Data Display Review

Measure of Center

A measure of center is a measure that describes the _____ value of a data set. The mean is one type of measure of center. Here are two others…

Median

The middle number when a list is organized from least to greatest

1) Find the median of the following :

10, 4, 19, 4, 6

Median

The middle number when a list is organized from least to greatest

2) Find the median of the following :

19, 10, 4, 23, 4, 6

Mode

The number that occurs the most in a list of numbers.

4) Find the mode of the following :

4, 4, 6, 10, 19

5) Find the mode of the following :

3, 5, 5, 7, 7

6) Find the mode of the following :

2, 4, 6, 7, 9

Mean

(Average) – The sum of numbers divided by the amount of numbers

$$\text{Mean} = \frac{\text{Sum of numbers}}{\text{Amount of numbers}}$$

Median

The middle number when a list is organized from least to greatest

Mode

The number that occurs the most in a list of numbers

Range

The difference between the biggest and smallest numbers

7) Find the range of the following :

4, 4, 6, 10, 19

8) Find the range of the following :

3, 5, 5, 7, 7

9) Find the range of the following :

2, 4, 6, 7, 9

PRACTICE

10) Find the mean, median, mode, and range.

4, 0, 8, 2, 1, 7, 2, 4, 26, 2, 10

Outlier

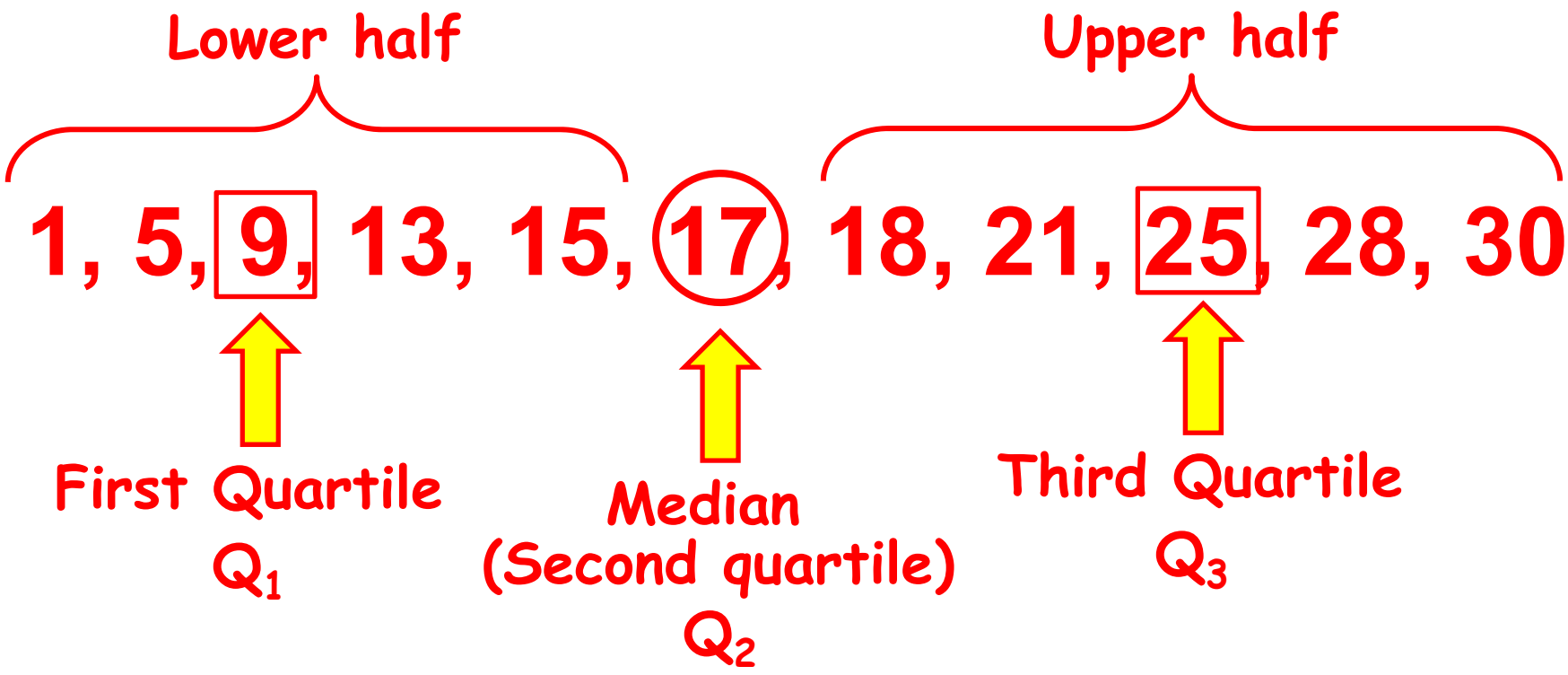
This is a number that is "out of place" and is much greater or much less than the other numbers.

