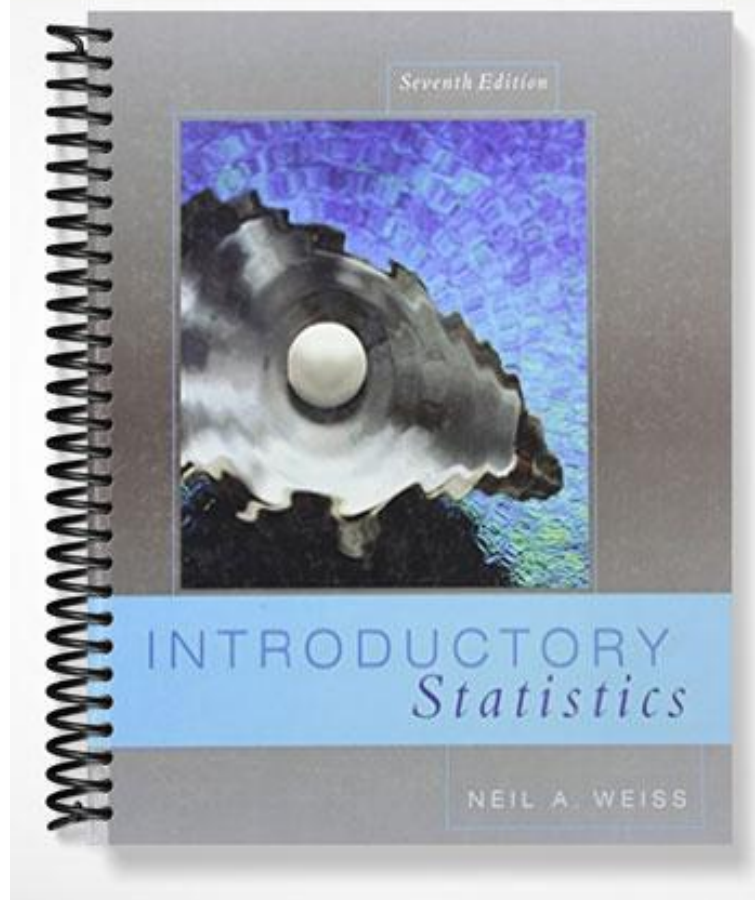


SOLUTIONS MANUAL



Seventh Edition

INTRODUCTORY
Statistics

NEIL A. WEISS

SUPPLEMENTARY EXERCISES FOR CHAPTER 2

Organizing Data

2.1 VARIABLES AND DATA

For each part of Exercises S2.1–S2.11, classify the data as either qualitative or quantitative; if quantitative, further classify it as discrete or continuous. Also identify the variable under consideration.

S2.1 Employment Figures. The U.S. Bureau of Labor Statistics publishes information on employment in *Employment and Earnings*. Following is a table providing 1998 employment figures for selected industries in the United States. What kind of data is given by the employee numbers?

Industry	Employees (1000s)
Agriculture	3,378
Mining	620
Construction	8,518
Manufacturing	20,733
Trade	27,203
Services	47,212

S2.2 Risk of Dying. What types of data are provided in the following table?

DO YOUR WORRIES MATCH THOSE OF THE EXPERTS?

Experts and laypeople were asked to rank the risk of dying in any year from various activities and technologies. The experts' ranking closely matches known fatality statistics.

Public	Experts
1 Nuclear power	20
2 Motor vehicles	1
3 Handguns	4
4 Smoking	2
5 Motorcycles	6
6 Alcoholic beverages	3
7 General (private) aviation	12
8 Police work	17
9 Pesticides	8
10 Surgery	5

Note: The table above was reprinted by permission from an issue of *Science*. Copyright by the American Association for the Advancement of Science.

S2.3 Largest U.S. Cities. The following table displays the rank by population and the population in thousands of the 10 largest cities in the United States in 1980 and 1998. [SOURCE: U.S. Bureau of the Census, *Census of Population*.]

