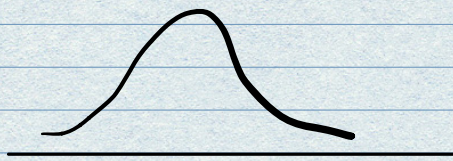
EACH CLASS IS AN INTERVAL WITH THE SAME LENGTH, CALLED CLASS WIDTH.

$$\text{CLASS WIDTH} = \frac{\text{MAX} - \text{MIN}}{\# \text{ CLASSES}}$$

ROUND UP A LITTLE
BUT (TO A CONVENIENT
NUMBER)

of CLASSES is your choice.
RECOMMEND 5-12.

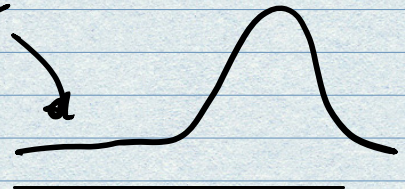
DESCRIBING DISTRIBUTIONS:



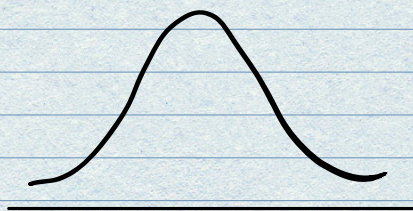
SYMMETRIC



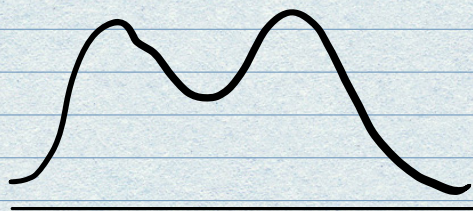
RIGHT-SKEWED



LEFT-SKEWED

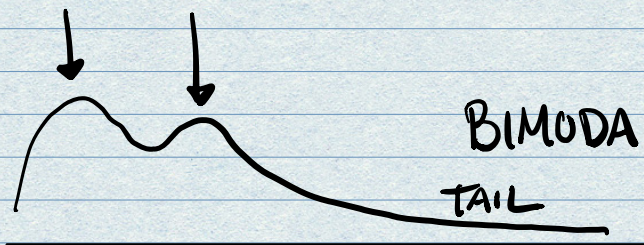


UNIMODAL
(ONE HUMP)



BIMODAL
(TWO HUMPS)

COMBINATIONS:



BIMODAL & RIGHT SKEWED.

TAIL