Answers to Odd-Numbered Exercises for Appendix B

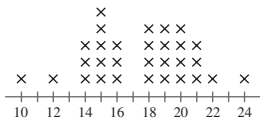
Appendix B.1 *(page B4)*

Vocabulary Check *(page B4)*

1. statistics **2.** line; stem-and-leaf **3.** histogram
4. frequency distribution

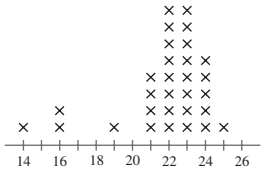
1. (a) \$2.109 (b) \$0.19

3. Quiz 1:



15

Quiz 2:



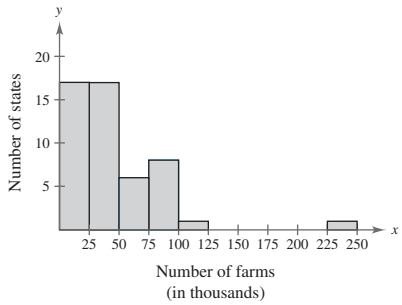
22 and 23

5.

Stems	*Leaves*
7	0 5 5 5 7 7 8 8 8
8	1 1 1 1 2 3 4 5 5 5 5 7 8 9 9 9
9	0 2 8
10	0 0

7.

Interval	Tally
[0, 25)	𝍸 𝍸 𝍸 ||
[25, 50)	𝍸 𝍸 𝍸 ||
[50, 75)	𝍸 |
[75, 100)	𝍸 |||
[100, 125)	|
[125, 150)	
[150, 175)	
[175, 200)	
[200, 225)	
[225, 250)	|



9. A histogram would be the best way to organize the data because it would be easy to group the data into intervals and it would be easy to identify any patterns in the data by using a histogram.

Appendix B.2 *(page B11)*

Vocabulary Check *(page B11)*

1. measure; central; tendency **2.** mean **3.** median
4. modes; bimodal **5.** variance; standard deviation
6. quartiles **7.** box-and-whisker plot

1. Mean: 8.86; median: 8; mode: 7

3. Mean: 10.29; median: 8; mode: 7

5. Mean: 9; median: 8; mode: 7

7. The mean is sensitive to extreme values.

9. Mean: \$67.14; median: \$65.35

11. Mean: 3.07; median: 3; mode: 3

13. One possibility: $\{4, 4, 10\}$

15. The median gives the most representative description.

17. (a) $\bar{x} = 12;\ \sigma \cdot 2.83$ (b) $\bar{x} = 20;\ \sigma \cdot 2.83$
(c) $\bar{x} = 12;\ \sigma \cdot 1.41$ (d) $\bar{x} = 9;\ \sigma \cdot 1.41$

19. $\bar{x} = 6,\ v = 10,\ \sigma \cdot 3.16$

21. $\bar{x} = 2,\ v = \frac{4}{3},\ \sigma \cdot 1.15$ **23.** $\bar{x} = 4,\ v = 4,\ \sigma = 2$

25. $\bar{x} = 47,\ v = 226,\ \sigma \cdot 15.03$ **27.** 3.42

29. 101.55 **31.** 1.65

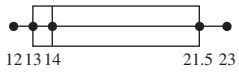
33. $\bar{x} = 12$ and $|x_i - 12| = 8$ for all x_i

35. It will increase the mean by 5, but the standard deviation will not change.

37. First histogram

39. (a) Lower quartile: 13; upper quartile: 21.5

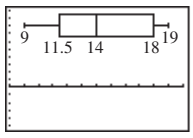
(b)



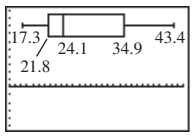
41. (a) Lower quartile: 47; upper quartile: 51

(b)

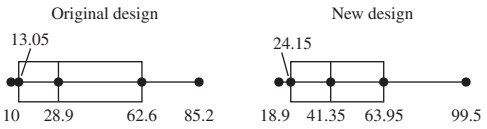
43.



45.



47.



From the plots, you can see that the lifetimes of the units in the sample made by the new design are greater than the lifetimes of the units in the sample made by the original design. (The median increased by more than 12 months.)

Appendix B.3 *(page B15)*

Vocabulary Check *(page B15)*

1. method; least squares **2.** sum; squared differences
3. least squares regression

1. 6.75 **3.** 3.55 **5.** $y = 1.6x + 7.5$
7. $y = \frac{28}{107}x + \frac{207}{107}$ **9.** $y = 2x + 83.5$; 1
11. $y = -0.75x^2 + 3.5x$ **13.** $y = \frac{78}{55}x^2 - \frac{104}{55}x + \frac{10}{11}$