Review Exercises

Section 2.1

In Exercises 1 and 2, use the following data set. The data set represents the income DATA (in thousands of dollars) of 20 employees at a small business.

30 28 26 39 34 33 20 39 28 33
26 39 32 28 31 39 33 31 33 32

1. Make a frequency distribution of the data set using five classes. Include the class midpoints, limits, boundaries, frequencies, relative frequencies, and cumulative frequencies.

2. Make a relative frequency histogram using the frequency distribution in Exercise 1. Then determine which class has the greatest relative frequency and which has the least relative frequency.

In Exercises 3 and 4, use the following data set. The data represent the actual liquid DATA volume (in ounces) in 24 twelve-ounce cans.

11.95 11.91 11.86 11.94 12.00 11.93 12.00 11.94
12.10 11.95 11.99 11.94 11.89 12.01 11.99 11.94
11.92 11.98 11.88 11.94 11.98 11.92 11.95 11.93

3. Make a frequency histogram using seven classes.

4. Make a relative frequency histogram of the data set using seven classes.

In Exercises 5 and 6, use the following data set. The data represent the number of DATA meals purchased during one night's business at a sample of restaurants.

153 104 118 166   89 104 100 79   93   96 116
 94 140   84   81   96 108 111 87 126 101 111
122 108 126   93 108   87 103 95 129   93

5. Make a frequency distribution with six classes and draw a frequency polygon.

6. Make an ogive of the data set using six classes.

Section 2.2

In Exercises 7 and 8, use the following data set. The data represent the average daily DATA high temperature (in degrees Fahrenheit) during the month of January for Chicago, Illinois. (*Source: National Oceanic and Atmospheric Administration*)

33 31 25 22 38 51 32 23 23 34 44 43 47 37 29 25
28 35 21 24 20 19 23 27 24 13 18 28 17 25 31

7. Make a stem-and-leaf plot of the data set. Use one line per stem.

8. Make a dot plot of the data set.

9. The following are the heights (in feet) and the number of stories of nine notable buildings in Miami. Use the data to construct a scatter plot. What type of pattern is shown in the scatter plot? (*Source: Skyscrapers.com*)

Height (in feet)	764	625	520	510	484	480	450	430	410
Number of stories	55	47	51	28	35	40	33	31	40

10. The U.S. unemployment rate over a 12-year period is given. Use the data to construct a time series chart.

Year	1992	1993	1994	1995	1996	1997
Unemployment rate	7.5	6.9	6.1	5.6	5.4	4.9
Year	1998	1999	2000	2001	2002	2003
Unemployment rate	4.5	4.2	4.0	4.7	5.8	6.0

In Exercises 11 and 12, use the following data set. The data set represents the top seven American Kennel Club registrations (in thousands) in 2003.

Breed	Labrador Retriever	Golden Retriever	Beagle	German Shepherd	Dachshund	Yorkshire Terrier	Boxer
Number registered (in thousands)	145	53	45	44	39	38	34

11. Make a Pareto chart of the data set.

12. Make a pie chart of the data set.

Section 2.3

13. Find the mean, median, and mode of the data set.

    9 7 8 6 9 12 11 5 9 10

14. Find the mean, median, and mode of the data set.

    28 35 29 29 33 32 29 33 31 29

15. Estimate the mean of the frequency distribution you made in Exercise 1.

16. The following frequency distribution shows the number of magazine subscriptions per household for a sample of 60 households. Find the mean number of subscriptions per household.

Number of magazines	0	1	2	3	4	5	6
Frequency	13	9	19	8	5	2	4

17. Six test scores are given. The first five test scores are 15% of the final grade, and the last test score is 25% of the final grade. Find the weighted mean of the test scores.

    65 72 84 89 70 90

18. Four test scores are given. The first three test scores are 20% of the final grade, and the last test score is 40% of the final grade. Find the weighted mean of the test scores.

    81 95 89 87

19. Describe the shape of the distribution in the histogram you made in Exercise 3. Is the distribution symmetric, uniform, or skewed?

