Bar Graphs
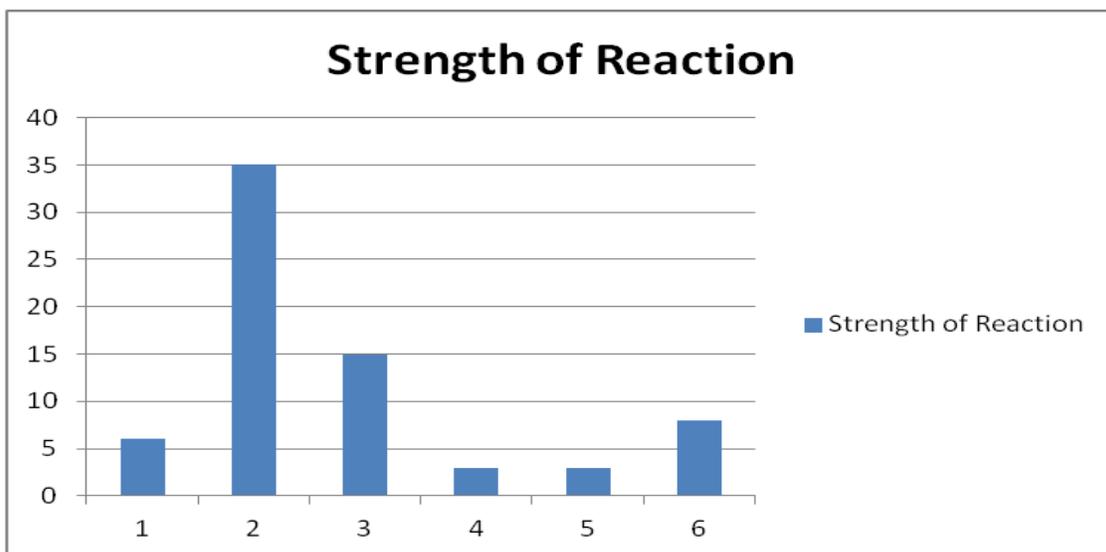
1. Data are divided into groups

2. For each group draw a rectangle

   a. Width same for each group

   b. Height proportional to frequency

3. Rectangles are equally spaced

Example: **The strength of reaction of a blood specimen to a certain antigen can be categorized according to degree of clumping.**

Strength of Reaction	Frequency
I	6
II	35
III	15
IV	3
V	3
VI	8
Total	70

Ages of 30 patients seen in the ER of a hospital on a Friday night

35	32	21	43	39	60
36	12	54	45	37	53
45	23	64	10	34	22
36	45	55	44	55	46
22	38	35	56	45	57

Ordered Array

10	23	36	43	45	55
12	32	36	44	46	56
21	34	37	45	53	57
22	35	38	45	54	60
22	35	39	45	55	64

Sturges Rule

$$K = 1 + 3.322(log_{10}\, n)$$
$$= 1 + 3.322(log_{10}\, 30)$$
$$= 1 + 4.91$$
$$= 5.91 \sim 6$$

Width of Interval

Let R = Range (largest value – smallest value)

k = number of intervals

$$W = R\, /\, k \quad = \quad (64 – 10)\, /\, 6 \quad = 9$$

Intervals

10 – 18	vs	10 – 19	**Smallest**
19 – 27		20 – 29	
28 – 36		30 – 39	
37 – 45		40 – 49	↓
46 – 54		50 – 59	
55 – 63		60 – 69	**Largest**

Multiples of 5 or 10 are usually more meaningful

**Midpoint of lowest interval = (10 + 19) / 2 = 14.5**

# Frequency Distribution of Ages of 30 Patients Seen in the ER on a Friday Night

Class Interval	Tally	Frequency
10-19	**	2
20-29	****	4
30-39	*********	9
40-49		7
50-59		6
60-69		2
Total		30

Frequency Distribution of Ages of 30 Patients Seen in the ER on a Friday Night

Class Interval	Freq.	Cumulative Freq.	Relative Freq.	Cumulative Relative Freq.
10-19	2	2	0.0667	0.0667
20-29	4	6	0.1333	0.2000
30-39	9	15	0.3000	0.5000
40-49	7	22	0.2333	0.7333
50-59	6	28	0.2000	0.9333
60-69	2	30	0.0667	1.0000
Total	30		1.0000	

Class Interval	True Class Limits	Frequency
10-19	9.5-19.5	2
20-29	19.5-29.5	4
30-39	29.5-39.5	9
40-49	39.5-49.5	7
50-59	49.5-59.5	6
60-69	59.5-69.5	2