City	1980		1998	
	Rank	Population (thous.)	Rank	Population (thous.)
New York	1	7,072	1	7,420
Los Angeles	3	2,967	2	3,598
Chicago	2	3,005	3	2,802
Houston	5	1,595	4	1,787
Philadelphia	4	1,688	5	1,436
San Diego	8	876	6	1,221
Phoenix	9	790	7	1,198
San Antonio	11	786	8	1,114
Dallas	7	904	9	1,076
Detroit	6	1,203	10	970

- What type of data is provided by the statement, “In 1980 Houston was the fifth largest city in the United States”?
- What type of data is given in the 1998 “Population” column of the table?
- What type of data is provided by the information that Theodore Roosevelt was born in New York?

S2.4 Largest U.S. Commercial Banks. The *American Banker* reports that the five largest U.S. commercial banks, by assets, as of December 31, 1997, were as follows.

Bank	Rank	Deposits (\$millions)
Chase Manhattan Bank, New York, NY	1	365,521
Citicorp, New York, NY	2	310,897
Nations Bank, Charlotte, NC	3	264,562
J.P. Morgan & Company, New York, NY	4	262,159
BankAmerica Corp., San Francisco, CA	5	260,159

- What kind of data is displayed in the second column of the table?
- What kind of data is presented in the third column of the table?

S2.5 Potpourri. What kinds of data would be collected in the following situations?

- A quality-control engineer measures the lifetimes of electric light bulbs.
- A businessperson wants to know the number of families with preteen children in Pueblo, CO.
- A manufacturer of sporting goods classifies each major-league baseball player as either right-handed or left-handed and counts the number of players in each category.
- A sociologist needs to estimate the average annual income of the residents of Ossining, New York.
- A pollster plans to classify each individual in a sample of voters as Democrat or Republican and count the total number in each group.
- An administrator at a college needs to know how many men and women participated in varsity sports during the spring semester and how much money was spent on men's sports and on women's sports.

S2.6 Tobacco Production. As reported by the U.S. Department of Agriculture in *Agricultural Statistics*, tobacco production in the United States for the years 1990–

1998 is as displayed in the following table. What type of data is provided by the second and fourth columns of the table?

Year	Pounds (millions)	Year	Pounds (millions)
1990	1626	1995	1269
1991	1664	1996	1565
1992	1722	1997	1787
1993	1613	1998	1530
1994	1583		

S2.7 Up, Up, and Away. On May 4, 1961, Commander Malcolm Ross of the U.S. Naval Reserves, ascended 113,739.9 ft in a free balloon. What kind of data is the height given here?

S2.8 Continental Statistics. The following table of continental statistics provides approximate land areas and 1998 population estimates. [SOURCE: Bureau of the Census, U.S. Department of Commerce.]

Continent	Land area (1000 sq mi)	Population (millions)
Africa	11,707	761
Asia	10,644	3528
Europe	3,800	508
North America	9,360	301
Oceania	3,284	30
South America	6,883	508

- What type of data is provided by the land area figures displayed in the second column of the table?
- What type of data is contained in the statement, “Africa is largest in land area and second largest in population”?
- What type of data is provided by the population figures shown in the third column of the table?
- What type of data do we obtain from the fact that Marie Curie was born in Europe?

S2.9 People in Prison. The U.S. Department of Justice publishes prison statistics in *Prisoners in 1997, Bureau of Justice Statistics*. The number of inmates for

selected states are given in the following table. What type of data is provided by the inmate numbers?

State	Number of Inmates
Michigan	44,771
California	157,547
Georgia	36,450
New York	70,026

S2.10 Cell Phone Subscriptions. The number of subscribers to cell phone services has climbed drastically since 1990. Published in *Semi-annual Wireless Survey*, the number of subscribers, in thousands, for the years 1990 and 1992–1998 are given in the following table. [SOURCE: Cellular Telecommunications Industry Association.] What type of data is provided by the second column of the table?

Year	Subscribers (1000s)
1990	5,283
1992	11,033
1993	16,009
1994	24,134
1995	33,786
1996	44,043
1997	55,312
1998	69,209

S2.11 Kids Galore! On November 19, 1997, Bobby McCaughey delivered septuplets, four boys and three girls, in Des Moines, IA. What kind of data is the number of boys and girls delivered?

