

Name: _____ Date: _____ Period: _____

Unit 1-Lesson 2: Box-and-Whisker Plots

Definitions:

- Mean: _____ Calculate it by: _____

- Median (Q2): _____
- Mode: _____

Example 1: Use the following data set to calculate the mean, median, and mode.

45 18 9 25 14 7 12 9 4

Mean: _____ Median: _____ Mode: _____

STOP AND JOT:



- How do you calculate the median if a data set has 2 middle numbers? _____

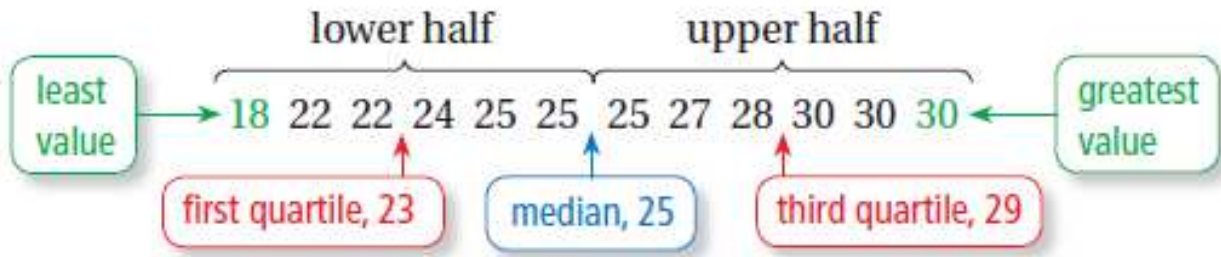
- What happens if more than 1 number appears the most? _____

- Minimum: _____
- Maximum: _____
- Lower Quartile (LQ): _____
- Upper Quartile (UQ): _____
- Range: _____
- Interquartile Range (IQR): _____
- Box-and-Whisker Plot: _____

Label:



Reference the picture below to see how a data set is separated into halves.



Example 2: Use data set from Example 1 to calculate the minimum, LQ, UQ, maximum, range, and IQR. Then, construct a box-and-whisker plot with an ACCURATE number line!

45 18 9 25 14 7 12 9 4

Minimum: _____ LQ: _____ Median: _____

UQ: _____ Maximum: _____ Range: _____ IQR: _____

Box-and Whisker Plot:



**PRACTICE
MAKES
PERFECT!**

Directions: Use the following data set to calculate the mean, mode, range, IQR, and to construct a box-and-whisker plot.

88 79 94 90 45 71 82 88

Mean: _____ Mode: _____ Range: _____ IQR: _____

Min: _____ LQ: _____ Median: _____ UQ: _____ Max: _____



Space for work:

o Outlier: _____

Calculate it by: _____ AND _____

STOP AND JOT:



o What 3 values need to already be calculated in order for us to determine if there are outliers in a data set? _____

Example 3: Use the same data set from Example 1 and 2 to determine if there are any outliers in the data.

45 18 9 25 14 7 12 9 4

a. Lower Bound for Outlier: _____ Upper Bound for Outlier: _____

b. Are there any outliers? If so, which value(s)? _____

c. Calculate the mean and median of the data set both with and without the outlier. Describe what happens.

Data Set	Mean	Median
With Outlier		
Without Outlier		

Describe what happens: _____

When there are outliers in a data set, our five number summary should NOT include the outliers.

Example 4: Let's go back to Example 2 and recreate our box-and-whisker plot without including the outlier. **The outlier will still be included in our number line, but it will not be incorporated into our box-and-whisker plot.**

Minimum: _____ LQ: _____ Median: _____ Outlier: _____

UQ: _____ Maximum: _____ Range: _____ IQR: _____

Box-and-Whisker Plot:



PRACTICE MAKES PERFECT!

Directions: Use the data set from the first 'Practice Makes Perfect' to calculate the mean, mode, range, IQR, and to construct a box-and-whisker plot WITHOUT the outlier included in the five number summary.

