

20.

a. Stem thousands digit
leaf hundreds digit

stem	leaf		
0	1 2 3 3 3 4 5 5 5 5 9 9	12	0.26
1	0 0 1 2 2 2 3 4 6 8 8	11	0.23
2	1 1 1 2 3 4 4 4 7 7	10	0.21
3	0 1 1 3 3 3 8	7	0.15
4	3 7	2	0.04
5	2 3 7 7 8	5	0.11

The number of the data set is mostly concentrated on the number with thousands digit of 0, 1 and 2. There are only 2 number with thousands digit of 4.

A typical value of thousands digit and hundred digit is

05

The mean number:

Section 1.2

11. stem tens digit
leaf ones digit

stem	leaf
6L	0 3 4
6H	6 6 7 8 9 9
7L	0 0 1 2 2 2 4 4
7H	
8L	0 0 1 1 1 1 2 2 3 4 4
8H	5 5 5 7 8 9 9
9L	0 3
9H	5 8

The distribution of the numbers in each ten-digit stage.

14. stem ones digit and tens digit
decimals digit

a.

stem	leaf
2	2
3	2 3 3 4 4 7 8 9
4	0 1 1 3 5 6 6 8 8 9 9
5	0 0 1 1 2 2 3 4 5 5 5 6 6 7 8 9
6	0 0 1 1 1 1 2 2 3 3 4 5 6 6 6 6 7 8
7	0 0 0 0 0 1 1 1 2 3 3 3 4 4 5 5 5 5 6 6 6 7 7 7 8
8	0 0 1 2 2 2 3 3 8 4
9	1 1 2 2 3 3 5 6 8 8 8 9 9 9
10	2 2 2 3 3 4
11	2 2 3 3 5 5 9 9
12	3 7
13	8
14	3 6
15	0 3 5
18	9

The mean number:

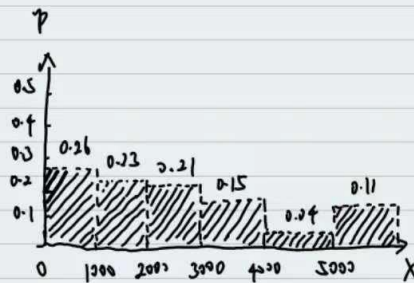
$$\text{mean} = \frac{1+2+\dots+58}{47} \approx 20.4$$

The median number:

median number:

$$\text{median} = 21$$

b.



It's positively skewed shapes.

Section 1.3

34. The present order of two data set.

U: 4.0 5.0 5.0 6.0 11.0 17.0 18.0 23.0 33.0 35.0 80.0

F: 0.3 2.0 3.0 4.0 4.0 5.0 8.0 8.9 9.0 9.2 11.0

14.0 20.0 21.0

$$6.0 + 5.0 + \dots + 23.0$$

b. A typical number is 7.0

$$\text{Mean} = \frac{4.6 + 12.3 + \dots + 8.2 + 6.0}{100} = 7.605$$

$$\text{Median} = \frac{6.7 + 6.8}{2} = 6.75$$

So mean flow rate is 7.605
the median flow rate is 6.75

c. It appears to be highly
concentrated in numbers with 7 ones
digit

d. Yes, it is reasonable symmetry.

e. 18.9. it is too far away from the average
and the median number of the data set.

20.

a. stem thousands digit
leaf hundreds digit

stem	leaf		
0	1 2 3 3 3 4 5 5 5 5 9 9	12	0.26
1	0 0 1 2 2 2 3 4 6 8 8	11	0.23
2	1 1 1 2 2 4 4 4 7 7	10	0.21

Section 1.3

34. The present order of two data set.

U: 4.0 5.0 5.0 6.0 11.0 17.0 18.0 23.0 33.0 35.0 82.0

F: 0.3 2.0 3.0 4.0 4.0 5.0 8.0 8.9 9.0 9.0 9.2 11.0
14.0 20.0 21.0

$$a. \text{mean}_U = \frac{6.0 + 5.0 + \dots + 23.0}{11} \approx 21.5$$

$$\text{mean}_F = \frac{4.0 + 14.0 + \dots + 0.3}{15} \approx 8.6$$

$$\text{mean}_U > \text{mean}_F$$

$$b. \text{median}_U = 17$$

$$\text{median}_F = 8.9 \quad \text{median}_U > \text{median}_F$$

Because the number smaller than median number and the number bigger than median's values may not be symmetric by median number. Of course the median number is different from mean value.

c. Trimmed mean:

$$\text{Trimmed mean}_U = \frac{5.0 + 5.0 + \dots + 35.0}{9} = 17$$

$$\text{Trimmed mean}_F = \frac{2.0 + 3.0 + \dots + 20.0}{13} \approx 8.24$$

$$\text{Trimmed percentage}_U = \frac{1}{11} \approx 9.1\%$$

$$\text{Trimmed percentage}_F = \frac{1}{15} \approx 6.7\%$$

Both the trimmed mean of U and F are smaller than mean value.

40.

11	14	20	23	31	36	39	44	47	50
59	61	65	67	68	71	74	76	78	79
81	84	85	89	91	93	96	99	101	104
105	105	112	118	123	136	139	141	148	158
161	168	184	206	248	263	289	322	388	513

$$\text{Sol: median} = \frac{91+93}{2} = 92$$

25% trimmed mean

$$= \frac{65+67+\dots+139+141}{26}$$

$$\approx 95.4$$

10% trimmed mean

$$= \frac{36+39+\dots+148+158}{40}$$

$$= 102.225$$



mean

$$= \frac{11+14+\dots+388+513}{50}$$

$$= 119.26$$

mean > 10% trimmed mean >

25% trimmed.

Section 14

44. The present order of sample numbers.

23.5 26.3 28.0 28.2 29.4 29.5 30.6 31.6

a. Sample range is $[23.5, 31.6]$

$$b. \text{Mean} = \frac{23.5 + 26.3 + \dots + 30.6 + 31.6}{8}$$

$$\approx 28.4$$

$$s^2 = \frac{(23.5 - 28.4)^2 + \dots + (31.6 - 28.4)^2}{8 - 1}$$

$$= \frac{4.9^2 + \dots + 3.2^2}{7}$$

$$\approx 6.558$$

$$c. s = \sqrt{s^2} = \sqrt{6.56} = 2.56$$

$$d. s^2 = \frac{S_{xx}}{n-1}$$

$$= \frac{\sum_{i=1}^n x_i^2 - \frac{(\sum_{i=1}^n x_i)^2}{n}}{n-1}$$

$$= \frac{23.5^2 + \dots + 31.6^2 - \frac{(23.5 + \dots + 31.6)^2}{8}}{7}$$

$$= \frac{6492.71 - 6446.80125}{7}$$

$$\approx 6.558$$

B+