2.2 GROUPING DATA

S2.12 Stays in Europe and the Mediterranean. The Bureau of Economic Analysis gathers information on the length of stay in Europe and the Mediterranean by U.S. travelers. Data are published in *Survey of Current Business*. A sample of 36 U.S. residents who traveled to Europe and the Mediterranean one year yielded the following data, in days, on length of stay.

41	16	6	21	1	21
5	31	20	27	17	10
3	32	2	48	8	12
21	44	1	56	5	12
3	13	15	10	18	3
1	11	14	12	64	10

Use classes of equal width starting with the class $1 \leq 8$ to construct a grouped-data table for these data on length of stay.

S2.13 Iron Intake. According to the Food and Nutrition Board of the National Academy of Sciences, the recommended daily allowance of iron is 18 mg for adult females under the age of 51. The amounts of iron intake, in milligrams, during a 24-hour period for a sample of 45 such females follows.

15.0	18.1	14.4	14.6	10.9	18.1	18.2	18.3	15.0
16.0	12.6	16.6	20.7	19.8	11.6	12.8	15.6	11.0
15.3	9.4	19.5	18.3	14.5	16.6	11.5	16.4	12.5
14.6	11.9	12.5	18.6	13.1	12.1	10.7	17.3	12.4
17.0	6.3	16.8	12.5	16.3	14.7	12.7	16.3	11.5

Construct a grouped-data table for these iron intakes. Use a first cutpoint of 6 and classes of equal width 2.

S2.14 Stays in Europe and the Mediterranean. Redo Exercise S2.12 using the alternative method for grouping data based on class limits and class marks.

S2.15 Iron Intake. Redo Exercise S2.13 using the alternative method for grouping data based on class limits and class marks.

S2.16 Car Sales. A car salesperson keeps track of the number of cars she sells per week. The number of cars she sold per week last year are as follows.

1	0	3	3	1	0	2	1	4	0	4	1	2
3	6	4	3	0	2	2	1	1	2	2	2	3
5	1	0	2	5	3	1	3	1	1	1	1	2
2	3	0	4	4	1	0	1	1	3	2	5	2

Construct a grouped-data table for the number of sales per week. Use classes based on a single value.

S2.17 NCAA Wrestling Champs. According to *The World Almanac*, the National Collegiate Athletic Association wrestling champions for the years 1969–1998

are as follows. Construct both a frequency distribution and a relative-frequency distribution for the champions.

Year	Champion	Year	Champion
1969	Iowa State	1984	Iowa
1970	Iowa State	1985	Iowa
1971	Oklahoma State	1986	Iowa
1972	Iowa State	1987	Iowa State
1973	Iowa State	1988	Arizona State
1974	Oklahoma	1989	Oklahoma State
1975	Iowa	1990	Oklahoma State
1976	Iowa	1991	Iowa
1977	Iowa State	1992	Iowa
1978	Iowa	1993	Iowa
1979	Iowa	1994	Oklahoma State
1980	Iowa	1995	Iowa
1981	Iowa	1996	Iowa
1982	Iowa	1997	Iowa
1983	Iowa	1998	Iowa

S2.18 Heights and Weights of Students. The heights (in inches) and weights (in pounds) of the students in Exercise 2.32 are as follows.

Height	Weight	Height	Weight	Height	Weight
68	140	67	155	74	215
67	140	67	130	67	129
72	145	68	160	72	275
69	145	64	127	68	135
66	115	74	170	60	95
72	185	73	180	75	175
64	130	63	142	61	120
65	145	69	170	73	180
62	127	62	103	64	125
69	135	68	160	66	130
66	110	75	185	63	105
69	178	64	122	69	155
63	130	64	130	70	170
72	185	70	215	64	105
67	120	63	105	65	132
68	135	76	200	65	115
64	130	71	169		

Repeat parts (a)–(f) of Exercise 2.32 for the bivariate data on heights and weights. Use a contingency table with classes for weight of equal width 40 starting with 90–129 and classes for height of equal width 6 starting with 60–65.

S2.19 Starting Salaries. Data on starting salaries for college graduates are provided by *The Northwestern Endicott-Lindquist Report*. A sample of 35 liberal-arts graduates yielded the following starting annual salaries. Data are in thousands of dollars, rounded to the nearest hundred dollars.

