REVIEW QUESTIONS

Table 3.4, needed for questions 1 and 2, consists of a list of the top 100 major league baseball players ranked according to career batting average. (Notice that because of ties for the 100th place, there are actually 104 players on this list.)

The table contains the following information for each player: number of career years, the last year for which data were collected, career batting average, and career number of home runs.

(See full table on next page...)

First	Last	Career Years	Last Career Year	Career Batting Avg.	Career Home Runs	First	Last	Career Years	Last Career Year	Career Batting Avg.	Career Home Runs
Cap	Anson	22	1897	0.331	97	Willie	Keeler	19	1910	0.341	33
Luke	Appling	20	1950	0.310	45	Joe	Kelly	17	1908	0.317	65
Earl	Averill	13	1941	0.318	238	Chuck	Klein	17	1944	0.320	300
Ginger	Beaumont	12	1910	0.311	39	Nap	Lajoie	21	1916	0.339	83
Wade	Boggs	18	1999	0.328	118	Henry	Larkin	10	1893	0.310	53
Jim	Bottomley	16	1937	0.310	219	Freddie	Lindstrom	13	1936	0.311	103
Dan	Brouthers	19	1904	0.342	106	Denny	Lyons	13	1897	0.318	62
Pete	Browing	13	1894	0.349	46	Heinie	Manush	17	1939	0.330	110
Jessie	Burkett	16	1905	0.338	75	Edgar	Martinez	18	2004	0.312	309
Miguel	Cabrera	10	2012	0.318	312	Joe	Mauer	9	2012	0.322	93
Rod	Carew	19	1985	0.328	92	Barney	McCosky	11	1953	0.312	24
Fred	Clarke	21	1915	0.312	67	John	McGraw	16	1906	0.334	13
Roberto	Clemente	18	1972	0.317	240	Joe	Medwik	17	1948	0.324	205
Ty	Cobb	24	1929	0.366	117	Irish	Meusel	11	1927	0.310	106
Mickey	Cochrane	13	1937	0.320	119	Bing	Miller	16	1936	0.311	116
Eddie	Collins	25	1930	0.333	47	Dale	Mitchell	11	1956	0.312	41
Earle	Combs	12	1935	0.325	58	Johnny	Mize	15	1953	0.312	359
Roger	Connor	18	1897	0.317	138	Stan	Musial	22	1963	0.331	475
Kiki	Cuyler	18	1938	0.321	128	Tip	O'Neill	10	1892	0.334	52
Ed	Delahanty	16	1903	0.346	101	Jim	O'Rourke	9	1904	0.310	80
Bill	Dickey	17	1946	0.313	202	Kirby	Puckett	12	1995	0.318	207
Joe	DiMaggio	13	1951	0.325	361	Albert	Pujols	12	2012	0.325	474
Mike	Donlin	12	1914	0.333	51	Rip	Radcliff	10	1943	0.311	42
Hugh	Duffy	17	1906	0.324	106	Manny	Ramirez	19	2011	0.312	555
Bibb	Falk	12	1931	0.314	69	Sam	Rice	20	1934	0.322	34
Elmer	Flick	13	1910	0.313	48	Jackie	Robinson	10	1956	0.311	137
Bob	Fothergill	12	1933	0.325	36	Edd	Roush	18	1931	0.323	68
Jack	Fournier	15	1927	0.313	136	Babe	Ruth	22	1935	0.342	714
Jimmie	Foxx	20	1945	0.325	534	Joe	Sewell	14	1933	0.312	49
Frankie	Frisch	19	1937	0.316	105	Al	Simmons	15	1944	0.334	307
Nomar	Garciaparra	14	2009	0.313	229	George	Sisler	14	1930	0.340	102
Lou	Gehrig	17	1939	0.340	493	Elmer	Smith	14	1901	0.312	37
Charlie	Gehringer	19	1942	0.320	184	Tris	Speaker	22	1928	0.345	117
Goose	Goslin	18	1935	0.316	248	Riggs	Stephenson	14	1934	0.336	63
Hank	Greenberg	13	1947	0.314	331	Ichiro	Suzuki	12	2012	0.322	102
Vladimir	Guerrero	16	2011	0.318	449	Bill	Terry	14	1936	0.341	154
Tony	Gwynn	20	2001	0.338	135	Sam	Thompson	15	1906	0.331	127
Chick	Hafey	13	1937	0.317	164	Mike	Tiernan	13	1899	0.311	106
Billy	Hamilton	14	1901	0.344	40	Cecil	Travis	12	1947	0.314	27
Harry	Heilmann	17	1932	0.342	183	Pie	Traynor	17	1937	0.320	58
Todd	Helton	16	2012	0.320	354	George	Van Haltren	17	1903	0.316	69
Babe	Herman	13	1945	0.324	181	Arky	Vaughan	14	1948	0.318	96
Matt	Holliday	9	2012	0.314	227	Bobby	Veach	14	1925	0.310	64
Rogers	Hornsby	23	1937	0.359	301	Honus	Wagner	21	1917	0.327	101
Baby Doll	Jackson	11	1927	0.311	83	Larry	Walker	17	2005	0.313	383
Joe	Jackson	13	1920	0.356	54	Paul	Waner	20	1945	0.333	113
Hughie	Jennings	17	1918	0.311	18	Lloyd	Waner	18	1945	0.316	27
Derek	Jeter	11	2005	0.313	254	Zack	Wheat	19	1927	0.317	132
Willie	Keeler	19	1910	0.341	33	Ted	Williams	19	1960	0.344	521
Joe	Kelly	17	1908	0.317	65	Ken	Williams	14	1929	0.319	196
Chuck	Klein	17	1944	0.320	300	Taffy	Wright	9	1949	0.311	38
Nap	Lajoie	21	1916	0.339	83	Ross	Youngs	10	1926	0.322	42

