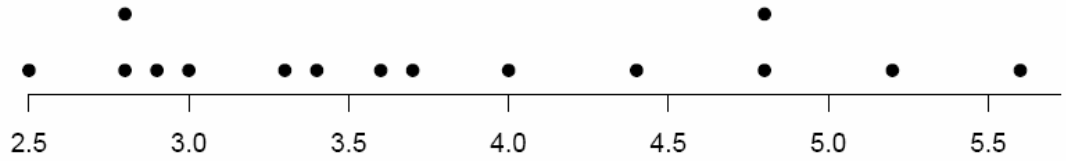
Math 423 – **Prof. Richard B. Goldstein** – Walpole – 8th ed – Chapter 1 Answers

1.1 (a) 15.

(b) $\bar{x} = \frac{1}{15}(3.4 + 2.5 + 4.8 + \cdots + 4.8) = 3.787.$

(c) Sample median is the 8th value, after the data is sorted from smallest to largest: 3.6.

(d) A dot plot is shown below.



(e) After trimming total 40% of the data (20% highest and 20% lowest), the data becomes:

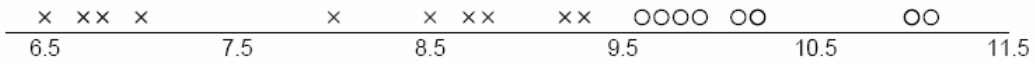
2.9	3.0	3.3	3.4	3.6
3.7	4.0	4.4	4.8	

So. the trimmed mean is

$$\bar{x}_{\text{tr20}} = \frac{1}{9}(2.9 + 3.0 + \cdots + 4.8) = 3.678.$$

1.4 (a) $\bar{X}_A = 7.950$ and $\tilde{X}_A = 8.250$;
$\bar{X}_B = 10.260$ and $\tilde{X}_B = 10.150$.

(b) A dot plot is shown below.



In the figure, "×" represents company A and "○" represents company B. The steel rods made by company B show more flexibility.

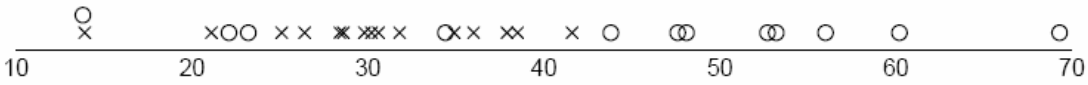
1.7 $s^2 = \frac{1}{15-1}[(3.4-3.787)^2+(2.5-3.787)^2+(4.8-3.787)^2+\cdots+(4.8-3.787)^2] = 0.94284;$
$s = \sqrt{s^2} = \sqrt{0.9428} = 0.971.$

1.10 For company A: $s_A^2 = 1.2078$ and $s_A = \sqrt{1.2078} = 1.099.$
For company B: $s_B^2 = 0.3249$ and $s_B = \sqrt{0.3249} = 0.570.$

1.17 (a) $\bar{X}_{\text{smokers}} = 43.70$ and $\bar{X}_{\text{nonsmokers}} = 30.32;$

(b) $s_{\text{smokers}} = 16.93$ and $s_{\text{nonsmokers}} = 7.13;$

(c) A dot plot is shown below.



In the figure, "×" represents the nonsmoker group and "○" represents the smoker group.

(d) Smokers appear to take longer time to fall asleep and the time to fall asleep for smoker group is more variable.

1.18 (a) A stem-and-leaf plot is shown below.

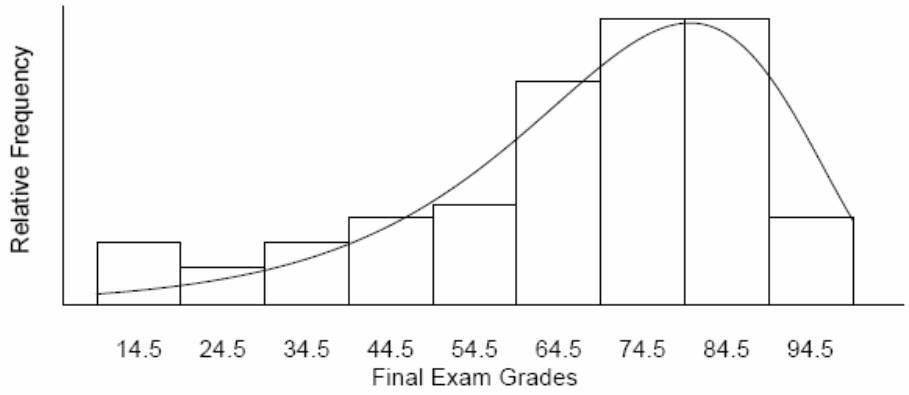
Stem	Leaf	Frequency
1	057	3
2	35	2
3	246	3
4	1138	4
5	22457	5
6	00123445779	11
7	01244456678899	14
8	00011223445589	14
9	0258	4

(b) The following is the relative frequency distribution table.

Relative Frequency Distribution of Grades

Class Interval	Class Midpoint	Frequency, f	Relative Frequency
$10-19$	14.5	3	0.05
$20-29$	24.5	2	0.03
$30-39$	34.5	3	0.05
$40-49$	44.5	4	0.07
$50-59$	54.5	5	0.08
$60-69$	64.5	11	0.18
$70-79$	74.5	14	0.23
$80-89$	84.5	14	0.23
$90-99$	94.5	4	0.07

(c) A histogram plot is given below.



The distribution skews to the left.

(d) $\bar{X} = 65.48$, $\tilde{X} = 71.50$ and $s = 21.13$.