29.0	25.8	30.3	29.6	30.0	27.7	32.8
27.3	26.7	27.0	28.1	30.1	28.6	28.0
27.7	29.8	29.4	26.1	28.5	28.9	28.2
28.1	26.2	27.3	31.7	29.0	28.2	29.9
28.1	29.8	29.5	30.4	25.3	25.3	29.5

Using 25 as the first cutpoint and classes of equal width 1, construct a grouped-data table for these starting annual salaries.

S2.20 Starting Salaries. Redo Exercise S2.19 using the alternative method for grouping data based on class limits and class marks.

S2.21 Ages of Diabetics. A research physician conducted a study on the ages of people with diabetes. The following data were obtained for the ages of a sample of 35 diabetics. Construct an appropriate grouped-data table for these data.

48	41	57	83	41	55	59
61	38	48	79	75	77	7
54	23	47	56	79	68	61
64	45	53	82	68	38	70
10	60	83	76	21	65	47

S2.22 Ages of Diabetics. Redo Exercise S2.21 using the alternative method for grouping data based on class limits and class marks.

S2.23 College Tuition and Fees. Peterson's Annual Survey of undergraduate institutions publishes data on accredited undergraduate degree-granting institutions of the United States in *Peterson's*. A random sample of annual tuition and fees of four-year colleges for the 1997–1998 academic year yielded the following data, in thousands of dollars. Construct an appropriate grouped-data table for these data.

5.1	11.5	9.3	4.0	2.0
17.9	8.8	4.7	18.3	1.8
18.7	2.3	16.8	4.1	13.0
22.7	3.6	12.3	13.9	17.2
3.3	28.6	2.5	4.4	8.6

S2.24 Volunteer Time. Volunteers are people who offer their time to help others for no monetary pay. The average number of hours volunteered per week by persons 18 years and older is published in *Giving and Volunteering in the United*

States. The following table provides the average hours volunteered per week for a sample of 50 volunteers. Construct an appropriate grouped-data table for these data.

5.0	4.0	7.9	0.7	38.4	4.1	4.6	4.9	4.3	5.3
1.5	5.2	5.5	39.5	3.0	0.8	5.5	3.0	0.6	4.2
3.3	41.0	3.1	5.0	1.8	38.4	4.0	2.8	5.4	3.5
1.3	2.0	36.2	1.9	4.4	3.2	3.0	2.2	7.4	6.0
8.5	4.0	5.6	6.3	0.5	3.0	40.0	1.9	40.5	4.1

S2.25 Popular Car Colors. The American Automobile Manufacturers Association collects data on color preference for all makes and models of new cars. A sample of 40 recently purchased sports and compact cars yielded the following data on car color (B-Bright, L-Light, M-Medium, M/D-Medium/Dark). Obtain frequency and relative-frequency distributions for these data.

M/D Green	Black	M/D Green	B Red	White
White	M/D Green	L Brown	M/D Green	M Red
Black	White	L Brown	Black	Brown
L Brown	Brown	M/D Green	Black	M/D Blue
M/D Blue	M Red	M Red	M Red	M Red
M/D Green	White	Black	M/D Green	M/D Green
Black	L Brown	M/D Green	B Red	B Red
Black	White	Black	M/D Green	White

S2.26 Absentee Records. Cudahey Masonry, Inc., employs 80 bricklayers. The number of days each employee misses is recorded. Absentee records for the past year are as follows. Construct an appropriate grouped-data table for these data.

2	3	6	2	6	5	5	2	4	7
5	3	6	4	4	4	2	2	4	5
4	0	2	1	6	3	5	3	6	6
4	7	5	2	5	0	5	6	5	2
4	2	6	2	4	3	5	4	2	4
4	3	3	4	0	5	6	3	5	5
2	4	4	2	0	7	5	5	7	6
1	5	3	3	4	7	7	2	5	5

2.3 GRAPHS AND CHARTS

S2.27 Stays in Europe and the Mediterranean. Following are frequency and relative-frequency distributions for the data in Exercise S2.12 on length of stay in Europe and the Mediterranean for a sample of 36 U.S. residents who traveled there one year:

Length of stay (days)	Frequency	Relative frequency
1 < 8	10	0.278
8 < 15	10	0.278
15 < 22	8	0.222
22 < 29	1	0.028
29 < 36	2	0.056
36 < 43	1	0.028
43 < 50	2	0.056
50 < 57	1	0.028
57 < 64	0	0.000
64 < 71	1	0.028

- Construct a frequency histogram.
- Construct a relative-frequency histogram.