20. Describe the shape of the distribution in the histogram you made in Exercise 4. Is the distribution symmetric, uniform, or skewed?
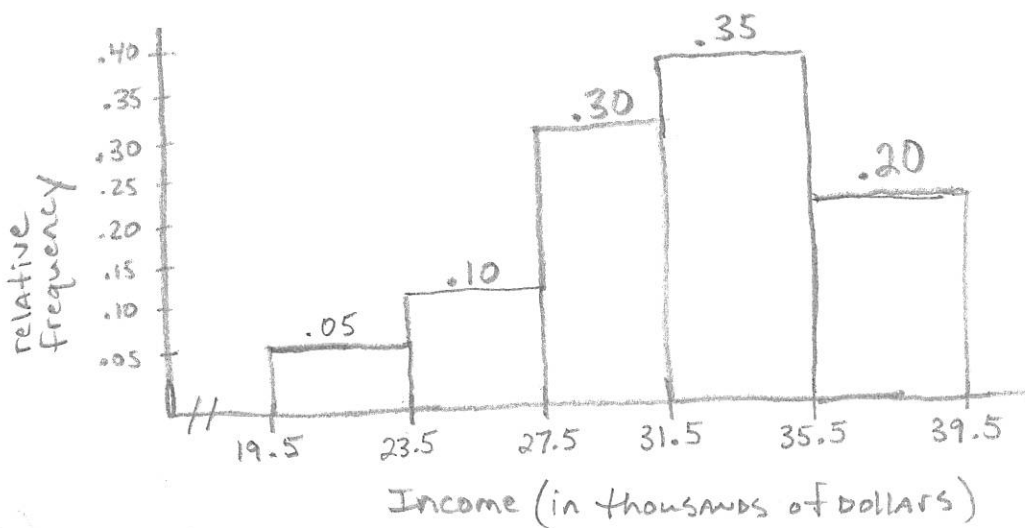
2.1 - 2.2 Quiz Review

1.) $n = 20$ CLASS WIDTH $= \dfrac{39-20}{5} = \dfrac{19}{5} = 3.8 \approx \boxed{4}$

Classes	boundaries	frequency	relative f	cumulative f
20 - 23	19.5 - 23.5	1	1/20 = .05	1
24 - 27	23.5 - 27.5	2	2/20 = .10	3
28 - 31	27.5 - 31.5	6	6/20 = .30	9
32 - 35	31.5 - 35.5	7	7/20 = .35	16
36 - 39	35.5 - 39.5	4	4/20 = .20	20

$\Sigma f = 20$

2.) Relative frequency histogram

32-35 greatest rel. frequency

20-23 least rel. frequency

Income (in thousands of dollars)

3.)

Classes	boundaries	f	relative frequency	midpt
11.86 - 11.89	11.855 - 11.895	2	2/24 = .08	11.875
11.90 - 11.93	11.895 - 11.935	4	4/24 = .17	11.915
11.94 - 11.97	11.935 - 11.975	10	10/24 = .42	11.955
11.98 - 12.01	11.975 - 12.015	6	6/24 = .25	11.995
12.02 - 12.05	12.015 - 12.055	1	1/24 = .04	12.035
12.06 - 12.09	12.055 - 12.095	0	0/24 = 0	12.075
12.10 - 12.13	12.095 - 12.135	1	1/24 = .04	12.115

