



## Algebra 2 – Year 2

Lesson 11.5 – Analyzing Data  
Notes & Examples (Day 1)

Name: \_\_\_\_\_

Date: \_\_\_\_\_ Hour: \_\_\_\_\_

After collecting data, it can be summarized with the measures of central tendency and presented in a variety of manners.

**Measures of Central Tendency:** values that are representative of an entire data set

**Mean** –referred to as the “average”

- To find the mean,  $\bar{x} = \frac{\text{sum of data values}}{\text{number of data values}}$
- The mean will be affected by values that are extremely small or extremely large.

**Median** – the middle data value when the numbers are listed from smallest to largest.

- If the number of data values is odd, then the median is in the absolute middle position.
- If the number of data values is even, you must find the mean of the TWO middle values.

Ex. Find the median of the given data set: 2 3 4 4 5 5 6

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 $\frac{4+5}{2} = 4.5$

**Mode** – the data value that occurs most frequently / often

- If every value occurs the same number of times, there is no mode.
- If several values occur the same number of times, then they will all be listed.

**Example 1** – State the mean, median, and mode of the data set below.

4    5    6    7    7    8    8    9    10    12

$\frac{64}{10}$                        $\frac{7+8}{2} = 7.5$

Mean = 6.4              Median = 7.5              Mode = 7, 8

NOTE: The data set above could be described as **bimodal**, because it has two modes.

A frequency table displays the possible outcomes and the frequency of each outcome in a set of data. You can use data in a frequency table to calculate measures of center as well.



**Example 2** – The frequency table shows the number of textbooks in several students' book bags. What are the measures of center for textbooks per student?

Textbooks	0	1	2	3	4
Students	1	6	10	4	4

total  
25

Mean = 2.16

Median = 2

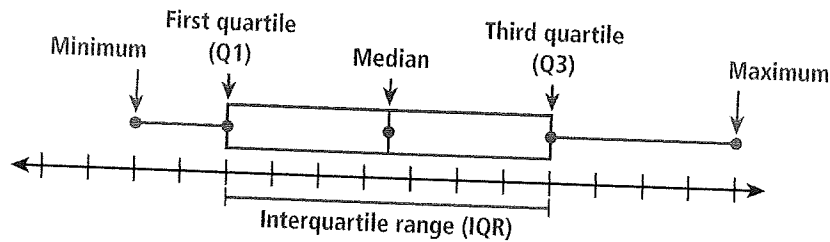
Mode = 2

$$\frac{1(0) + 6(1) + 10(2) + 4(3) + 4(4)}{25} = 2.16$$

0 1 1 1 1 1 1 2 2 2 2 2 2 2 2 2 2 2 2 2 3 3 3 3 4 4 4 4

**Box-and-Whisker Plot** - displays how data values are distributed

- It displays the minimum and maximum values, the median, and the first and third quartiles. These five values often are referred to as the **five-number summary**.

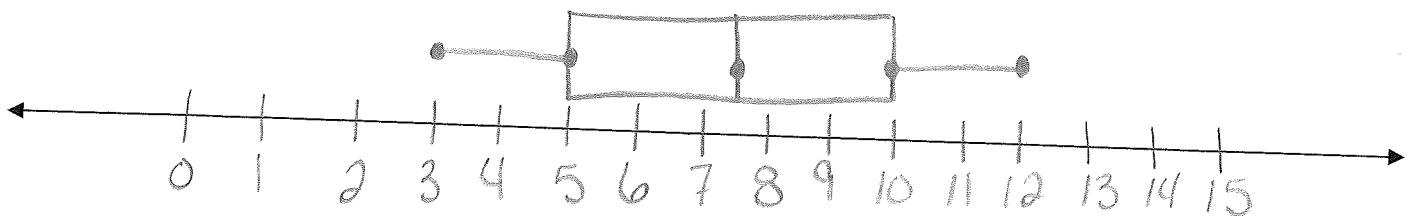


**Example 3** – Create a box-and-whisker-plot for the following data set:

5 6 8 12 11 9 4 3 7 10  
3 4 5 6 7 8 9 10 11 12

Find the “five-number summary” of the data set.