88 79 94 90 45 71 82 88

Mean: _____ Mode: _____ Range: _____ IQR: _____

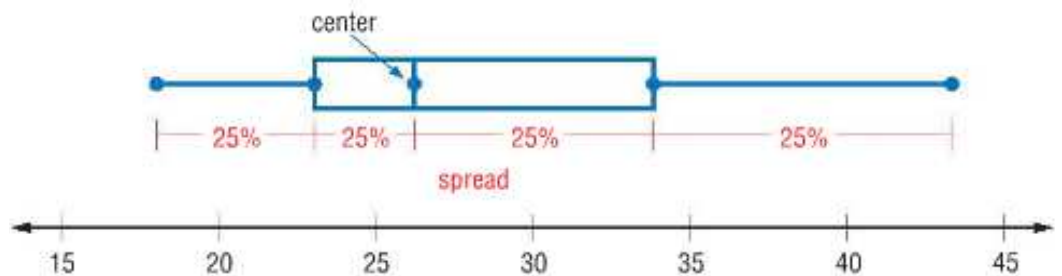
Min: _____ LQ: _____ Median: _____ UQ: _____ Max: _____



Space for work:

Interpreting Box-and-Whisker Plots:

- Each quartile represents 25% of the data
- 25% of the data lies within each quartile

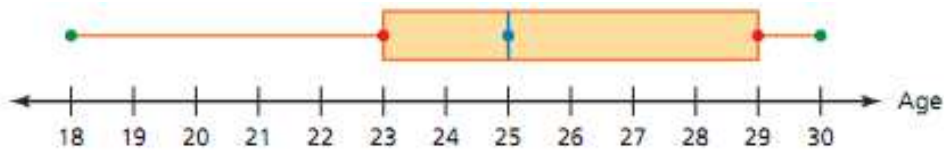


STOP AND JOT:



- What percent of the data falls between the minimum and LQ? _____
- What percent of the data falls between the LQ and UQ? _____
- What percent of the data falls between the minimum and median? _____
- What percent of the data falls between the median and maximum? _____
- What percent of the data falls between the LQ and maximum? _____

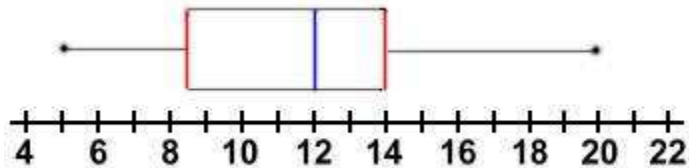
Example 5: Based on the box-and-whisker plot, which of these must be true?



- a. The median age is 24.
- b. The lower quartile age is 18.
- c. Half of the ages are between 23 and 30.
- d. The interquartile range is half of the range.

PRACTICE MAKES PERFECT!

Directions: The box-and-whisker plot shows the length of various snakes in inches. List 5 things that you can conclude from this box-and-whisker plot.

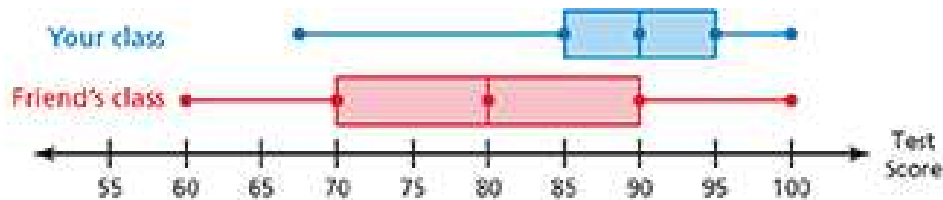


1. _____
2. _____
3. _____
4. _____
5. _____

Double Box-and-Whisker Plots:

- o Double Box-and-Whisker Plots: _____

Example 6: The double box-and-whisker plot below shows a box-and-whisker plot for test scores from two different math classes - your class and your friend's class.



What can you conclude when comparing these two box and whisker plots? Come up with at least 4!

- _____
- _____
- _____

PRACTICE MAKES PERFECT!

It is time to make your own double box and whisker plot and then make conclusions about it!

In the table below, collect data from 20 classmates - 10 girls and 10 boys. For each student, find their height (in INCHES) and put it in the correct column. Then, create a double box-and-whisker plot, one for each gender. Be sure to EXCLUDE outliers. Finally, make 4 conclusions from the data display. Write your conclusions on a separate sheet of paper.

Male Students	Height (in inches)	Female Students	Height (in inches)

Males: Min: _____ LQ: _____ Med: _____ UQ: _____ Max: _____ Outliers: _____

Females: Min: _____ LQ: _____ Med: _____ UQ: _____ Max: _____ Outliers: _____

