

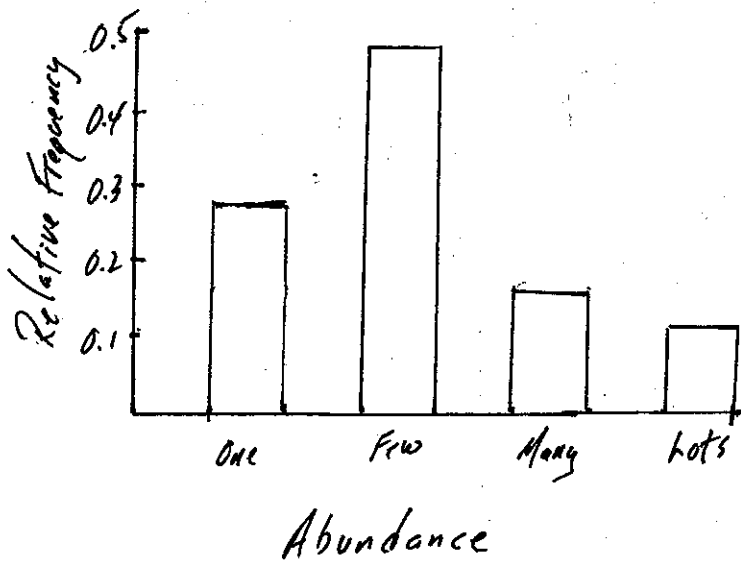
2.16

### Summary of Frog Census

a)

Abundance (Number of Frogs)	Number of Recordings	Relative Frequency
one	33	0.217
Few (2-9)	75	0.493
Many (10-50)	27	0.178
Lots (>50)	17	0.112
Total	152	1.000

b)



c) "Few" is the abundance category with the greatest relative frequency.

2.28

a) The graph is a frequency histogram.

b) Fourteen class intervals were used in the construction of the histogram.

c) There are 49 measurements in the data set.

2.32

### Stem-and-Leaf Display: SCORE

Stem-and-leaf of SCORE N = 169  
Leaf Unit = 1.0

1	6	2
1	6	
2	7	2
3	7	8
4	<u>8</u>	<u>4</u>
15	8	66677888899
56	9	00001111111222222222222333333334444444444
(100)	9	55555555555555555556666666666666666666777777777777778888888+
13	10	00000000000000

score of 84

a)

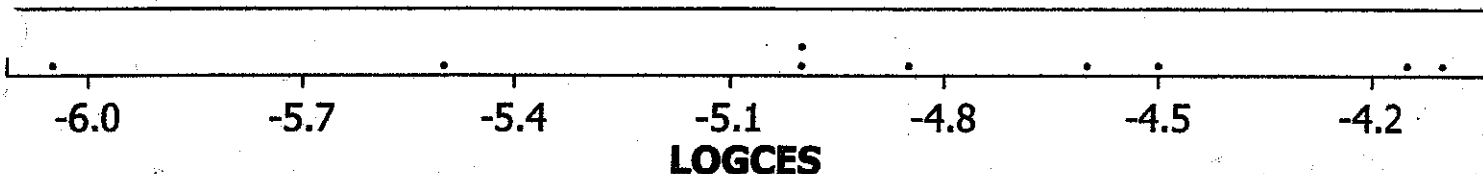
↑ Stem  
↑ leaf

b) Of the 169 ships, all but 4 have an accepted sanitation standard. So, about 98% of the ships meet the standard.

c) See display

2.34

a)



b)

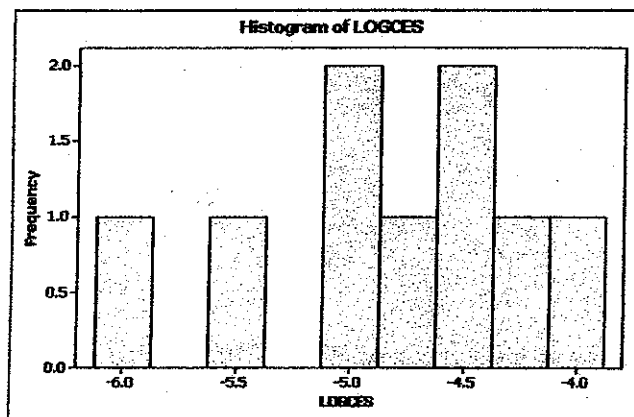
### Stem-and-Leaf Display: LOGCES

Stem-and-leaf of LOGCES N = 9  
Leaf Unit = 0.10

1	-6	0
2	-5	5
4	-5	00
(3)	-4	865
2	-4	11

see page 39.

c)



d) I feel the dot plot is most informative.

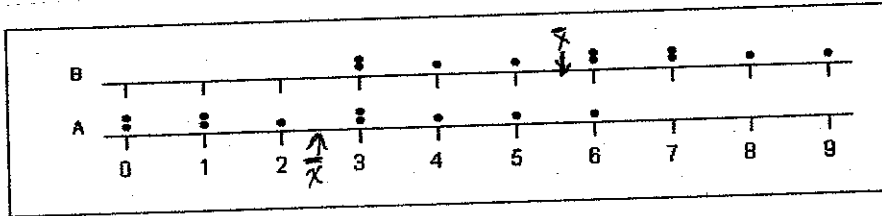
e) Four of the nine measurements, or 44.4%, are -5.00 or lower.

2.78

$$A = \{0, 0, 1, 1, 2, 3, 3, 4, 5, 6\}$$

$$B = \{3, 3, 4, 5, 6, 6, 7, 7, 8, 9\}$$

Each has a range of 6, but A has a mean of 2.5 and variance 2.77 and B has mean 5.8 and variance 4.178.



2.84

- The range of the ages is 25.
- The variance of the ages is 27.87.
- The standard deviation is 5.275.
- The age data is more variable in Europe.
- If the maximum age is omitted the standard deviation decreases from 5.275 to 4.916.

2.88

We will apply Chebyshev's Rule in the following statements.

- We can't say much about the percent of measurements within one standard deviation of the mean.
- At least 75% of the measurements are within two standard deviations of the mean.
- At least 88.8% of the measurements are within three standard deviations of the mean.

2.90

Results for: LM2\_90.MTP

Descriptive Statistics: X

Variable	N	N*	Mean	SE Mean	StDev	Variance	Minimum	Q1	Median
X	25	0	8.240	0.366	1.832	3.357	5.000	7.000	8.000
Variable	Q3	Maximum	Range						
X	10.000	12.000	7.000						

- a) b) The interval (6.408, 10.672) contains 18 or 72% of the measurement.  
 The interval (4.576, 11.904) contains 24 or 96% of the measurement.  
 The interval (2.744, 13.736) contains 25 or 100% of the measurement.
- c) The results are fairly consistent with both Chebyshev's Rule and the Empirical Rule.
- d) The range is 7 and  $\frac{7}{4} \approx 1.75$ . So, 1.75 is pretty good as a rough approximation for the standard deviation (1.832). [See Example 2.22]

2.100

R If assumed "mound shaped"

R

"SHAPED"

- a) The histogram suggests the distribution is relatively symmetric; so the empirical rule will give a pretty good approximation.
- b) Approximately 95% of the measurements will be in the interval (24,557; 29,677).
- c) In this case the mean would be a good estimate. This estimate would be 27,117 km/sec.
- a) Not mound shaped so we will use Chebyshev's Rule
- b) About  $1 - (\frac{1}{4})^2 \approx 94\%$  of the measurements fall within 4 standard deviations of the mean. This interval is (21,997; 32,237) [See Table 2.6]