$\Sigma f = 24$
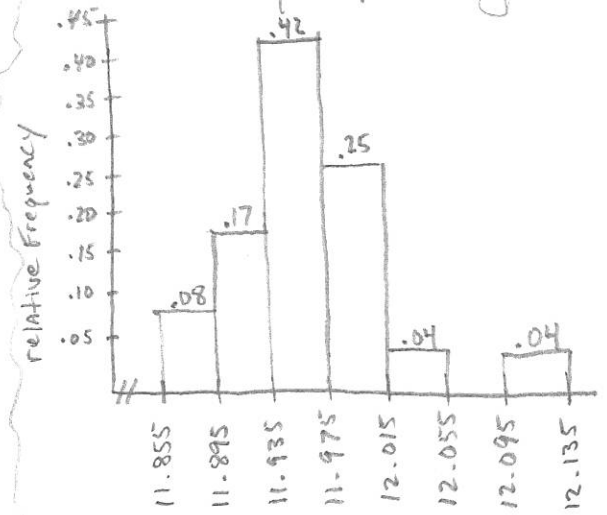
$n = 24$

$CW = \dfrac{12.10 - 11.86}{7} \approx \boxed{.04}$

⟨over⟩

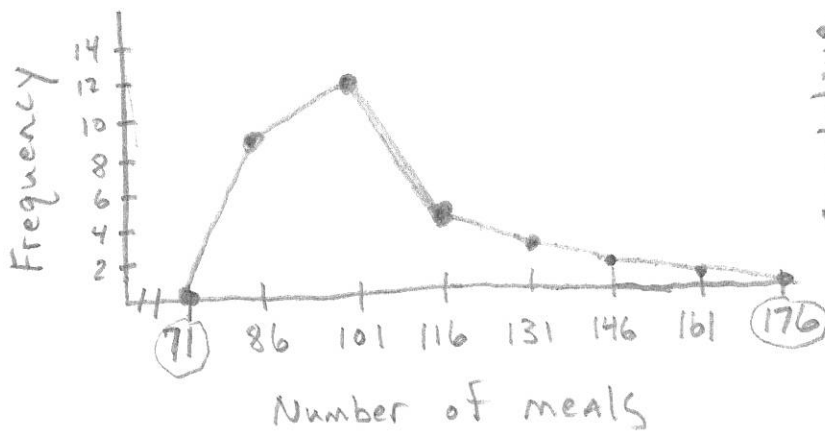3.) (CONTINUED) Frequency histogram
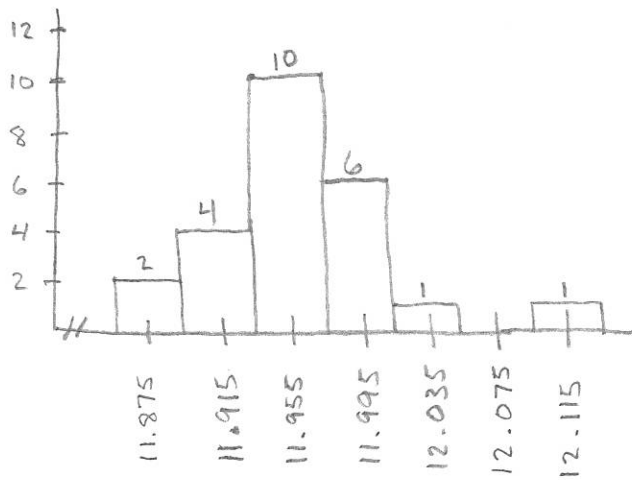
4.) Relative Frequency Histogram

5 & 6.)

Classes	boundaries	midpt	F	relative f	cumulative f
79-93	78.5-93.5	86	9	9/32 = .28	9
94-108	93.5-108.5	101	12	12/32 = .38	21
109-123	108.5-123.5	116	5	5/32 = .16	26
124-138	123.5-138.5	131	3	3/32 = .09	29
139-153	138.5-153.5	146	2	2/32 = .06	31
154-168	153.5-168.5	161	1	1/32 = .03	32
			$\Sigma f = 32$		

$n = 32$

$CW = \dfrac{166 - 79}{6}$

$CW \approx \boxed{15}$

Frequency Polygon

Number of meals

6.) Ogive (Cumulative frequency polygon)
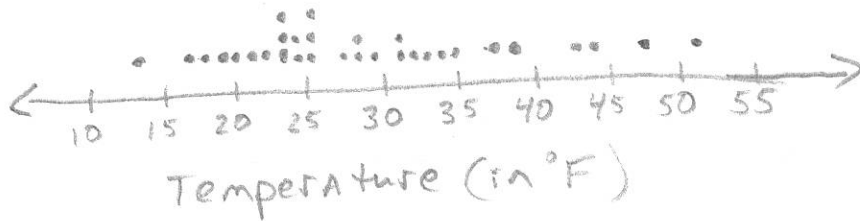