2, 3, 4, 5, 6, 70

11) What would happen to the average if we removed this outlier from this list?

Quartiles

The *quartiles* of a data set divide the data into _____equal parts. Another name of the *median* is the _____ _____ and it divides the data set into two halves.



Example 1

Find the median, first quartile, third quartile, and interquartile range of the data.

18, 21, 22, 24, 28, 30, 31, 32, 36, 37

The difference between the third quartile and the first quartile is called the _____ _____. The IQR represents the range of the _____ _____ of the data and is another measure of variation.

Example 2

Find the median, first quartile, third quartile, and interquartile range of the data. Afterwards, *INTERPRET THE IQR*.

23, 27, 34, 40, 42, 45, 55, 56, 62, 68, 83, 90

Stem-and-Leaf Plots

A **stem-and-leaf plot** uses the digits of data values to organize a data set. Each data value is broken into a **stem** (digit or digits on the left) and a **leaf** (digit or digits on the right).

A stem-and-leaf plot shows how data are distributed.

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

Key: 2 | 0 = 20

The *key* explains what the stems and leaves represent.

1) **List all the numbers displayed from the stem-and-leaf plot.**

Example 1

Make a stem-and-leaf plot of the length of the 12 cell phone calls.

	A	B
1	DATE	MINUTES
2	JULY 9	55
3	JULY 9	3
4	JULY 9	6
5	JULY 10	14
6	JULY 10	18
7	JULY 10	5
8	JULY 10	23
9	JULY 11	30
10	JULY 11	23
11	JULY 11	10
12	JULY 11	2
13	JULY 11	36

2, 3, 5, 6, 10, 14, 18, 23, 23, 30, 36, 55

Cell Phone Call Lengths

Stem	Leaf

Key: 1 \| 4 = 14 minutes

Example 2

Make a stem-and-leaf plot of the length of the eleven fish, in inches.
7, 12, 20, 14, 20, 25, 8, 18, 16, 20, 14

Stem	Leaf

Key:

Example 3

Test Scores

Stem	Leaf
6	6
7	0 5 7 8
8	1 1 3 4 4 6 8 8 9
9	0 2 9
10	0

Key: 9|2 = 92 points

The stem-and-leaf plot shows student test scores. (a) How many students scored less than 80 points? (b) How many students scored at least 90 points? (c) How are the data distributed?

a.

