

Solutions

1. Determine the mean, median, and mode of each set of data points.

- a) 45, 24, 62, 12, 43, 73, 98, 58, 12, 81, 25,
12, 43, 52

Mean = Total \div # of Items

$$= 640 \div 14$$

$$= 45.7$$

To find the median, first order the data:

12, 12, 12, 24, 25, 43, 43, 45, 52, 58, 62, 73, 81, 98

There are 14 values, so we need the midpoint of the 7th and 8th values.

$$\text{Median} = (43 + 45) / 2 = 44$$

Mode is the value(s) that occur most often, in this case 12 (3 times).

1. Determine the mean, median, and mode of each set of data points.

b) 6, 14, 3, 14, 21, 20, 14, 16, 19, 6, 7

Mean = Total \div # of Items

$$= 140 \div 11$$

$$= 12.7$$

To find the median, first order the data:

3, 6, 6, 7, 14, 14, 14, 16, 19, 20, 21

There are 11 values, so we need the 6th value.

Median = 14

Mode is the value(s) that occur most often, in this case 14 (3 times).

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c) 12.3, 15.8, 9.9, 13.0, 12.7, 16.1, 20.0, 8.3

Mean = Total \div # of Items

$$= 108.1 \div 8$$

$$= 13.5$$

To find the median, first order the data:

8.3, 9.9, 12.3, 12.7, 13.0, 15.8, 16.1, 20.0

There are 8 values, so we need the midpoint of the 4th and 5th values.

Median = $(12.7 + 13.0) / 2 = 12.85$

Mode is the value(s) that occur most often, in this case there is NO mode (all values appear once only).

1. Determine the mean, median, and mode of each set of data points.

d) 102, 134, 187, 155, 142, 134, 134, 156, 181

Mean = Total \div # of Items

$$= 1325 \div 9$$

$$= 147.2$$

To find the median, first order the data:

102, 134, 134, 134, 142, 155, 156, 181, 187

There are 14 values, so we need the 5th value.

Median = 142

Mode is the value(s) that occur most often, in this case 134 (3 times).

2. The mean of the set of numbers is 15. What is the missing number?

13, 16, 15, 20, 14, ■

Mean = Total \div # of Numbers

$$15 = (13 + 16 + 15 + 20 + 14 + x) \div 6$$

$$15(6) = 78 + x$$

$$90 = 78 + x$$

The missing number is 12.

$$12 = x$$

3. Identify each type of variable as categorical, ordinal, or quantitative.

- a) hair colour Categorical
- b) salary Numerical/Quantitative
- c) gender (M, F) Categorical
- d) rating scale (low, medium, high) Ordinal
- e) level 1, 2, 3, or 4 on a standardized test Numerical/Quantitative
- f) temperature Numerical/Quantitative

4. Match each description with the appropriate type of graph. Some graph types can be used more than once.

Description

- a) Displays discrete data in separate columns.
- b) Organizes data by representing part of each number as a stem and the other part as a leaf.

- c) Uses pictures or symbols to represent data.
- d) Displays data as a percent of the whole.
- e) Uses proportional areas of the bars to show frequencies of the values of the variables.
- f) Represents data using a circle that has been divided into sectors.
- g) Represents nominal data, such as days of the week.

Graph

Bar graph
Histogram
Circle graph
Stem and leaf plot
Pictograph

- a) Bar Graph
- b) Stem and Leaf Plot
- c) Pictogram
- d) Circle Graph (Pie Chart)
- e) Histogram
- f) Circle Graph (Pie Chart)
- g) Bar Graph

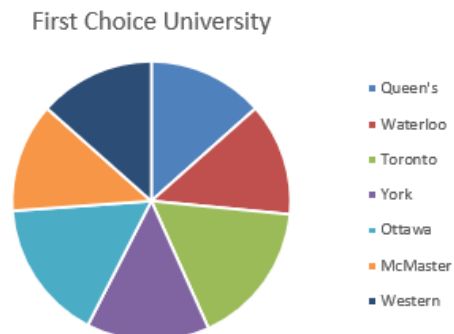
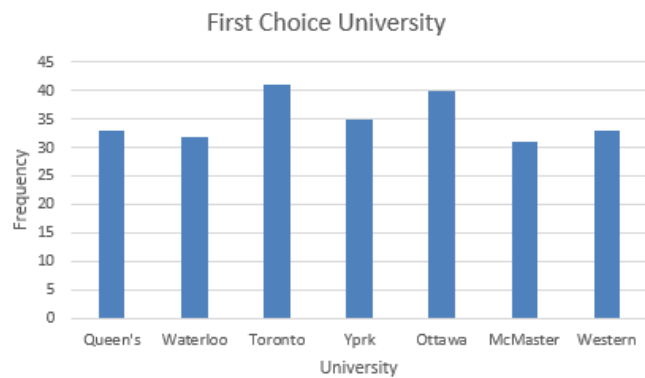
5. A survey asked grade 12 students to state their first choice for the university they would like to attend from the list given.

University	Frequency
Queen's University	33
University of Waterloo	32
University of Toronto	41
York University	35
University of Ottawa	40
McMaster University	31
University of Western Ontario	33

Illustrate the data using two graph types of your choice. Justify your choices.

The bar graph provides a visual representation of each university's popularity compared to each other.

The circle graph provides a visual comparison of the proportion of the popularity for each university compared to the whole.



6. Create a stem and leaf plot for each list of student averages. Compare with a histogram.

a) 78, 83, 77, 73, 61, 99, 65, 80, 55, 67, 52, 79, 43, 59

Stem	Leaf
4	3
5	2, 5, 9
6	1, 5, 7
7	3, 7, 8, 9
8	0, 3
9	9

The stem and leaf plot still allows you to see the individual data values, where as the class intervals of a histogram does not.

6. Create a stem and leaf plot for each list of student averages. Compare with a histogram.

b) 63.2, 71.4, 79.5, 50.0, 93.7, 44.5, 87.6,
65.7, 54.9, 92

The stem and leaf plot for this data set is not practical at all. It would have 50 rows to it and there are only 10 pieces of data!

As the data is so spread out, a histogram would be advisable as you can group the data into class intervals to make it more manageable.