

The background of the slide is a green chalkboard. In the lower-left quadrant, two pieces of pink chalk are lying on the surface. One piece is standing upright, and the other is lying horizontally next to it. There are some faint, white chalk-like markings on the board, including a curved line and some scattered dots.

Box and Whisker Plots and the 5 number summary

Essential Question:
How do you create and
analyze a b. & w. plot?

Georgia Performance Standards

M7D1.c Analyze data using measures of central tendency (mean, median, and mode), including recognition of outliers.

M7D1.d Analyze data with respect to measures of variation (range, quartiles, interquartile range).

M7D1.f Analyze data using appropriate graphs...

M7D1.g Analyze and draw conclusions about data, including a description of the relationship between two variables

The Importance of Measuring Variability

- **Central tendency** - Numbers that describe what is **typical** or **average** (central) in a distribution
- **Measures of Variability** - Numbers that describe **diversity** or **variability** in the distribution.

These two types of measures together help us to sum up a distribution of scores without looking at each and every score. Measures of central tendency tell you about typical (or central) scores. Measures of variation reveal how far from the typical or central score that the distribution tends to vary.

The 5 Number Summary

- The five number summary consist of :
 - *The median (2nd quartile)*
 - *The 1st quartile*
 - *The 3rd quartile*
 - *The maximum value in a data set*
 - *The minimum value in a data set*

Step 1 - Find the median

- Remember, the median is the middle value in a data set.

18, 27, 34, 52, 54, 59, 61, 68, 78, 82, 85, 87, 91, 93, 100

68 is the median of this data set.

Step 2 – Find the lower quartile.

- The lower quartile is the median of the data set to the left of 68.

(18, 27, 34, 52, 54, 59, 61,) **68**, 78, 82, 85, 87, 91, 93, 100

52 is the lower quartile

Step 3 – Find the upper quartile.

- The upper quartile is the median of the data set to the right of 68.

18, 27, 34, 52, 54, 59, 61, 68, (78, 82, 85, 87, 91, 93, 100)

87 is the upper quartile

Step 4 – Find the maximum and minimum values in the set

- The maximum is the greatest value in the data set.
- The minimum is the least value in the data set.

18, 27, 34, 52, 54, 59, 61, 68, 78, 82, 85, 87, 91, 93, 100


18 is the minimum and 100 is the maximum.



