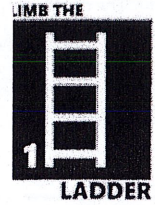


Answers to Climb the Ladder

1. The numbers of points scored by Dwyane Wade in the first 12 games of the 2012–2013 NBA regular season are listed. (Source: National Basketball Association)

29	15	14	22	22	8	19	8	28	18	19	34
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- (a) Find the mean, median, and mode of the data set. Which best represents the center of the data?
- (b) Find the range, variance, and standard deviation of the sample data set.
- (c) Find the coefficient of variation of the data set.
- (d) Display the data in a stem-and-leaf plot. Use one line per stem.

a) $\bar{x} = 19.5$
 Med = 19
 Mode = 19, 22

d) Stem-and-leaf plot:

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

c) $\frac{9.04}{19.5} = .4635$
 46.4% C.V.

b) range = 28 pts
 $S_x = 9.04$
 $S_x^2 = 81.72$
 8.27
 68.39

Ladder 8

a. For the stem-and-leaf plot below, what is the maximum and what is the minimum entry?

Key: 11|2 = 11.2

11	0 2
12	4 6 6 7 8 9
13	0 1 1 2 3 6 6 7 8 8
14	3 4 6 6 8 9 9 9
15	0 1 1 2 3 7 7 8 9
16	2 2 5 7 8 8 9 9
17	0 5

$\frac{75}{100} = \frac{x}{45}$

b. describe the SHAPE

mean is less than median so slightly skewed left but fairly symmetric because not far off

c. Center: Mean, Median, Mode

Mean: $\bar{x} = 145.8$ med = 148 mode = 149

d. Spread; Calculate the SD.

$S_x = 1.63$

e. Find the score that relates to the 75th percentile.

158.5 is 75% or 34th perc of data 158.5

Min	Q1	Q2	Q3	Max
110	131.5	148	158.5	175

f. Calculate the coefficient of variation.

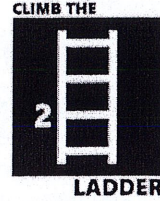
$\frac{16.30}{145.8} \cdot 100\% = .112$ 11.2% = C.V.

Class width $\frac{\text{Max} - \text{Min}}{6} = 34$

2. The data set represents the numbers of movies that a sample of 24 people watched in a year.

121	148	94	142	170	88	221	106
136	85	18	106	67	149	28	60
101	134	139	168	92	154	53	66

Min: 18
Max: 221

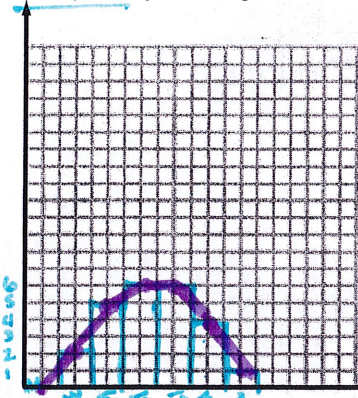


(a) Construct a frequency distribution for the data set using six classes. Include class limits, midpoints, boundaries, frequencies, relative frequencies, and cumulative frequencies.

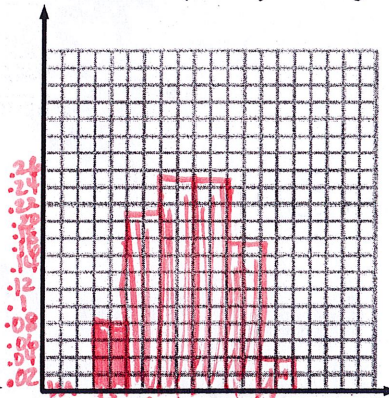
Class	Midpoint	Class Boundary	Frequency	Relative Frequency	Cumulative Frequency
18-51	34.5	17.5-51.5	2	$\frac{2}{24} = .08$	2
52-85	68.5	51.5-85.5	5	$\frac{5}{24} = .21$	7
86-119	102.5	85.5-119.5	6	$\frac{6}{24} = .25$	13
120-153	136.5	119.5-153.5	6	$\frac{6}{24} = .25$	19
154-187	170.5	153.5-187.5	4	$\frac{4}{24} = .17$	23
188-221	204.5	187.5-221.5	1	$\frac{1}{24} = .04$	24

3. Use the frequency distribution in Ladder 2 to graph the data in the 3 following graphs

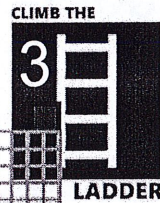
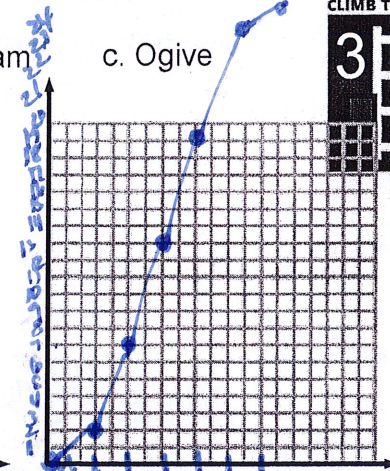
a. Frequency Histogram



b. Relative Frequency Histogram



c. Ogive

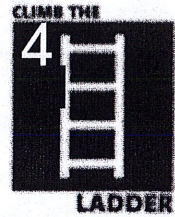


d. Draw a frequency polygon on the same axis of part a.

e. Describe the shape of the distribution as symmetric, Uniform, skewed left, skewed right or NONE

Symmetric

4. Use frequency distribution formulas to approximate the sample mean and the sample standard deviation of the data set in Exercise 2.



