

Practice Problem Set

ANSWER KEY

1. Two math classes took the same quiz. The scores of 10 randomly selected students from each class are listed below:

Sample of Class A: 75, 80, 60, 90, 85, 80, 70, 90, 70, 65

$$60, 65, 70, 70, 75, 80, 80, 85, 90, 90 \quad \text{median} = \frac{75+80}{2} = 77.5$$

$$\text{IQR: } 85 - 70 = 15$$

Sample of Class B: 95, 90, 85, 90, 100, 75, 90, 85, 90, 85

$$75, 85, 85, 85, 90, 90, 90, 95, 100 \quad \text{median} = 90$$

$$\text{IQR: } 90 - 85 = 5$$

- a. Find the **median** and **interquartile range** of the scores for each class.

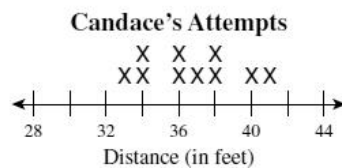
Class A: Median: 77.5 IQR: 15 points

Class B: Median: 90 IQR: 5 points

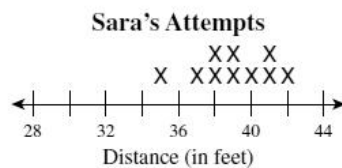
- b. What inference would you make about the quiz scores of all the students in Class A compared to all the students in Class B? Explain your reasoning to justify your answer.

The median score of class A is 12.5 points lower than that of class B. In class B, the IQR is 5 points which means 50% of the class scored within 5 points of one another. In class A, the IQR is 15 points which is a wider spread. Class B was more consistent because their IQR was smaller and class B outperformed class A because their median was higher.

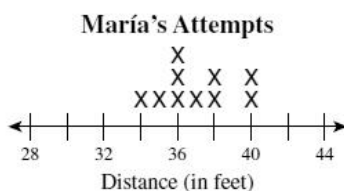
2. Four girls on a high school track-and-field team practiced the shot put. Each girl made 10 attempts, and the distances measured after each attempt are shown on the line plots below. Which athlete is most consistent in throwing the shotput? **Explain your response.**



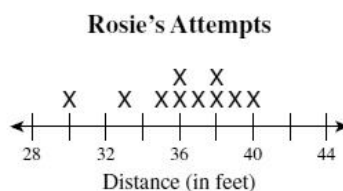
Range: $41 - 33 = 8$
8 ft.



Range: $42 - 35 = 7$
7 ft.



Range: $40 - 34 = 6$
6 ft.

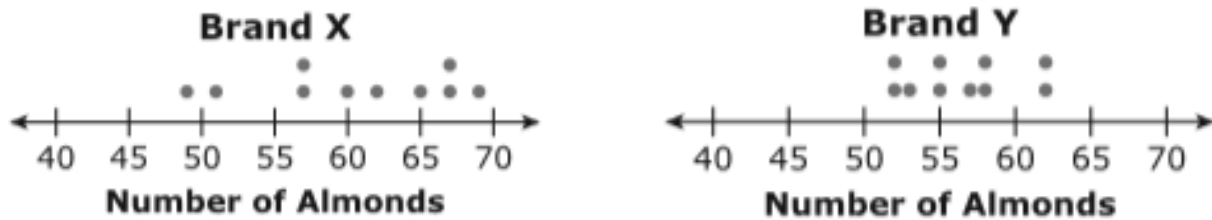


Range: $40 - 30 = 10$
10 ft.

María's data shows the smallest range (less variability) which would indicate that she is the most consistent with her throws.

However, if you compared performance, you notice that Sara outperforms the rest of the girls. Her data is clustered to the right of the number line. Her median shotput distance is 39 ft. The rest of the girls have a median distance less than 39 ft. You could also compare mean distances to determine which person performs the best.

3. Alexis chose a random sample of 10 jars of almonds from each of two different brands, X and Y. Each jar in the sample was the same size. She counted the number of almonds in each jar. Her results are shown in the plots.



- When comparing the plots, you can see that the data for Brand Y is more consistent (*less of a spread or less variability*). The data has a smaller range. The data for Brand X shows a larger range (*wider spread or more variability*) which indicates the data overall is less consistent.
- However, most of the data for Brand X has been shifted farther right than Brand Y, therefore, the number of almonds in jars from brand X is greater than Brand Y.

Based on the plots, which statement **best** compares the number of almonds in the jars from the two brands?

- A. The number of almonds in jars from Brand X tends to be greater and more consistent than those from Brand Y.
- B.** The number of almonds in jars from Brand X tends to be greater and less consistent than those from Brand Y.
- C. The number of almonds in jars from Brand X tends to be fewer and more consistent than those from Brand Y.
- D. The number of almonds in jars from Brand X tends to be fewer and less consistent than those from Brand Y.