Let's practice finding the
five number summary



Day 2: Building the plot **ON GRAPH PAPER**

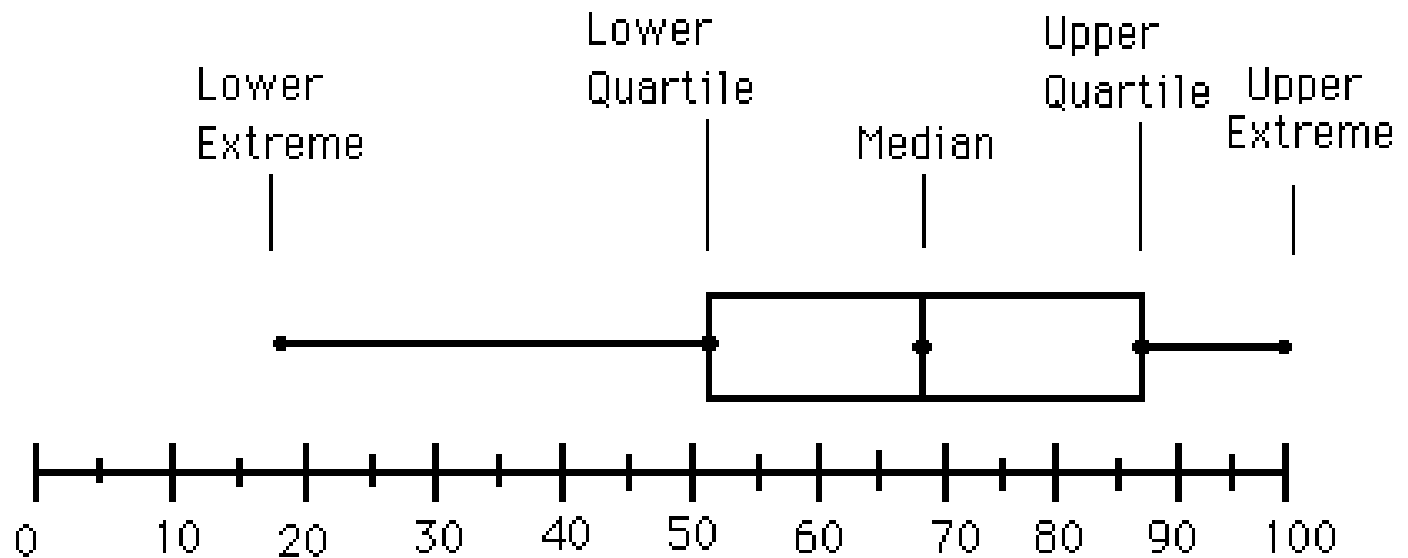


A box-and-whisker plot uses a number line to show the distribution of a set of data.

-The five number summary is another name for the visual representation of the box and whisker plot.

Graphing The Data

- Notice, the Box includes the lower quartile, median, and upper quartile.
- The Whiskers extend from the Box to the max and min.



Practice

1. Draw a box around the median. Circle the upper and lower extremes : 5, 1, 5, 7, 2, 4, 1, 3, 5
2. Draw a box around the median. Circle the upper and lower extremes: 5, 5, 6, 7, 8, 9, 0, 2, 10
3. Draw a box around the median. Circle the upper and lower extremes : 5, 6, 8, 2, 5, 16, 23, 13, 23
4. Draw a box around the median. Circle the upper and lower extremes: 2, 9, 3, 8, 4, 9, 5, 2, 6
5. Draw a box around the median. Circle the upper and lower extremes: 25, 12, 56, 24, 45, 45, 21

Analyzing



Interquartile Range

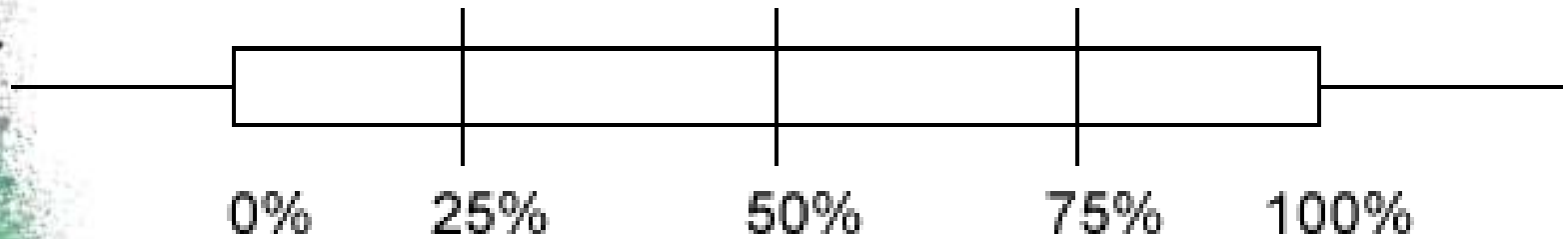
- Range- Difference between highest and lowest value in the data set
- Interquartile Range (IQR)- Difference between upper and lower quartiles

Practice page

What are the interquartile ranges of our b & w plots?



- The data values found inside the box represent the middle half (50%) of the data.



Practice page

Let's find the middle
50% for our b & w
plots?



