11.1 Stem-and-Leaf Plots and Histograms

Goal: Make stem-and-leaf plots and histograms.

Vocabulary

82 84 97 95 89

Stem-and-leaf plot:

stem | leaf

8 | 2 4 9

9 | 5 7

key

8|2 = 82

Frequency: how often an event occurs

Frequency table:

Histogram:

Example 1 *Making a Stem-and-Leaf Plot*

The amounts (in pounds) of hay eaten by 16 elephants in one day are listed below. Use a stem-and-leaf plot to display the data.

449, 450, 419, 448, 479, 440, 446, 468, 413, 455, 479, 390, 393, 403, 460, 409

1. The least data value is 390 and the greatest is 479. Let the [ ] be the hundreds' and tens' digits of the data values (from 39 to 47). Let the [ ] be the ones' digits.
2. Write the stems first. Then record each amount by writing its ones' digit on the same line as its corresponding stem.
3. Make an ordered plot. Give it a key and a title.

Each stem in a stem-and-leaf plot determines an interval. For the stem-and-leaf plot in Example 1, for instance, the stem 39 determines the interval 390-399.

Hay Eaten by Elephants

Unordered plot

39	
40	
41	
42	
43	
44	
45	
46	
47	

Key: 39 | 0 = [ ]

Ordered plot

39	0 3
40	3 9
41	0 5 9
42	
43	
44	6 8 9
45	0 5
46	0 6
47	9 9

Key: 39 | 0 = 390

Checkpoint

1. An elephant eats about 460 pounds of hay per day. How does the amount of hay this elephant eats compare to the amounts in Example 1?

Example 2 *Making a Frequency Table*

Ticket Prices The average ticket prices (rounded to the nearest dollar) charged by Major League Baseball teams in a recent year are listed below. Make a frequency table for the data.

23, 24, 20, 19, 20, 20, 19, 16, 17, 18, 17, 17, 14, 15, 14, 13, 15, 13, 12, 17, 12, 12, 12, 12, 11, 8, 10, 11, 10, 9

To choose the interval size for a frequency table, divide the range of the data by the number of intervals you want the table to have. Use the quotient as an approximate interval size.

Solution

1. Choose intervals of equal size for the data.
2. Use a tally mark to record the interval in which each data value falls.
3. Write the frequency for each interval by counting the number of tally marks for the interval.

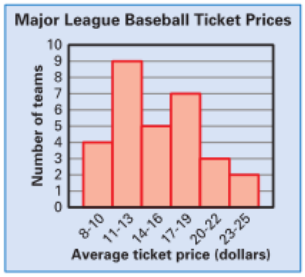
Prices	Tally	Frequency
8–10	IIII	4
11–13	IIII III	9
14–16	IIII	5
17–19	IIII II	7
20–22	III	3
23–25	II	2

30

Example 3 *Making and Interpreting a Histogram*

Make a histogram using the frequency table in Example 2. Then make a conclusion about the data.

1. Show the intervals from the frequency table on the [ ] axis, and show the frequencies on the [ ] axis.
2. Draw a bar to represent the [ ] for each interval.
3. Give the histogram a title.



Answer: From the histogram, about [ ] % of the teams charge $20 or more per ticket.