- What is your MINIMUM data value? Min = 3
- What is your MAXIMUM data value? Max = 12
- Find the median of the ENTIRE data set.  $\frac{7+8}{2} = 7.5$  Q2 = 7.5
- Look at just the data items to the LEFT of the median. Find the median of just these data items. 3 4 5 6 7 Q1 = 5
- Look at just the data items to the RIGHT of the median. Find the median of just these data items. 8 9 10 11 12 Q3 = 10







# Algebra 2 – Year 2

Assignment: Lesson 11.5 worksheet #1

Name: \_\_\_\_\_

Date: \_\_\_\_\_ Hour: \_\_\_\_\_

Find the mean, median, and mode of each data set. Round answers to the nearest thousandth, when necessary.

1. 62, 54, 63, 92, 62, 79, 54, 62

54 54 62 62 62 63 79 92

$$\frac{528}{8} = 66$$

$$\frac{62+62}{2} = 62$$

$$\text{mean} \rightarrow \bar{X} = \underline{66}$$

$$\text{Median} = \underline{62}$$

$$\text{Mode} = \underline{62}$$

2. 12, 28, 40, 22, 33, 27, 9

9 12 22 27 28 33 40

$$\frac{171}{7} = 24.43$$

$$\bar{X} = \underline{24.43}$$

$$\text{Median} = \underline{27}$$

$$\text{Mode} = \underline{\text{None}}$$

3. 1828, 1008, 1600, 7309, 2215, 1600

1008 1600 1600 1828 2215 7309

$$\frac{15560}{6} = 2593.33$$

$$\frac{1600+1828}{2} = 1714$$

$$\bar{X} = \underline{2593.33}$$

$$\text{Median} = \underline{1714}$$

$$\text{Mode} = \underline{1600}$$

4. 3.6, 6.3, 1.3, 3.6, 1.0, 5.9, 2.4, 1.3

1.0 1.3 1.3 2.4 3.6 3.6 5.9 6.3

$$\frac{25.4}{8} = 3.18$$

$$\frac{2.4+3.6}{2} = 3$$

$$\bar{X} = \underline{3.18}$$

$$\text{Median} = \underline{3}$$

$$\text{Mode} = \underline{1.3, 3.6}$$

Make a frequency table for the data, and find the mean.

5. ages (in years) of members of the swim team:

14, 15, 17, 17, 18, 16, 15, 14, 16, 17, 17, 18,  
17, 16, 16, 15, 14, 17

$$\bar{X} = \underline{16.06}$$

Age (in yrs)	Tally	Frequency
14		3
15		3
16		4
17		6
18		2

$$\frac{14(3) + 15(3) + 16(4) + 17(6) + 18(2)}{18}$$

$$= \frac{286}{18} = 16.06$$

18 total



For 6-7, find the five-number summary for each data set and make a box-and-whisker-plot.

6.  $26\ 32\ 27\ 36\ 28\ 30\ 31\ 28$   
 $26\ 27\ 28\ 28\ 30\ 31\ 32\ 36$

a. Find the "five-number summary".

Min = 26

$Q_2 = \frac{28+30}{2} = 29$

Max = 36

$Q_1 = 27.5$  (median of left side)

$Q_1: 26\ 27\ 28\ 28$

$Q_2 = 29$  (median of entire set)

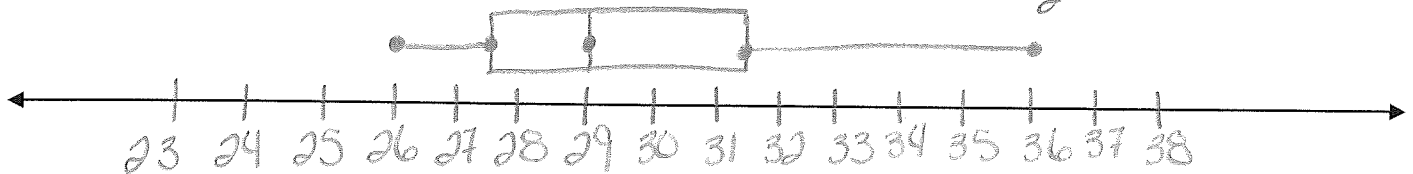
$\frac{27+28}{2} = 27.5$

$Q_3 = 31.5$  (median of right side)

$Q_3: 30\ 31\ 32\ 36$

$\frac{31+32}{2} = 31.5$

b. Make a box-and-whisker-plot.



7.  $15\ 19\ 24\ 16\ 12\ 18\ 20\ 22\ 16\ 17$   
 $12\ 15\ 16\ 16\ 17\ 18\ 19\ 20\ 22\ 24$

a. Find the "five-number summary".