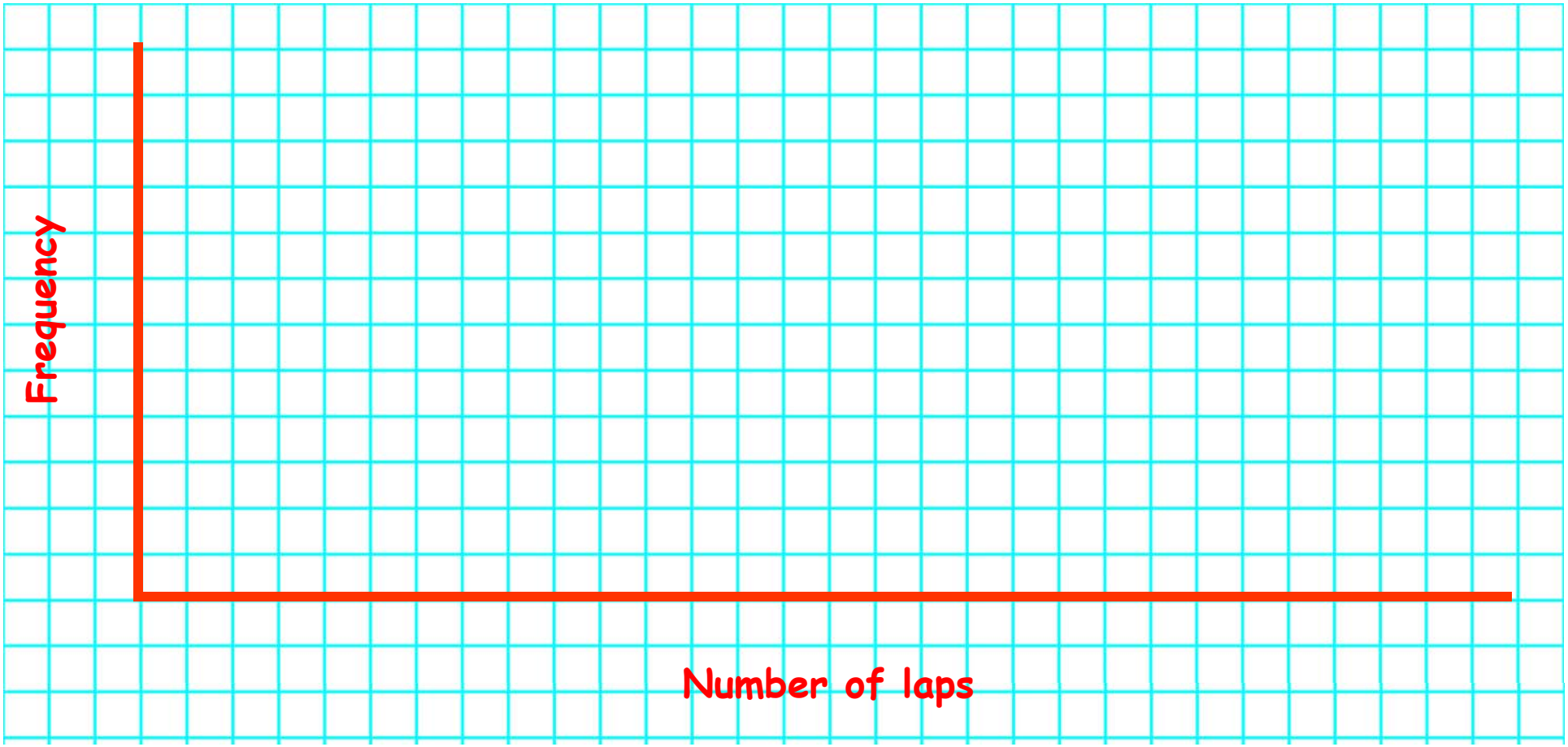
b.

c.

Histograms

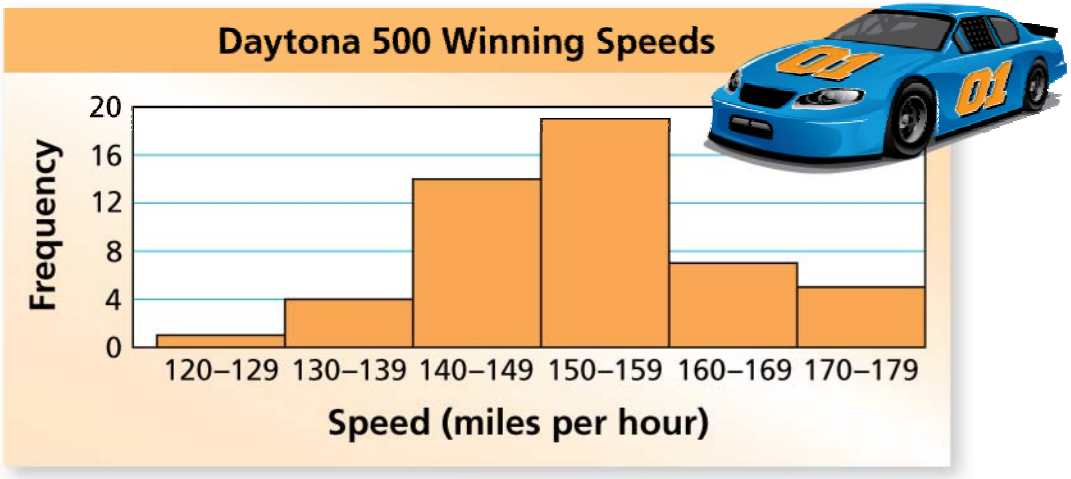
The frequency table shows the numbers of laps that people in a swimming class completed today. Display the data in a histogram.