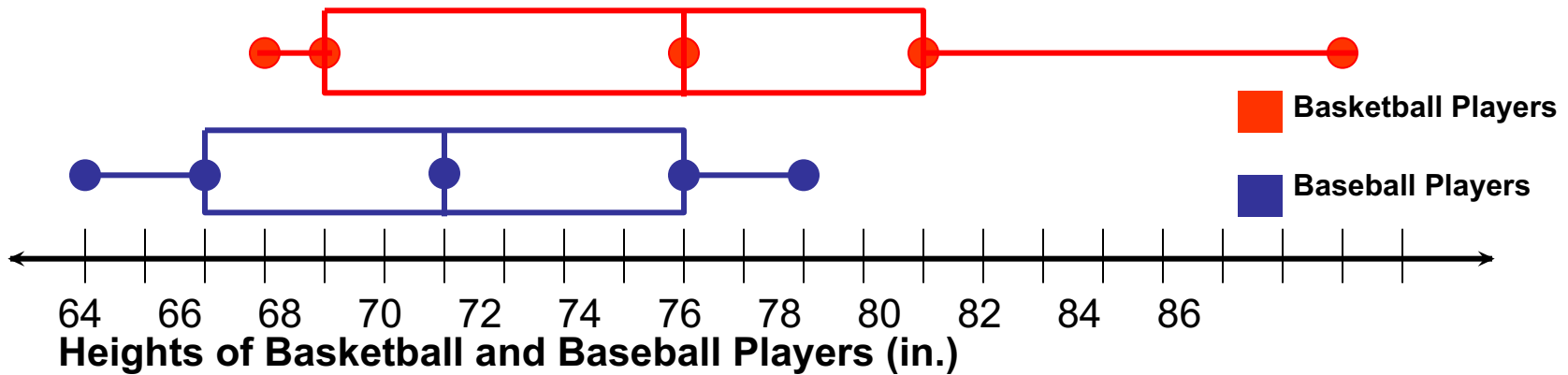
Predictability

- The smaller the _____ the _____ predictable the data.
- The larger the _____ the _____ predictable the data.

The image shows a close-up of a green chalkboard. Two pieces of pink chalk are lying on the surface. One piece is standing upright, and the other is lying horizontally next to it. The chalkboard has some faint, white, hand-drawn markings, including a large 'C' shape and some other indistinct lines. The text 'Review and practice' is written in red on the right side of the board.

Review and practice

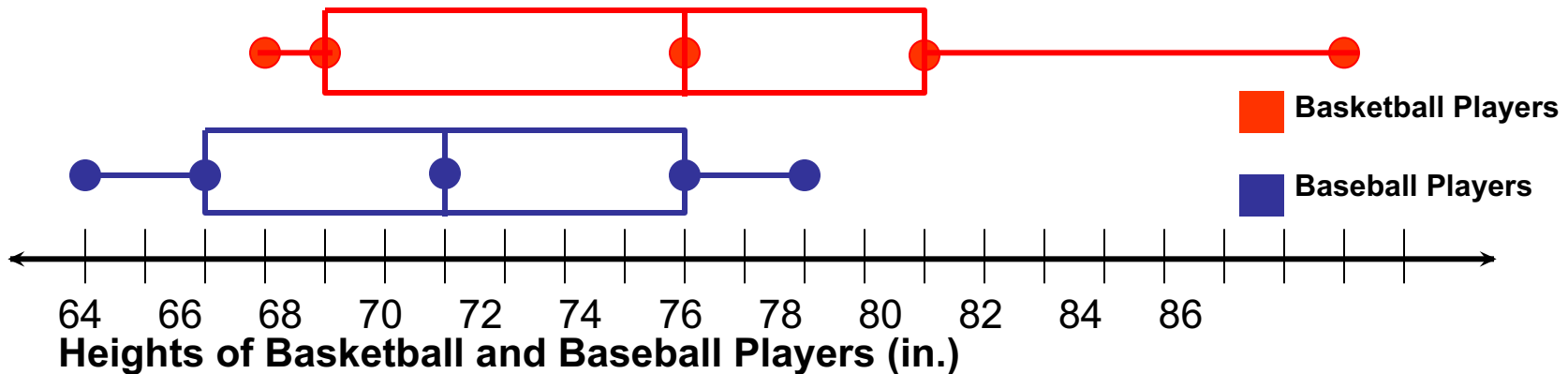
Use the box-and-whisker plots below to answer each question.



Which players have a greater interquartile range?

