

units column after rounding of the

Example 2.28: Consider the following marks obtained by 20 students in a business statistics test:

64 89 63 61 78 87 74 72 54 88
62 81 78 73 63 56 83 86 83 93

- Construct a stem-and-leaf diagram for these marks to assess class performance
- Describe the shape of this data set
- Are there any outliers in this data set.

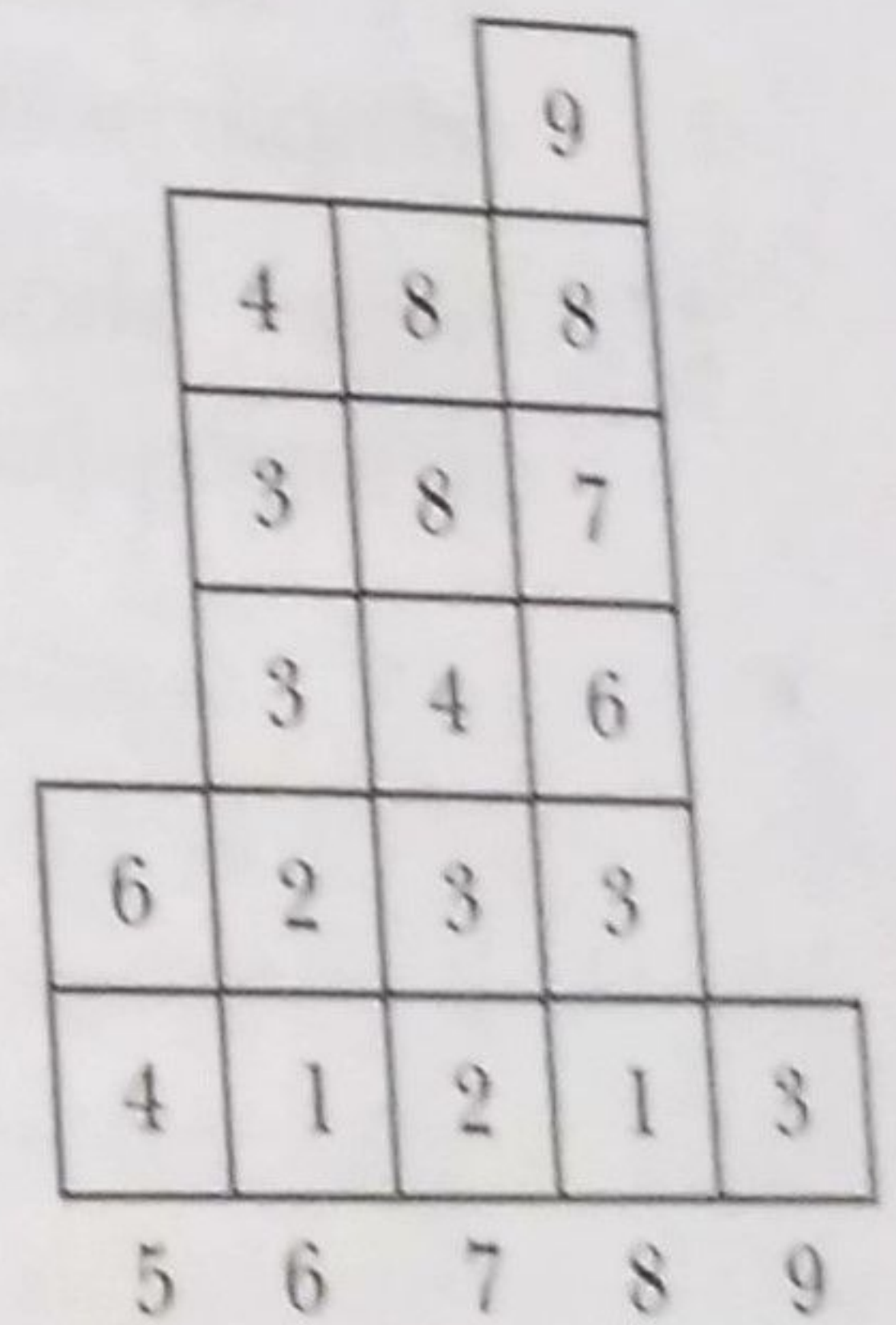
Solution: (a) The numerical values in the given data set are ranging from 54 to 93, i.e., 54, 56, 61, 62, 63, 63, 64, 72, 73, 74, 78, 78, 81, 83, 86, 87, 88, 89, 93 to construct a stem-and-leaf diagram, we make a vertical list of the stems (the first digit of each numerical value) as shown below:

Stem	Leaf
5	46
6	12334
7	23488
8	1367889
9	3

Rearrange all of the leaves in each row in rank order.

Each row in the diagram is a stem and numerical value on that stem is a leaf. For example, if we take the row 6/12334, it means there are five numerical values in the data set that begins with 6, i.e. 61, 62, 63, 63 and 64.

If the page is turned 90 degree clockwise and draw rectangles around the digits in each stem, we get a diagram similar to a histogram.



- Shape of the diagram is not symmetrical.
- There is no outlier (an observation far from the center of the distribution).

Example 2.29: The following data represent the annual family expenses (in thousand of rupees) on food items in a city.

13.8 14.1 14.7 15.2 12.8 15.6 14.9 16.7 19.2
14.9 14.9 14.9 15.2 15.9 15.2 14.8 14.8 19.1
14.6 18.0 14.9 14.2 14.1 15.3 15.5 18.0 17.2
17.2 14.1 14.5 18.0 14.4 14.2 14.6 14.2 14.8

Construct the stem-end-leaf diagram.

Solution: Since the annual costs (in ₹ '000) in the data set all have two-digit integer numbers, the tens and units columns would be the leading digits and the remaining column (the tenth column) would be trailing digits as shown below: