6. Standard deviation; variance; range; mean absolute deviation
7. $\bar{x}$; μ.   8. s, σ, s^2, σ^2.   9. 75%.
10. Minimum, first quartile Q_1, second quartile Q_2 (or median), third quartile Q_3, maximum.

Chapter 3: Review Exercises

1. a. 1559.6 mm;   b. 1550.0 mm;   c. none;   d. 1569.5 mm;   e. 145 mm;   f. 53.4 mm;   g. 2849.3 mm²;   h. 1538.0 mm;   i. 1571.0 mm. (Tech: Minitab yields Q_1 = 1517.5 mm and Q_3 = 1606.5 mm.)
2. $z = 1.54$. The eye height is not unusual because its z score is between 2 and −2, so it is within 2 standard deviations of the mean.
3. Because the boxplot shows a distribution of data that is roughly symmetric, the data could be from a population with a normal distribution, but the data are not necessarily from a population with a normal distribution, because there is no way to determine whether a histogram is roughly bell-shaped.

1497   1550   1642
      1538   1571
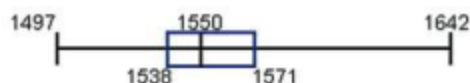
4. 10053.7. The ZIP codes do not measure or count anything. They are at the nominal level of measurement, so the mean is a meaningless statistic.
5. The male has the larger relative BMI because his z score of 0.26 is larger than the z score of 0.08 for the female.
6. The answers vary, but a mean around $8 or $9 is reasonable, and a standard deviation around $1 or $2 is a reasonable estimate.
7. Answer varies, but $s \approx 12$ years, based on a minimum of 23 years and a maximum of 70 years.
8. Minimum: 842 mm; maximum: 986 mm. The maximum usual height of 986 mm is more relevant for designing overhead bin storage.
9. The minimum volume is 963 cm³, the first quartile Q_1 is 1034.5 cm³, the second quartile Q_2 (or median) is 1079 cm³, the third quartile Q_3 is 1188.5 cm³, and the maximum volume is 1439 cm³.

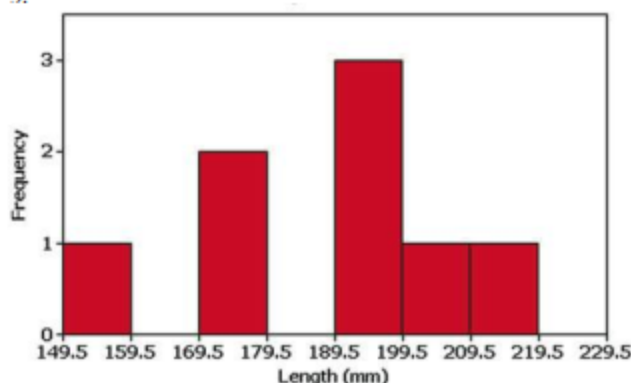963   1079   1439
   1034.5   1188.5
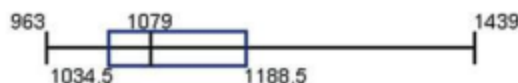
10. The median would be better because it is not affected much by the one very large income.

Chapter 3: Cumulative Review Exercises

1. a. Continuous.   b. Ratio.
2.

Hand Length (mm)	Frequency
150–159	1
160–169	0
170–179	2
180–189	0
190–199	3
200–209	1
210–219	1

3.

4.
```
15 | 8
16 |
17 | 39
18 |
19 | 569
20 | 7
21 | 4
```

5. a. 190.1 mm;   b. 195.5 mm;   c. 18.7 mm;   d. 348.7 mm²   e. 56.0 mm.
6. Yes. The frequencies increase to a maximum; then they decrease. Also, the frequencies preceding the maximum are roughly a mirror image of those that follow the maximum.
7. No. Even though the sample is large, it is a voluntary response sample, so the responses cannot be considered to be representative of the population of the United States.
8. The vertical scale does not begin at 0, so the differences among the different outcomes are exaggerated.

Chapter 4 Answers

Section 4-2

1. $P(A) = 1/10{,}000$, or 0.0001. $P(\bar{A}) = 9999/10{,}000$, or 0.9999.
3. Part (c).
5. 5:2; 7/3; −0.9; 456/123
7. 1/5 or 0.2
9. Unlikely; neither unusually low nor unusually high.
11. Unlikely; unusually low.
13. 1/4, or 0.25
15. 1/2, or 0.5   17. 1/5, or 0.2   19. 0
21. 6/1000, or 0.006. The employer would suffer because it would be at risk by hiring someone who uses drugs.
23. 50/1000, or 0.05. This result is not close to the probability of 0.134 for a positive test result.
25. 879/945, or 0.930. Yes, the technique appears to be effective.
27. 0.00000101. No, the probability of being struck is much greater on an open golf course during a thunderstorm. The golfer should seek shelter.
29. a. 1/365   b. Yes   c. He already knew.   d. 0
31. 0.0767. No, a crash is not unlikely. Given that car crashes are so common, we should take precautions such as not driving after drinking and not using a cell phone or texting.