Additional Example 2C: Comparing Box-and-Whisker Plot

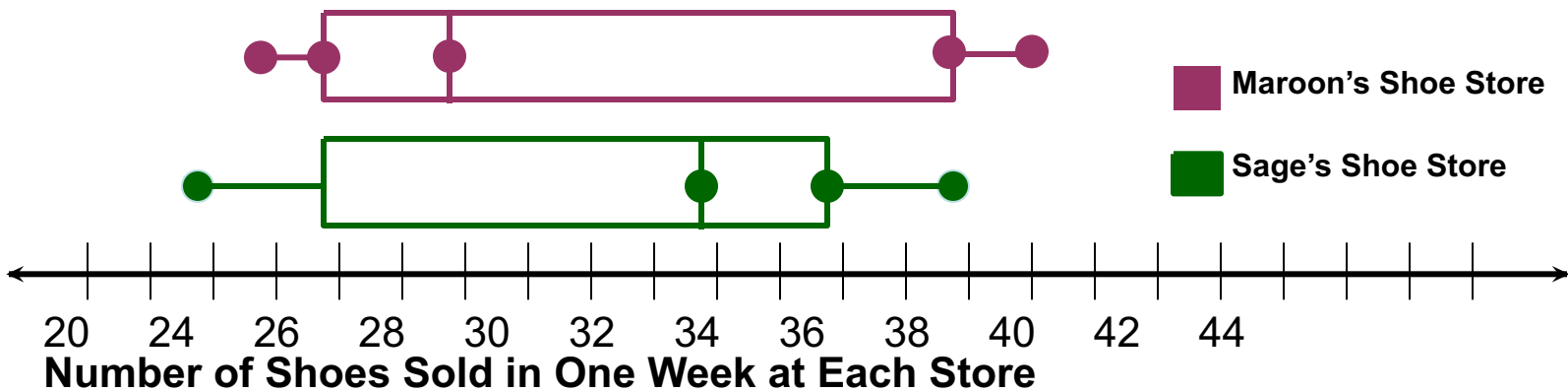
Use the box-and-whisker plots below to answer each question.



Which group of players has more predictability in their height?

Check It Out: Example 2A

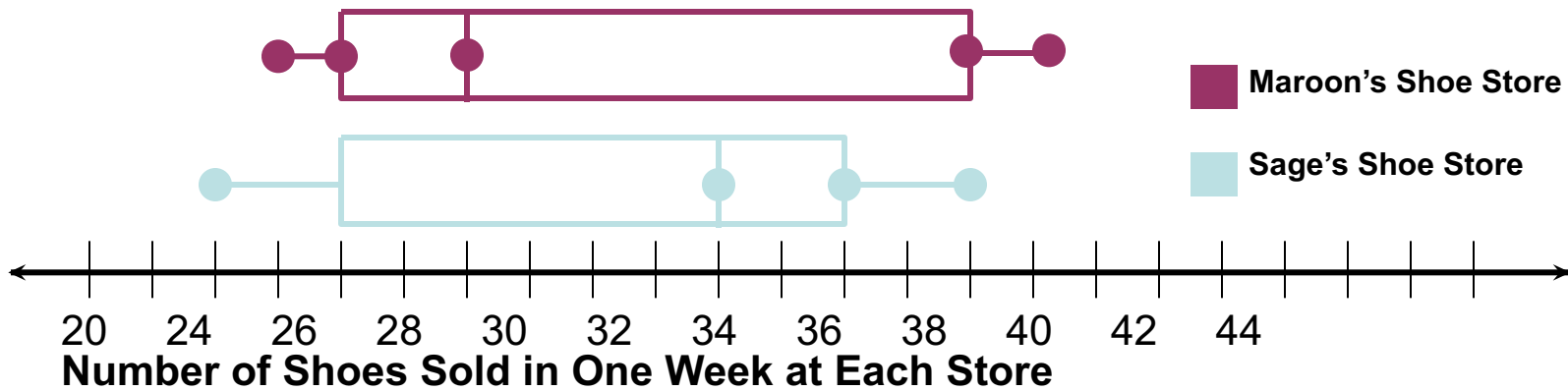
Use the box-and-whisker plots below to answer each question.



Which shoe store has a greater median?

Check It Out: Example 2C

Use the box-and-whisker plots below to answer each question.



What percent of Maroon's shoe store sold less than 39 pairs?

Homework: Workbook pg 62