Table 3.4: Top 100 career batting averages in baseball (at the end of the 2012 season).

1. Make two histograms for the career home run data. For the first histogram, use class intervals of size 100 and in the second, use class intervals of size 50. Describe the overall shape of the data based on each of your histograms. Also identify any potential outliers. Explain what new information you can obtain from the second histogram that was not visible in the first.

2. a. Make two histograms for Career Years. Use the following class intervals:

      Histogram 1: 9 – 14, 14 – 19, 19 – 24, and 24 – 29.

      Histogram 2: 9 – 11, 11 – 13, 13 – 15, 15 – 17, 17 – 19, 19 – 21, 21 – 23, 23 – 25.

b. Did any of the career years fall on a boundary of a class interval? If so, how did you classify those data values?

c. Describe the overall shape of each of the two histograms. In particular would you describe the shape as symmetric or skewed? Would you characterize the shape as unimodal (one peak), bimodal (two peaks), or multimodal? Did changing the class intervals affect the shape of the distribution?

3. The duration of 40 phone calls (in minutes) for technical support is given below.

12.0	3.3	0.5	48.7	16.7	1.2	14.8	8.2	9.0	5.7
11.5	17.5	3.2	20.8	7.3	8.0	0.2	51.2	3.3	5.2
12.3	24.5	13.3	7.7	13.5	4.3	13.7	10.7	18.8	15.7
3.2	38.7	16.2	23.3	9.7	4.7	6.5	0.5	45.1	5.3

a. Make a copy of Table 3.5 and then complete the frequency distribution table for the call duration data.

(See table on next page...)

Duration (minutes)	Frequency	Percent
0 – 6		
6 – 12		
12 – 18		
18 – 24		
24 – 30		
30 – 36		
36 – 42		
42 – 48		
48 – 54		

Table 3.5. Frequency distribution table for duration of phone calls.

b. What percentage of phone calls lasted less than 12 minutes?

c. What percentage of calls lasted a half hour or more?

d. Represent the frequency distribution with a histogram. Use a percent scale on the vertical axis.

e. Describe the shape of the distribution. Are there any gaps in the data? Outliers?