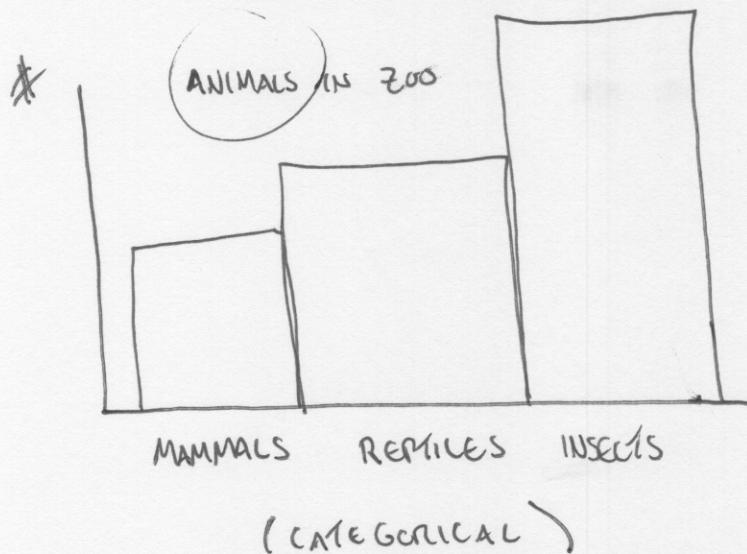


§ 1.5 REL. FREQ. HISTOGRAM

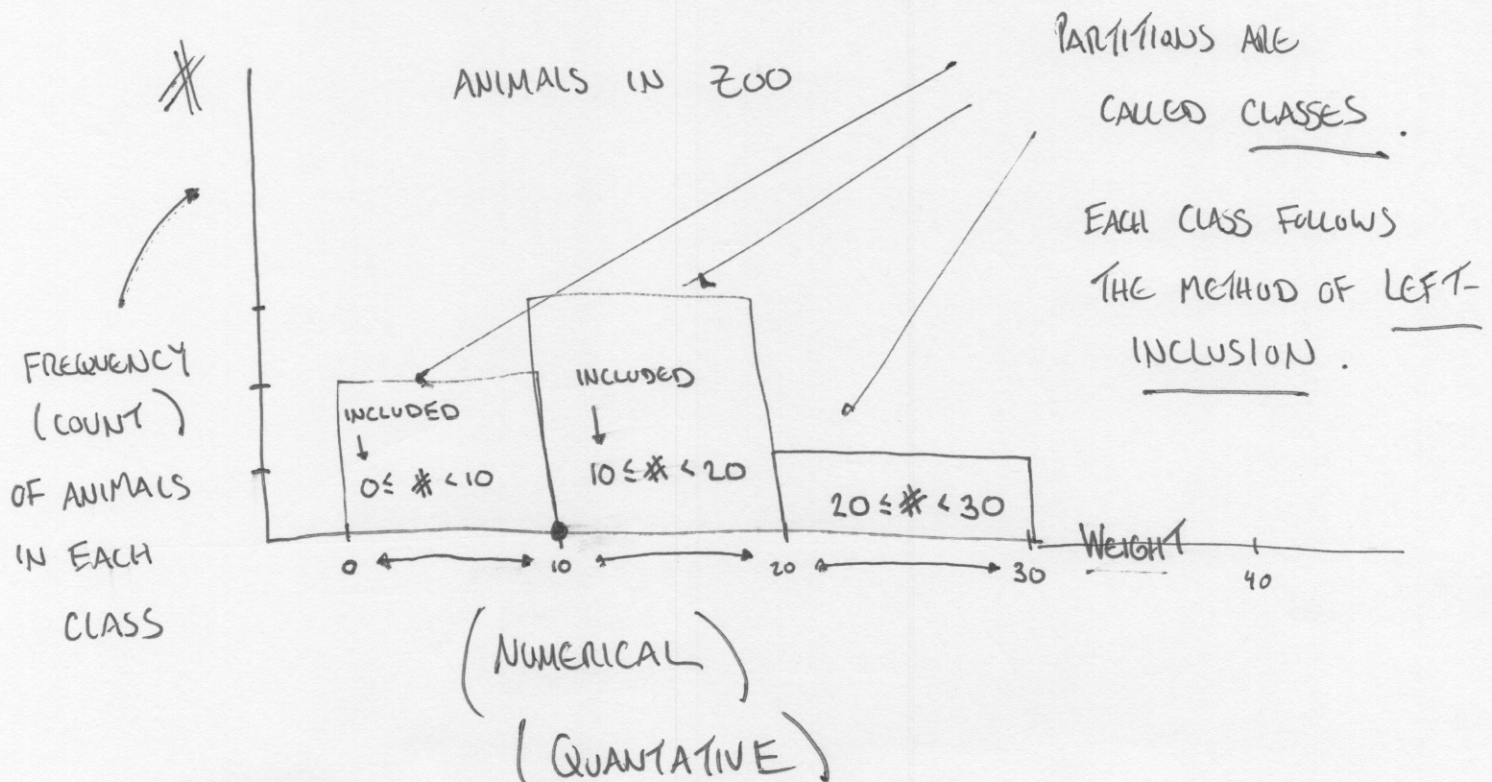
Def: HISTOGRAM : BAR CHART,

BUT HORIZONTAL AXIS IS A PARTITIONED
NUMBER LINE.



BAR CHART ✓

HISTOGRAM (X)



$$\text{RELATIVE FREQUENCY} = \frac{\text{FREQUENCY}}{\text{TOTAL \# OF OBSERVATIONS (ANIMALS)}}$$

ex. ANIMAL WEIGHTS: RAW DATA ~~100~~ 100 NUMBERS

1.2 , 3.8 , 2.7 , 13.1 , 20.2 , ETC.

SUMMARIZE WITH
REL. FREQ. HISTOGRAM.

BREAK DATA UP INTO CLASSES.

GUIDELINES: ALL CLASSES SHOULD HAVE THE SAME WIDTH.

WHAT WIDTH/LENGTH FOR THESE CLASSES/INTERVALS?

SUGGESTION: $\frac{\text{MAX} - \text{MIN} + \text{LITTLE BIT}}$

$$6 \leq \# \leq 12$$

6 - 12 CLASSES

ex. MAX: 58.8

MIN: 0.1

CLASS WIDTH =

$$\frac{58.8 - 0.1 + 1.3}{6}$$

$$= 10$$

$$\frac{64}{8} = 8$$

$$\frac{58.8 - .1 + 13}{6 \text{ \# CLASSES}} = \frac{60}{6} = 10 \text{ CLASS WIDTH}$$

$$\times \frac{58.8 - .1 + 6.3}{8 \text{ \# CLASSES}} = \frac{64}{8} = 8 \text{ CLASS WIDTH.}$$

8.09

to MAKE THE CLASSES: CLASS 1: $\text{MIN} \leq * < \text{MIN} + \text{CLASS WIDTH}$