The data set represents the numbers of movies that a sample of 24 people watched in a year.

121	148	94	142	170	89	221	106
186	85	18	106	67	149	29	60
101	134	139	168	92	154	83	65

Midpoints
 $\bar{x} = 113.83$
 $S_x = 45.6$

Actual Data
 $\bar{x} = 112.3$
 $S_x = 50.61$
 $Q3 = 148.5$

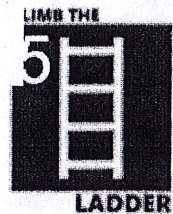
4. For the data set in Exercise 2, find the percentile that corresponds to 149 movies watched in a year.

148 (149) 154 168 170 180 221
 18 28 53 60 66 67 85 88 92 94 101 106 106 121 134 139 148

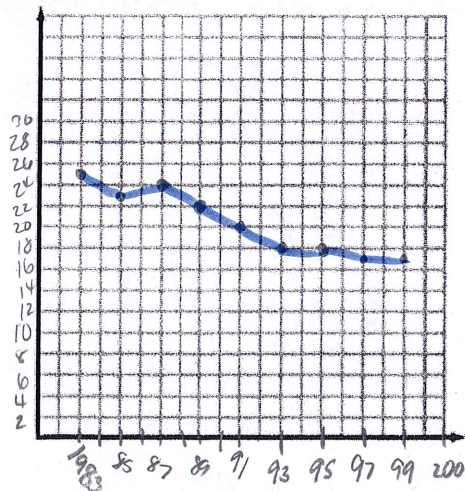
$\frac{18}{24} = .75$ 75%
 75%
 75%

5) The data below represent the alcohol-related driving fatalities, in thousands, in the United States over a 20-year period. Use a time series chart to display the data. Describe any trends shown.

Year	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001
Fatalities	25	23	24	22	20	18	18	17	17	17



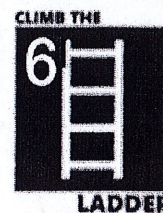
The fatalities due to alcohol have remained very close with a little decrease since 1983 in 1999, 2001 there was no change



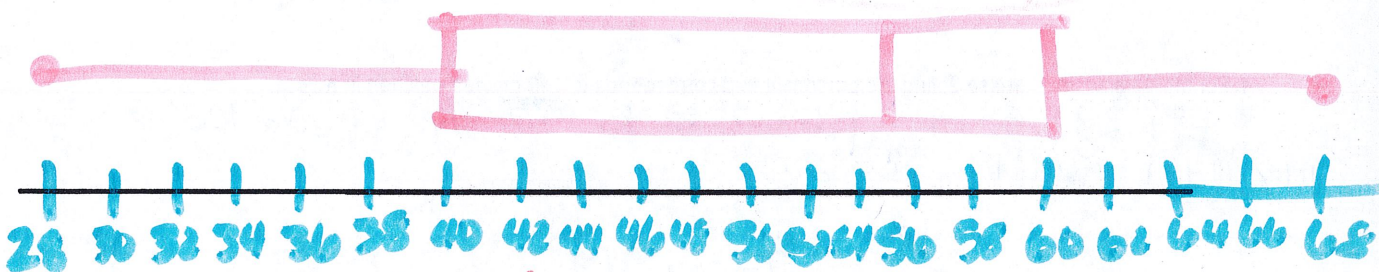
6. The data set represents the ages of 15 college professors.

46 51 60 58 37 65 40 55 30 68 28 62 56 42 59

- (a) Find the five-number summary of the data set.
- (b) Display the data in a box-and-whisker plot.
- (c) About what percent of the professors are over the age of 40?



Min 28 Q1 40 Q2 Mid 55 Q3 60 Max 68



15% of professors are older than 40 years old.

The mean length of a sample of 125 iguanas is 4.8 feet, with a standard deviation of 0.7 feet. The data set has a bell-shaped distribution.

- (a) Estimate the number of iguanas that are between 4.1 and 5.5 feet long.
- (b) Use a z-score to determine whether an iguana length of 3.1 feet is unusual.

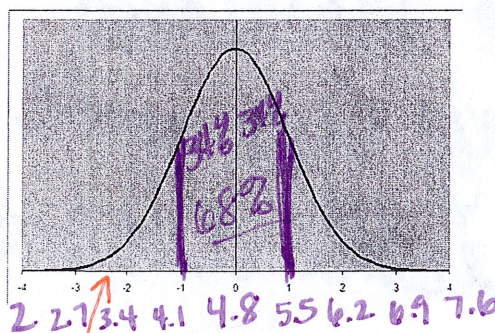


a) 68% lies between 4.1 & 5.5 feet long

$$z = \frac{x - \bar{x}}{s_x}$$

$$z = \frac{3.1 - 4.8}{.7}$$

$$z = -2.43$$



Yes it is unusual for an iguana to be 3.1 feet