Number of Laps	Frequency
1–3	11
4–6	4
7–9	0
10–12	3
13–15	6



Example 7

The histogram shows the winning speeds at the Daytona 500. (a) Which interval contains the most data values? (b) How many of the winning speeds are less than 140 miles per hour? (c) How many of the winning speeds are at least 160 miles per hour?



a.

b.

Example 7

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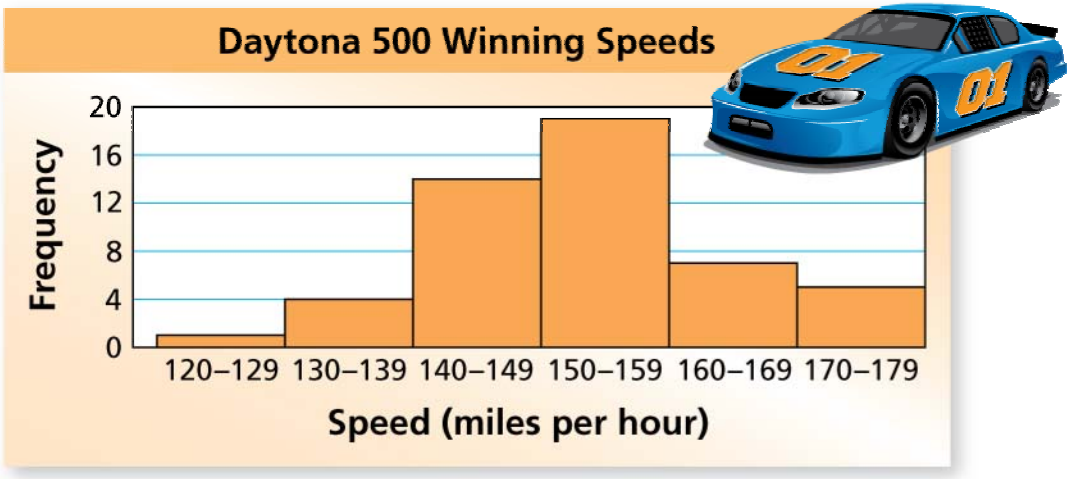


c.

Parts of a Box and Whisker Plot

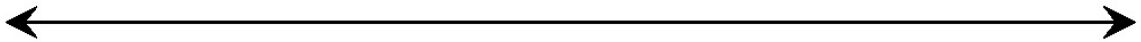
A **box-and-whisker plot** represents a data set along a number line by using the least value, the greatest value, and the quartiles of the data. A box-and-whisker plot shows the *variability* of a data set.

The five numbers that make up the box-and-whisker plot are called the **five-number summary** of the data set.

Making a Box and Whisker Plot

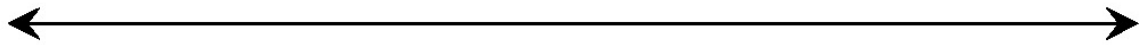
62, 23, 27, 56, 52, 34, 42, 40, 68, 45, 83

1) Find the Median _____ 2) Find the Lower Quartile _____ 3) Find the Upper Quartile _____ 4) Find the Lower Extreme _____ 5) Find the Upper Extreme _____	**Use the values above to make a box and whiskers plot** Step 1 – **Draw** a number line that includes the Lower and Upper extreme data values Step 2 – **Plot** the lower extreme, lower quartile, median, upper quartile, and upper extreme below the number line Step 3 – **Make** a box from the lower quartile to the upper quartile Step 4 – **Draw** a vertical line through the median Step 5 – **Draw** "whiskers" from the box to the lower and upper extremes.



Draw a box and whiskers plot for the following problems:

1) 2, 3, 6, 7, 6, 4, 8



2) 3, 7, 2, 10, 12, 5

3) 23, 27, 34, 40, 42, 45, 52, 56, 62, 68, 83, 90

4) 71, 50, 66, 71, 65, 60, 70, 71, 68, 57, 71, 53, 85, 71

Practice 1

Make a box-and-whisker plot for the ages (in years) of the spider monkeys at a zoo:

15, 20, 14, 38, 30, 36, 30, 30, 27, 26, 33, 35