$$.1 \leq * < 8.1 + \text{CLASS WIDTH.}$$

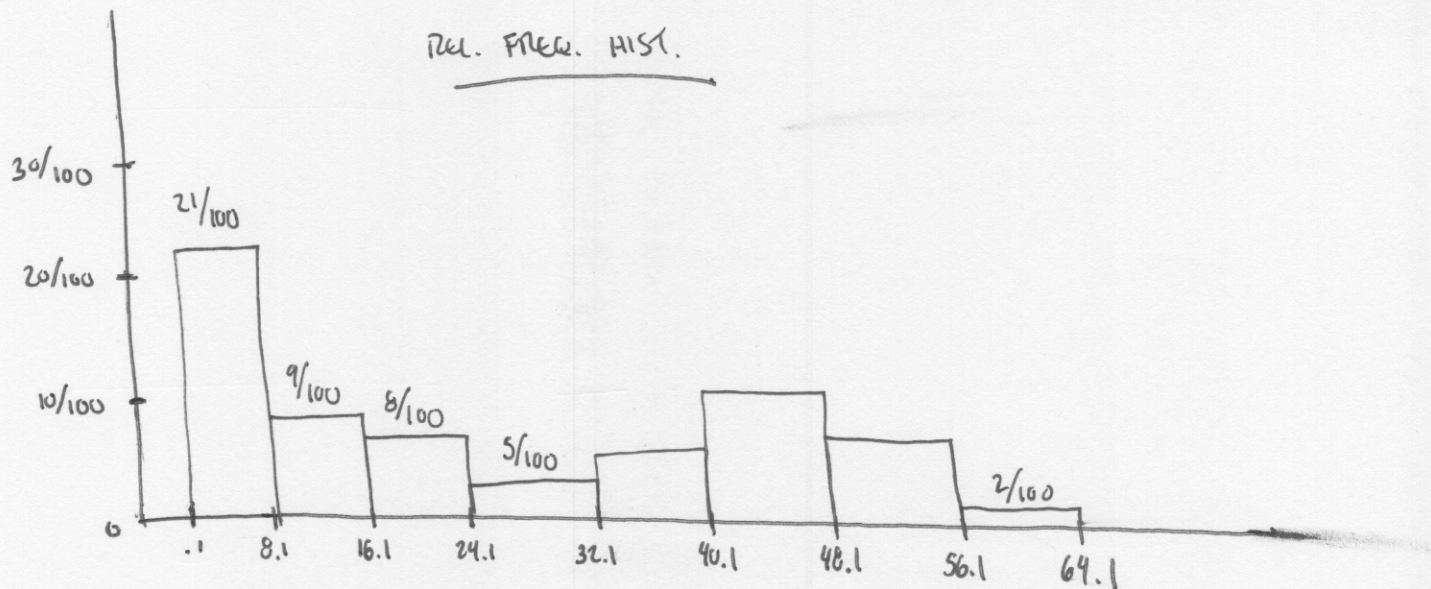
$$\text{CLASS 2: } 8.1 \leq * < 16.1$$

NO GAPS.

EVERY OBSERVATION MUST FALL INTO

1 & ONLY 1 CLASS.

				(Total 100 observations)	
		FREQ.		REL FREQ.	
CLASS 1	$.1 \leq * < 8.1$	21		21/100	
CLASS 2	$8.1 \leq * < 16.1$	9		9/100	
CLASS 3	$16.1 \leq * < 24.1$	8		8/100	
CLASS 4	$24.1 \leq * < 32.1$	5		5/100	
...					
CLASS 8	$56.1 \leq * \leq 64.1$	2		2/100	
	↑	100		1	
	BIGGER THAN MAX ✓				



ex. 1.25 MIN: 8 , MAX: 165

$$\frac{165 - 8 + 3}{8 \text{ CLASSES}} = \frac{160}{8} = 20 \text{ CLASS WIDTH:}$$

$$8 \leq * < 28$$

↓

CLASS 1 [8, 28)

CLASS 2 [28, 48)

CLASS 3 [48, 68)

4 [68, 88)

5 [88, 108)

6 [108, 128)

7 [128, 148)

8 [148, 168)

FREQ.

2.

0

3.

1.

2.

3.

15

+ 4

20

✓

REL FREQ.