Chart Title

- 19-10 7%
- 20-29 13%
- 30-39 30%
- 40-49 23%
- 50-59 20%
- 60-69 7%
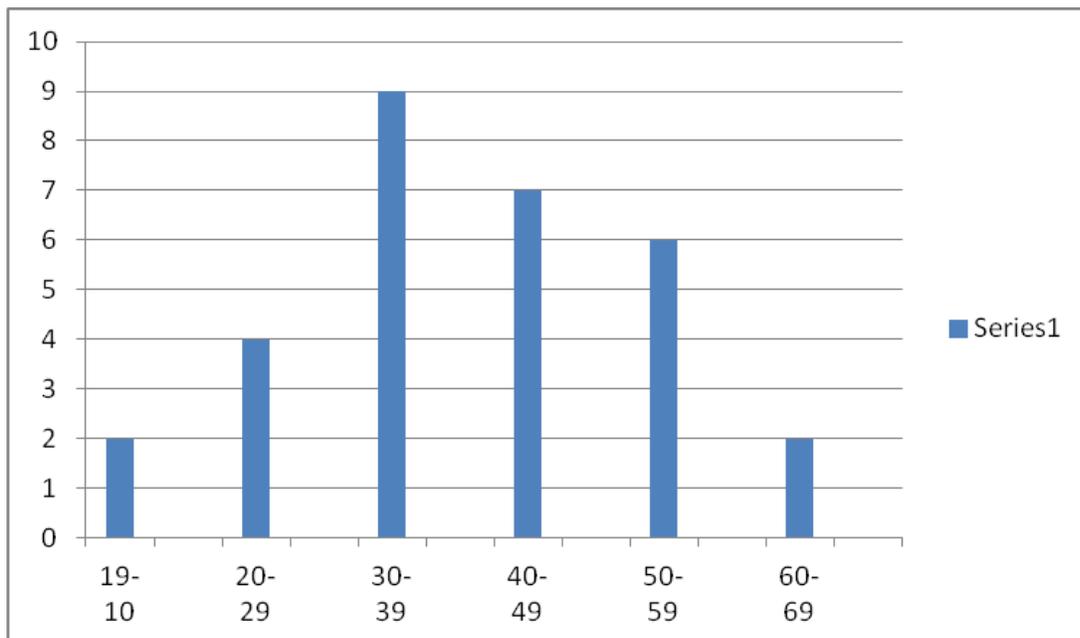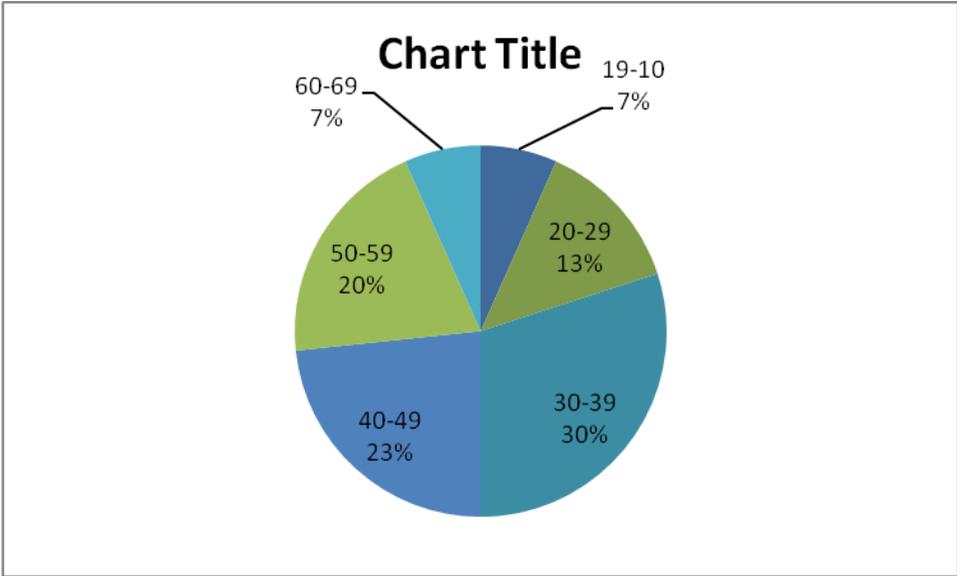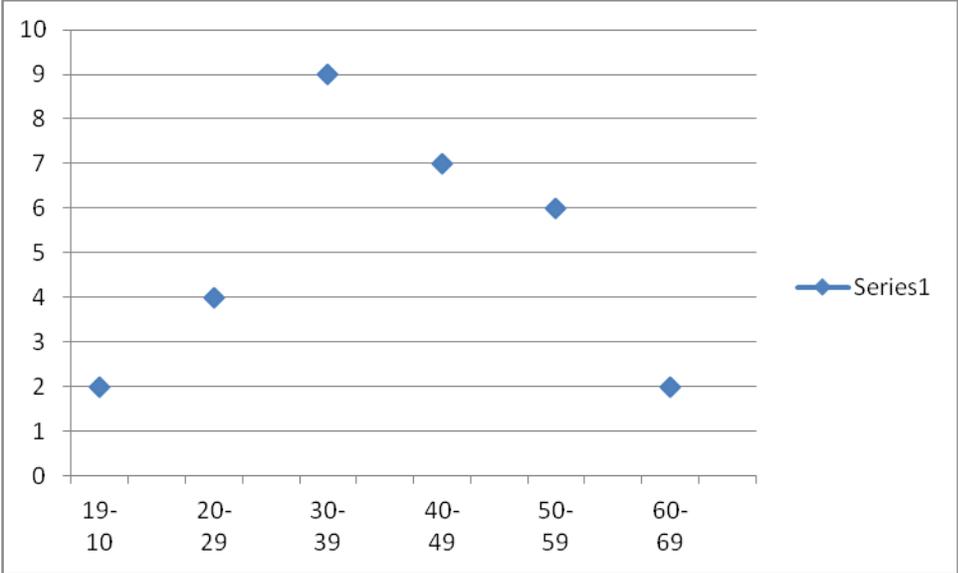
Stem and Leaf Plot

Stem	Leaf
1	0 2
2	1 2 2 3
3	2 4 5 5 6 6 7 8 9
4	3 4 5 5 5 5 6
5	3 4 5 5 6 7
6	0 4

10	23	36	43	45	55
12	32	36	44	46	56
21	34	37	45	53	57
22	35	38	45	54	60
22	35	39	45	55	64