S2.28 Iron Intakes. The following table presents frequency and relative-frequency distributions for the data in Exercise S2.13 on iron intake, in milligrams, during a 24-hour period for 45 adult females under the age of 51.

Iron intake (mg)	Frequency	Relative frequency
6 < 8	1	0.022
8 < 10	1	0.022
10 < 12	7	0.156
12 < 14	9	0.200
14 < 16	9	0.200
16 < 18	9	0.200
18 < 20	8	0.178
20 < 22	1	0.022

- Construct a frequency histogram.
- Construct a relative-frequency histogram.

S2.29 Car Sales. The table below provides frequency and relative-frequency distributions for the data in Exercise S2.16 on the number of cars sold per week last year by a car salesperson.

Number of cars sold	Frequency	Relative frequency
0	7	0.135
1	15	0.288
2	12	0.231
3	9	0.173
4	5	0.096
5	3	0.058
6	1	0.019

- Construct a frequency histogram.
- Construct a relative-frequency histogram.

S2.30 NCAA Wrestling Champs. The following table gives frequency and relative-frequency distributions for the data in Exercise S2.17 on the NCAA wrestling champions for the years 1969–1998.

Champion	Frequency	Relative frequency
Oklahoma State	4	0.133
Iowa State	6	0.200
Oklahoma	1	0.033
Iowa	18	0.600
Arizona State	1	0.033

- Draw a pie chart for the relative frequencies.
- Construct a bar graph for the relative frequencies.

S2.31 Organically Grown Oats. A farmer is interested in estimating his yield of oats if he farms organically. He uses the method on a sample of 15 one-acre plots. The yields, in bushels, are depicted in the following table. Construct a dotplot for these data.

67	65	55	57	58
61	61	61	64	62
62	60	62	60	67

2.4 STEM-AND-LEAF DIAGRAMS

S2.32 Ages of Diabetics. A research physician conducted a study on the ages of people with diabetes. The following data were obtained for the ages of a sample of 35 diabetics.

48	41	57	83	41	55	59
61	38	48	79	75	77	7
54	23	47	56	79	68	61
64	45	53	82	68	38	70
10	60	83	76	21	65	47

- Construct a stem-and-leaf diagram.
- Construct an ordered stem-and-leaf diagram.

S2.33 Stays in Europe and the Mediterranean. The Bureau of Economic Analysis gathers information on the length of stay in Europe and the Mediterranean by U.S. travelers. Data are published in *Survey of Current Business*. A sample of 36 U.S. residents who traveled to Europe and the Mediterranean one year yielded the following data, in days, on length of stay.

41	16	6	21	1	21
5	31	20	27	17	10
3	32	2	48	8	12
21	44	1	56	5	12
3	13	15	10	18	3
1	11	14	12	64	10

Construct a stem-and-leaf diagram for the stays

- using one line per stem.
- using two lines per stem.

S2.34 Maximum Temperatures. The U.S. National Oceanic and Atmospheric Administration publishes temperature data in *Climatology of the United States*. According to that document, the annual average maximum temperatures for selected cities in the United States are as shown on the following page. Construct a stem-and-leaf diagram for these annual average maximums

- using two lines per stem.
- using five lines per stem.

S2.35 Minimum Temperatures. The U.S. National Oceanic and Atmospheric Administration publishes temperature data in *Climatology of the United States*. According to that document, the annual average minimum temperatures for selected cities in the United States are as shown on the following page. Construct a stem-and-leaf diagram for these annual average minimums

- using two lines per stem.
- using five lines per stem.