$$2/20 = .1$$

$$0/20 = 0$$

$$3/20 = .15$$

$$1/20 = .05$$

$$2/20 = .1$$

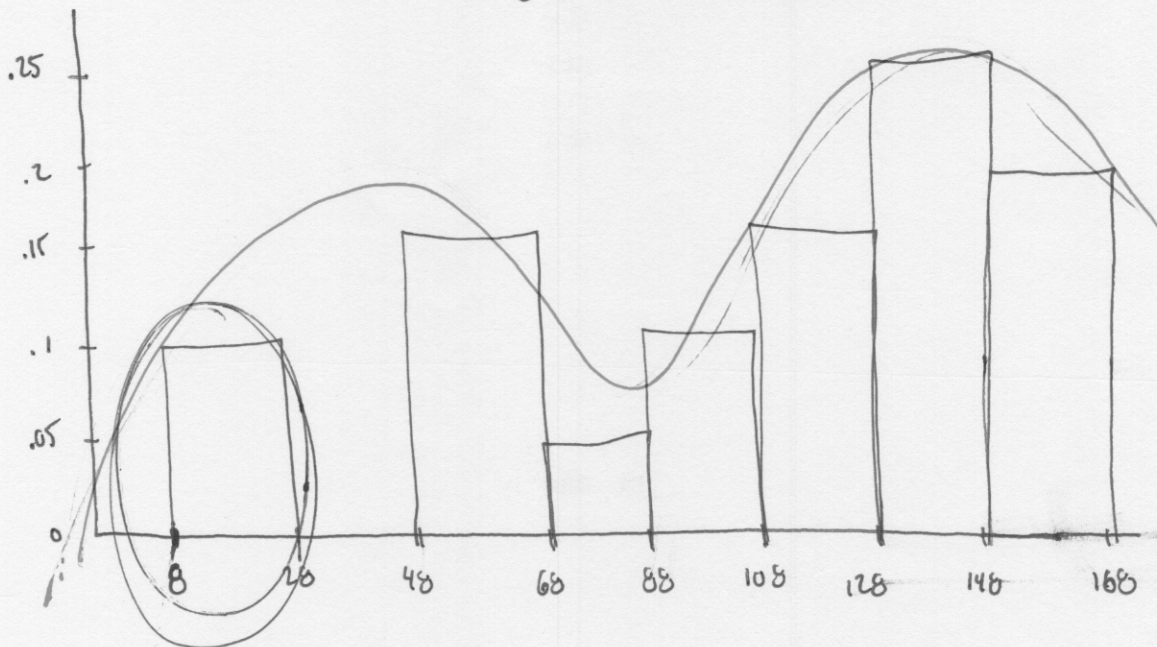
$$3/20 = .15$$

$$5/20 = .25$$

$$4/20 = .2$$

REL. FREQ. HIST.

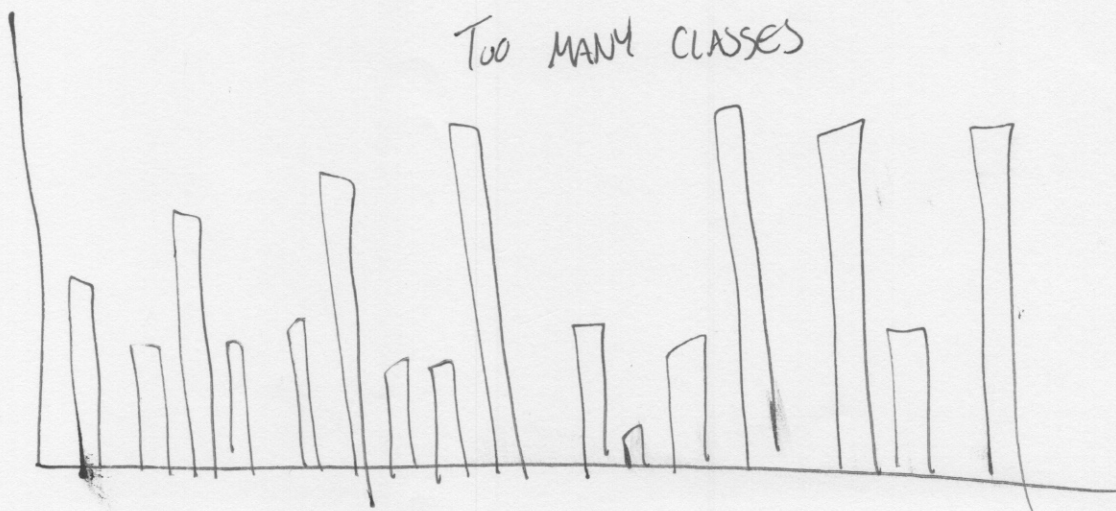
6-12 CLASSES ✓



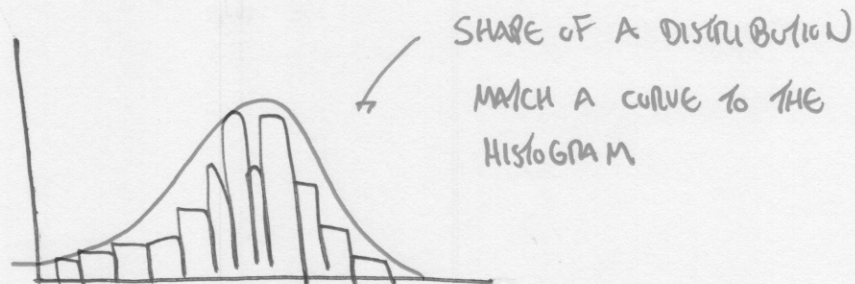
Too FEW CLASSES



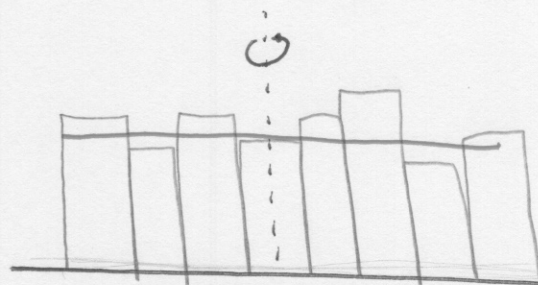
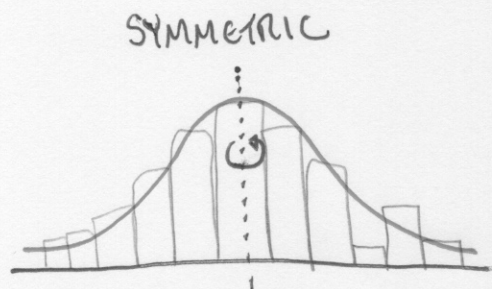
Too MANY CLASSES



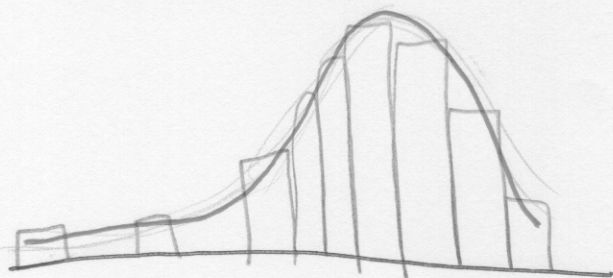
DATA → VISUALIZATION
(REL. FREQ. HIST.)



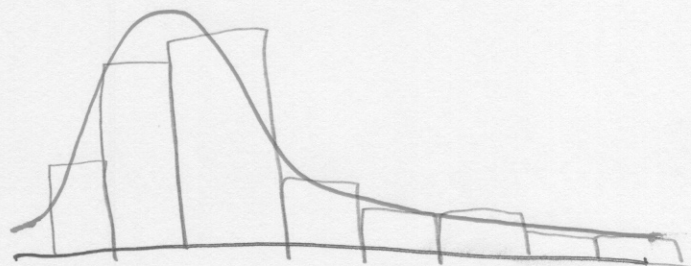
WE DESCRIBE THE DISTRIBUTION WITH SPECIFIC WORDS:



LEFT - SKEWED
(LEFT - TAIL)



RIGHT - SKEWED
(RIGHT TAIL)

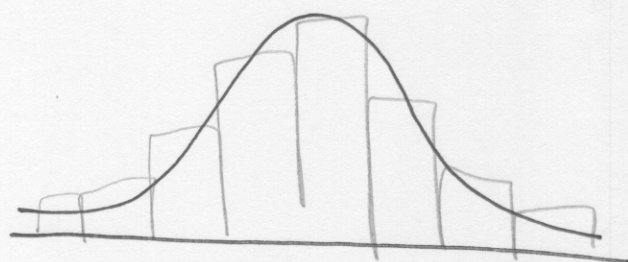


TAIL

NOT SYMMETRIC

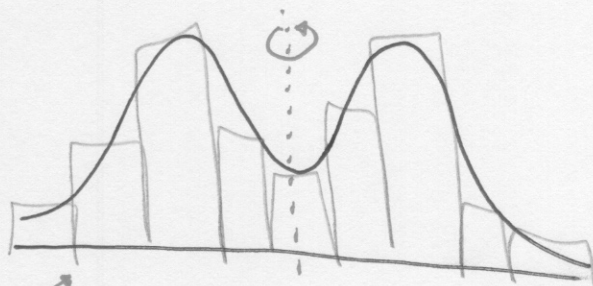
UNIMODAL

UNIMODAL : ONE HUMP



↑ ALSO SYMMETRIC

BIMODAL : TWO HUMPS



Def: AN OUTLIER IS A DATA POINT (OBSERVATION) THAT IS EXTREME IN THE SENSE THAT IS SIGNIFICANTLY BELOW/ABOVE THE MAJORITY OF THE OTHER DATA POINTS (OBSERVATIONS).