Min = 12

$Q_2 = \frac{17+18}{2} = 17.5$

Max = 24

$Q_1 = 16$

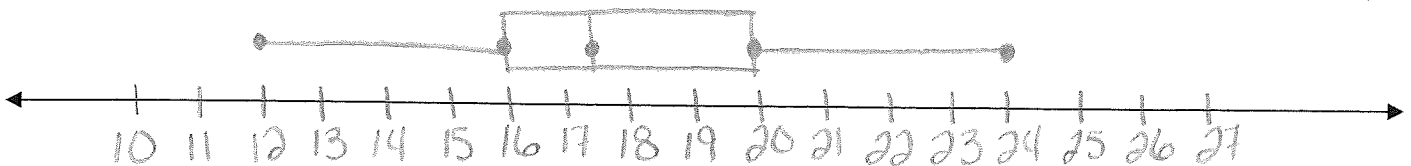
$Q_1: 12\ 15\ 16\ 16\ 17$

$Q_2 = 17.5$

$Q_2: 18\ 19\ 20\ 22\ 24$

$Q_3 = 20$

b. Make a box-and-whisker-plot.









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**Measures of Central Tendency:** values that are representative of an entire data set

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**Example 1** – State the mean, median, and mode of the data set below.

4    5    6    7    7    8    8    9    10    12

Mean = \_\_\_\_\_      Median = \_\_\_\_\_      Mode = \_\_\_\_\_

NOTE: The data set above could be described as **bimodal**, because it has two modes.

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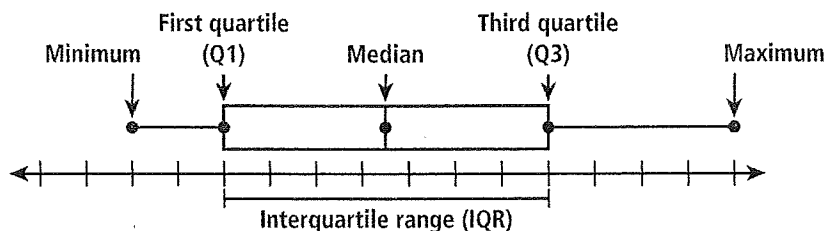
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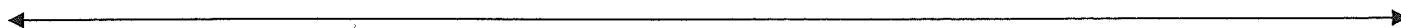


**Example 3** – Create a box-and-whisker-plot for the following data set:

5 6 8 12 11 9 4 3 7 10

Find the “five-number summary” of the data set.

1. What is your MINIMUM data value? Min = \_\_\_\_\_
2. What is your MAXIMUM data value? Max = \_\_\_\_\_
3. Find the median of the ENTIRE data set. Q2 = \_\_\_\_\_
4. Look at just the data items to the LEFT of the median.  
Find the median of just these data items. Q1 = \_\_\_\_\_
5. Look at just the data items to the RIGHT of the median.  
Find the median of just these data items. Q3 = \_\_\_\_\_





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$\bar{X}$  = \_\_\_\_\_

Median = \_\_\_\_\_

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4. 3.6, 6.3, 1.3, 3.6, 1.0, 5.9, 2.4, 1.3

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Make a frequency table for the data, and find the mean.

5. ages (in years) of members of the swim team:  
14, 15, 17, 17, 18, 16, 15, 14, 16, 17, 17, 18,  
17, 16, 16, 15, 14, 17

$\bar{X}$  = \_\_\_\_\_

Age (in yrs)	Tally	Frequency
14		
15		
16		
17		
18		

For 6-7, find the five-number summary for each data set and make a box-and-whisker-plot.

6. 26 32 27 36 28 30 31 28

a. Find the "five-number summary".

Min = \_\_\_\_\_

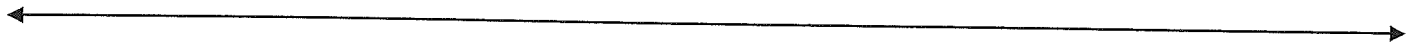
Max = \_\_\_\_\_

Q1 = \_\_\_\_\_

Q2 = \_\_\_\_\_

Q3 = \_\_\_\_\_

b. Make a box-and-whisker-plot.



7. 15 19 24 16 12 18 20 22 16 17

a. Find the "five-number summary".

Min = \_\_\_\_\_

Max = \_\_\_\_\_

Q1 = \_\_\_\_\_

Q2 = \_\_\_\_\_

Q3 = \_\_\_\_\_

b. Make a box-and-whisker-plot.

