Chapter Review

Frequently Asked Questions

Q: How are bar graphs and histograms similar and different?

A: Similarities

- The bars are the same width.
- Data categories are shown on the horizontal axis.

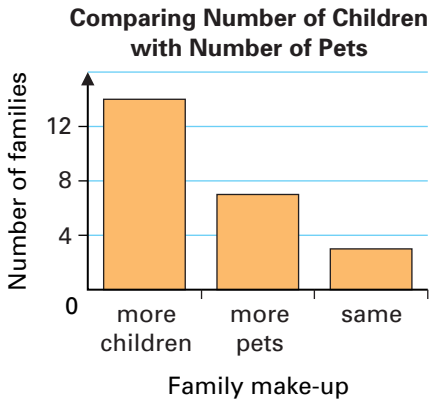
Differences

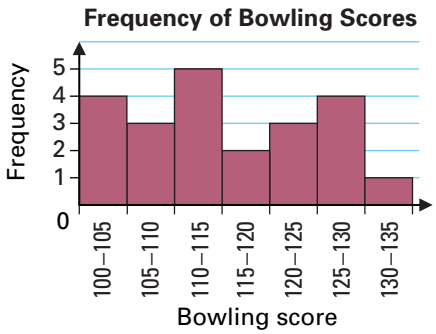
Bar graphs:

- Categories do not have to be numeric intervals.
- Categories can appear in any order.
- Spaces between bars indicate that the categories are separate from one another.
- Not all bar graphs show frequency.

Histograms:

- Categories must be numeric intervals.
- Categories must be in ascending order.
- The right boundary of an interval is the left boundary of the next interval.
- All histograms show frequency.





Q: How do you know when to use the mean, median, or mode to compare sets of data?

A: The mode is the only value that can be used for non-numeric data. A set of data could have no mode or several modes. Use the mode when you have non-numeric data or are only interested in the most frequently occurring data item.

The mean is calculated using every item of data, so it can be affected by extremely low or extremely high values. The median is not affected as much by extreme values. If you think extreme values should be taken into account, use the mean. If you think extreme values should not be taken into account, use the median.

Practice Questions

(3.1) **1.** The following database shows population characteristics for selected countries.

Country	Life expectancy (years)	Per capita income (U.S. $)	Number of people per motor vehicle
Bangladesh	57	230	1200
Brazil	66	3 370	9
Canada	78	19 570	1.6
China	70	530	225
Ethiopia	50	130	800
Iceland	79	24 590	1.8
India	59	310	225
Japan	80	34 630	2.1
Mexico	73	4 010	9
Norway	78	26 480	2.2

a) Compare the data to determine a relationship between life expectancy and income.

b) Construct a scatter plot to compare the number of people per motor vehicle and income. Is there a relationship between these two factors?

(3.2) **2.** When analyzing a survey, would you be more confident in the results from a census or a sample? Explain why.

(3.4) **3.** The distances, in kilometres, that employees of one company drive to work each day are listed below.

7.1	9.3	40.4	36.7	27.6	14.1
19.5	55.9	46.2	41.1	50	28.6
27.5	33.0	39.8	21.6	8.5	65
61.3	59.9	39.2	37.5	44.1	49.5
45.9	49.8	31.5	29.7	22.6	19.4

a) Organize the distances in a frequency table. Explain your choice of intervals.

b) Display the data in a histogram.

4. a) Organize the following data in a stem-and-leaf plot.

219	151	199	186	170	186	194
184	196	185	174	186	197	170
178	179	182	193	195	171	

b) Use your stem-and-leaf plot to determine the median and the mode.

c) Calculate the mean of the data.

d) Remove the greatest and least values, and determine the mean, median, and mode. Which measure is affected the most? Explain why. (3.5)

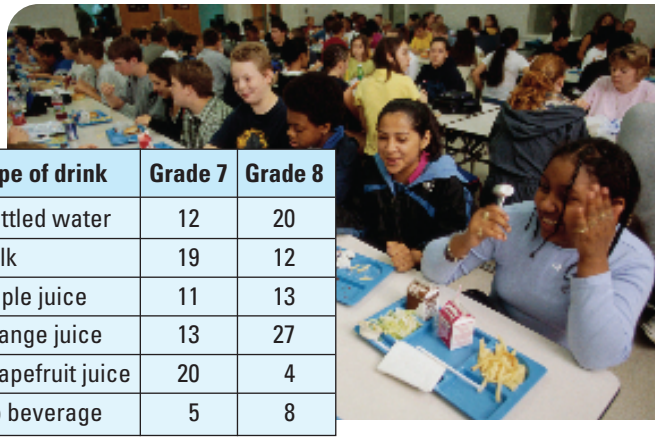
5. Consider the following data:

525, 575, 495, 63, 450, 560, 500

Explain how the mean and the median are affected by including each value below with these data. (3.5)

a) 1500 **b)** 499 **c)** 1

6. This database shows the lunchtime beverage choices of the Grade 7 and 8 students in one school. (3.6)



Type of drink	Grade 7	Grade 8
bottled water	12	20
milk	19	12
apple juice	11	13
orange juice	13	27
grapefruit juice	20	4
no beverage	5	8

a) Which grade has a greater percent of students who prefer juice?

b) Which three beverages should be offered at lunch? Present your opinion in a letter to the principal. Include a graph to make your argument convincing.