

# AP Statistics – Lesson Notes - Chapter 5: Describing Distributions Numerically

## Standard Deviation on a calculator

- 1) Stat, Edit enter data in L1 (if data is already divided into bins with counts, enter counts in L2).
- 2) Stat, ->Calc, 1-Var Stats
- 3) Set List=L1 (if bins/counts, set FreqList=L2 otherwise leave FreqList blank) - or - 1-Var Stats L1 (,L2)
- 4) Calculate

## Examples:

5, 10, 7, 4, 8	Value	Frequency	
	10	2	
	11	5	
$\bar{x}=6.8$	12	8	$\bar{x}=13.15$
$n=5$	13	17	$n=52$
$s = 2.38747$ (use Sx)	14	11	$s = 1.4469$ (use Sx)
5-number: 4, 4.5, 7, 9, 10	15	6	5-number: 10, 12, 13, 14, 16
	16	3	

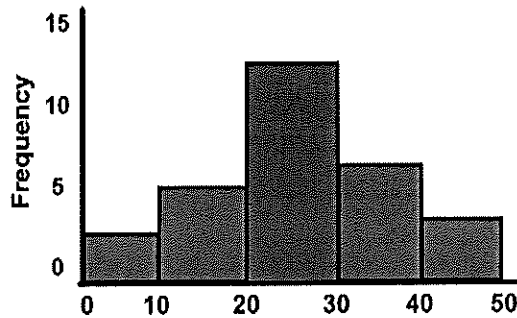
## 'Mound shaped' vs. Normal

Avoid describing shape of a distribution as 'normal'. Instead, use 'mound shaped'.

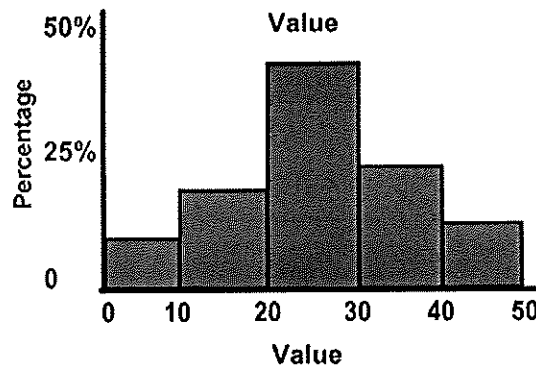
## Frequency Histograms and Ogives

Dividing each count value by total gives percentages and produces a *frequency histogram*.

Value	Frequency
0-9	2
10-19	5
20-29	12
30-39	6
40-49	3
total:	28



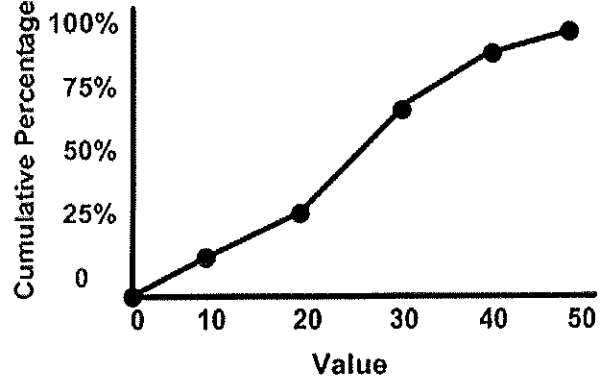
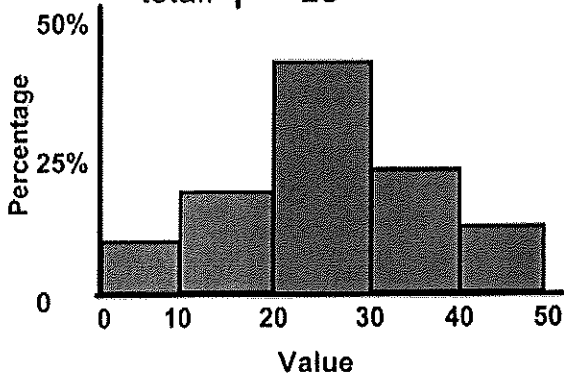
Value	Frequency
0-9	$2/28 = 7\%$
10-19	$5/28 = 18\%$
20-29	$12/28 = 43\%$
30-39	$6/28 = 21\%$
40-49	$3/28 = 11\%$
total:	28



Plotting *cumulative* percentages gives a ***cumulative frequency histogram*** (also called an *ogive*).

Value	Frequency
0-9	2 / 28 = 7%
10-19	5 / 28 = 18%
20-29	12 / 28 = 43%
30-39	6 / 28 = 21%
40-49	3 / 28 = 11%
total:	28

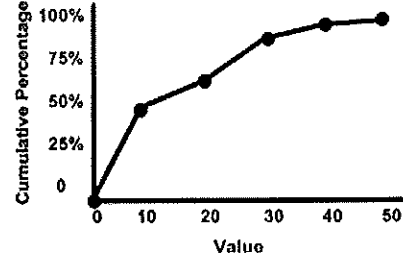
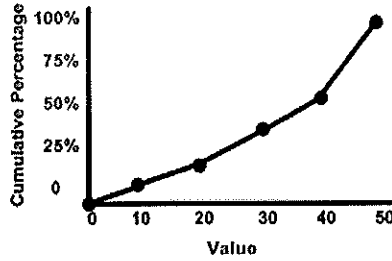
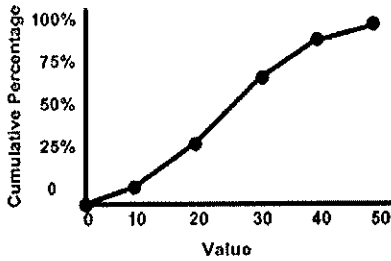
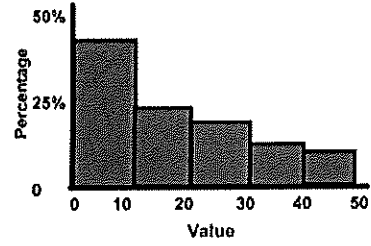
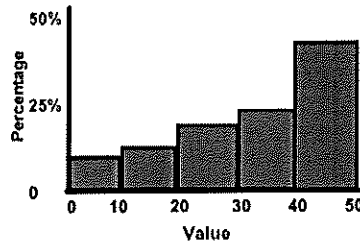
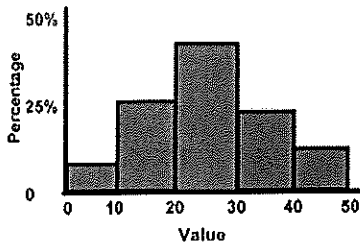
Value	Frequency	cumulative percentage:
0-9	2 / 28 = 7%	7%
10-19	5 / 28 = 18%	25%
20-29	12 / 28 = 43%	68%
30-39	6 / 28 = 21%	89%
40-49	3 / 28 = 11%	100%
total:	28	



Cumulative Frequency Histogram or Ogive ("Oh-Jive")

### Frequency Histograms and Ogives

We can get an idea of the shape of the distribution by looking at the ogive:



Symmetric

Skewed left

Skewed right