Number of meals
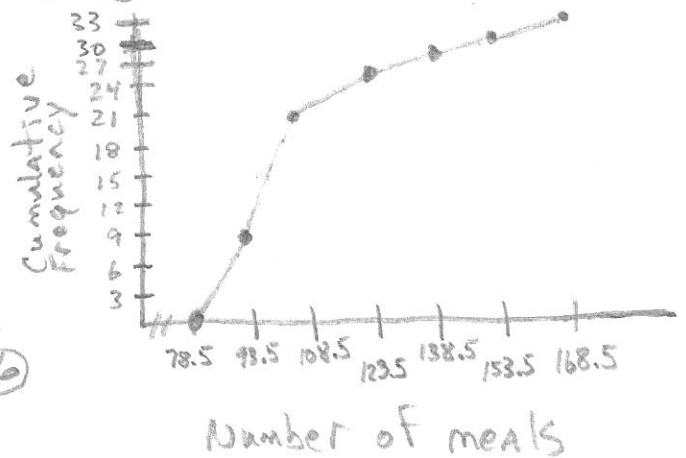
71 → subtract the class width (15) from the first midpoint
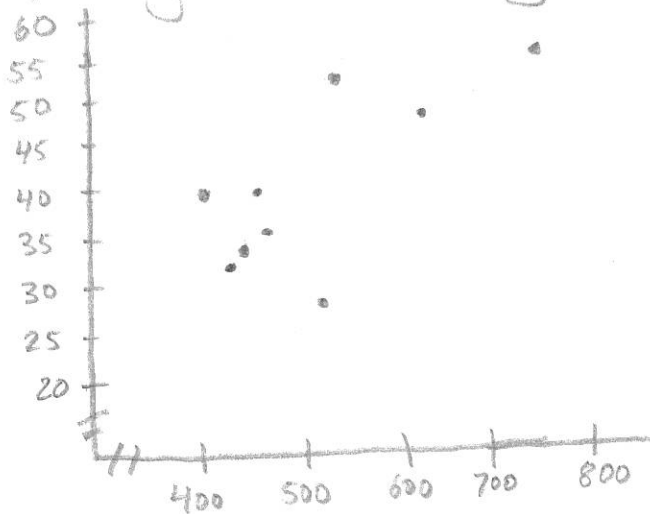
176 → ADD the class width (15) to the last midpoint

7.)

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1 | 3 7 8 9
2 | 0 1 2 3 3 3 4 4 5 5 5 7 8 8 9
3 | 1 1 2 3 4 5 7 8
4 | 3 4 7
5 | 1
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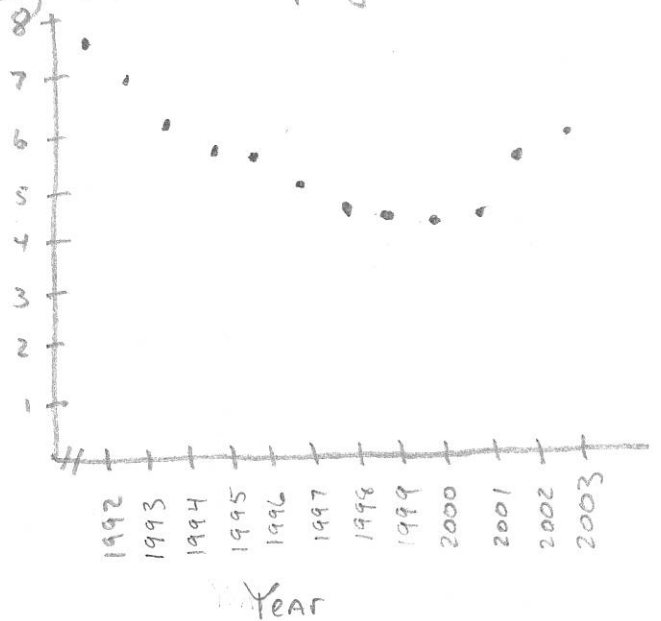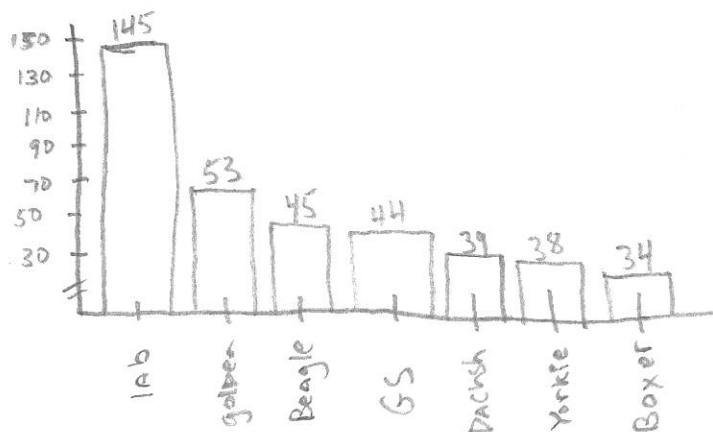
8.) Average Daily Highs

Temperature (in °F)

9.) Height of Buildings

10.) U.S. Unemployment Rate

Year

11.) American Kennel Club

12.) American Kennel club