Data for Exercise S2.34 and Exercise S2.35

City	Max	Min	City	Max	Min
Mobile, AL	77	58	Reno, NV	67	32
Juneau, AK	47	33	Concord, NH	57	33
Phoenix, AZ	85	57	Atlantic City, NJ	63	43
Little Rock, AR	73	51	Albuquerque, NM	70	42
Los Angeles, CA	70	55	Albany, NY	58	37
Sacramento, CA	73	48	Buffalo, NY	56	39
San Francisco, CA	65	48	New York, NY	62	47
Denver, CO	64	36	Charlotte, NC	71	49
Hartford, CT	60	40	Raleigh, NC	70	48
Wilmington, DE	64	45	Bismarck, ND	54	29
Washington, DC	67	49	Cincinnati, OH	64	45
Jacksonville, FL	79	57	Cleveland, OH	59	41
Miami, FL	83	69	Columbus, OH	62	42
Atlanta, GA	71	51	Oklahoma City, OK	71	49
Honolulu, HI	84	70	Portland, OR	62	44
Boise, ID	63	39	Philadelphia, PA	63	45
Chicago, IL	59	40	Pittsburgh, PA	60	41
Peoria, IL	60	41	Providence, RI	59	41
Indianapolis, IN	62	42	Columbia, SC	75	51
Des Moines, IA	59	40	Sioux Falls, SD	57	34
Wichita, KS	68	45	Memphis, TN	72	52
Louisville, KY	66	46	Nashville, TN	70	49
New Orleans, LA	78	59	Dallas-Ft. Worth, TX	77	55
Portland, ME	55	35	El Paso, TX	78	49
Baltimore, MD	65	45	Houston, TX	79	57
Boston, MA	59	44	Salt Lake City, UT	64	39
Detroit, MI	58	39	Burlington, VT	54	35
Sault Ste. Marie, MI	49	31	Norfolk, VA	68	51
Duluth, MN	48	29	Richmond, VA	69	47
Mnpls-St. Paul, MN	54	35	Seattle-Tacoma, WA	59	44
Jackson, MS	76	53	Spokane, WA	57	37
Kansas City, MO	64	44	Charleston, WV	66	44
St. Louis, MO	66	45	Milwaukee, WI	55	38
Great Falls, MT	56	33	Cheyenne, WY	58	33
Omaha, NE	62	40	San Juan, PR	86	73

2.5 DISTRIBUTION SHAPES; SYMMETRY AND SKEWNESS

S2.36 Contents of Soft Drinks. A soft-drink bottler fills bottles with soda. For quality assurance purposes, filled bottles are sampled to ensure that they contain close to the content indicated on the label. A sample of 30 “one-liter” bottles of soda yielded the following stem-and-leaf diagram for the amounts, in milliliters, that the bottles contain.

91		4
92		
93		
94		6
95		9 7
96		4
97		7 5 4 7
98		6 9 4 8 7
99		0 6 1 9 5 7
100		1
101		4 8 0 7
102		5 8
103		0 1
104		
105		
106		0

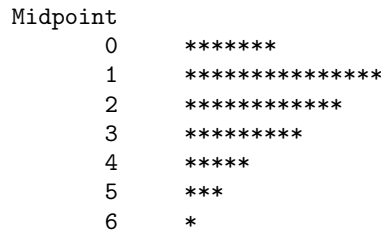
- Identify the overall shape of the distribution.
- State whether the distribution is (roughly) symmetric, right skewed, or left skewed.

S2.37 Crime Rates. The U.S. Federal Bureau of Investigation publishes annual crime rates in *Crime in the United States*. Rates are per 1000 population. Following is a stem-and-leaf diagram for the crime rates of the 50 states in the United States.

2		5 6 7 8
3		1 1 2 4
3		7 7 7 8 9 9 9
4		0 1 1 3 4 4
4		5 5 6 6 7 7 8 9 9 9
5		1 1 2
5		5 5 5 5 7 8 9
6		0 0 0 1 3 4
6		9
7		2 3

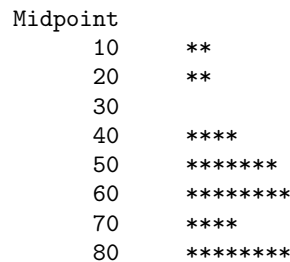
- Identify the overall shape of the distribution.
- State whether the distribution is (roughly) symmetric, right skewed, or left skewed.

S2.38 Car Sales. A car salesperson keeps track of the number of cars she sells per week. A character histogram for the number of cars she sold per week last year is as follows.



- a. Identify the overall shape of the distribution.
- b. State whether the distribution is (roughly) symmetric, right skewed, or left skewed.

S2.39 Ages of Diabetics. A research physician conducted a study on the ages of people with diabetes. The following character histogram was obtained for the ages of a sample of 35 diabetics.



- a. Identify the overall shape of the distribution.
- b. State whether the distribution is (roughly) symmetric, right skewed, or left skewed.

MISCELLANEOUS PROBLEMS

S2.40 U.S. Foreign Military Aid. The U.S. Agency for International Development compiles data on the amount of U.S. foreign military aid provided to each region of the world. Results are published in *U.S. Overseas Loans and Grants and Assistance*

From International Organizations. The data in the following table are for the years 1995 and 1997; aid amounts are in thousands of dollars.

Region	1995		1997	
	Rank	Aid	Rank	Aid
Near East	1	3,111,501	1	3,135,275
Europe	2	566,928	2	376,085
Sub-Saharan Africa	4	4,995	3	16,343
Latin America	3	21,881	4	11,052
Asia	5	3,804	5	6,781

- What type of data is given by the fact that the Near East received the most U.S. foreign military aid in 1997?
- What type of data is given by the fact that France is in Europe.
- What type of data is given in the fifth column of the table?

S2.41 Top-Selling Cars. According to the American Automobile Manufacturers Association, the top 20 best-selling passenger cars in the United States in 1997 are as shown in the following table.

Car	Number sold (1000s)	Car	Number sold (1000s)
Toyota Camry	397	Chevrolet Malibu	165
Honda Accord	385	Ford Contour	151
Ford Taurus	357	Buick LeSabre	151
Honda Civic	316	Nissan Altima	144
Chevrolet Cavalier	302	Pontiac Grand Prix	142
Ford Escort	284	Nissan Maxima	123
Saturn	251	Nissan Sentra	122
Chevrolet Lumina	228	Dodge Neon	122
Toyota Corolla	218	Dodge Intrepid	119
Pontiac Grand Am	204	Ford Mustang	117

- Construct a grouped-data table for the number sold using classes of equal width 50 and first cutpoint 100.
- Obtain a frequency histogram for the data based on your grouping in part (a).
- Repeat part (b) for a relative-frequency histogram.

S2.42 U.S. Patents. As published by the U.S. Patent and Trademark Office in *Technology Assessment and Forecast Report*, the 20 corporations receiving the most U.S. patents in 1997 are as given in the following table.

Rank	Company	Number of patents
1	IBM	1724
2	Canon K.K.	1381
3	NEC Corp.	1095
4	Motorola, Inc.	1058
5	Fujitsu, Ltd.	903
6	Hitachi, Ltd.	903
7	Mitsubishi Denki K.K.	892
8	Toshiba Corp.	862
9	Sony Corp.	859
10	Eastman Kodak	795
11	Lucent Technologies Inc.	768
12	Matsushita Electric Industrial	746
13	General Electric Comp.	664
14	Texas Instruments, Inc.	607
15	Xerox Corp.	606
16	Samsung Electronics Co.	582
17	Minnesota Mining & Manufacturing	548
18	Hewlett-Packard Company	530
19	Nikon Corp.	479
20	U.S. Phillips Corp.	473

- Construct a grouped-data table for the number of patents using equal-width classes starting with the class $400 \leq 600$.
- Identify the common class width.
- Draw a frequency histogram for the number of patents based on your grouping in part (a).
- Identify the overall shape of the distribution.

S2.43 International Internet Use. According to the *Computer Industry Almanac Inc., 1999*, the 10 countries with the highest weekly use of the Internet are as given

18 SUPPLEMENTARY EXERCISES FOR CHAPTER 2

below, in millions. Identify the data type and associated variable for each of the three columns of data.

Rank	Country	Weekly Users
1	USA	76.50
2	Japan	9.75
3	UK	8.10
4	Germany	7.14
5	Canada	6.49
6	Australia	4.36
7	France	2.79
8	Sweden	2.58
9	Italy	2.14
10	Spain	1.98