

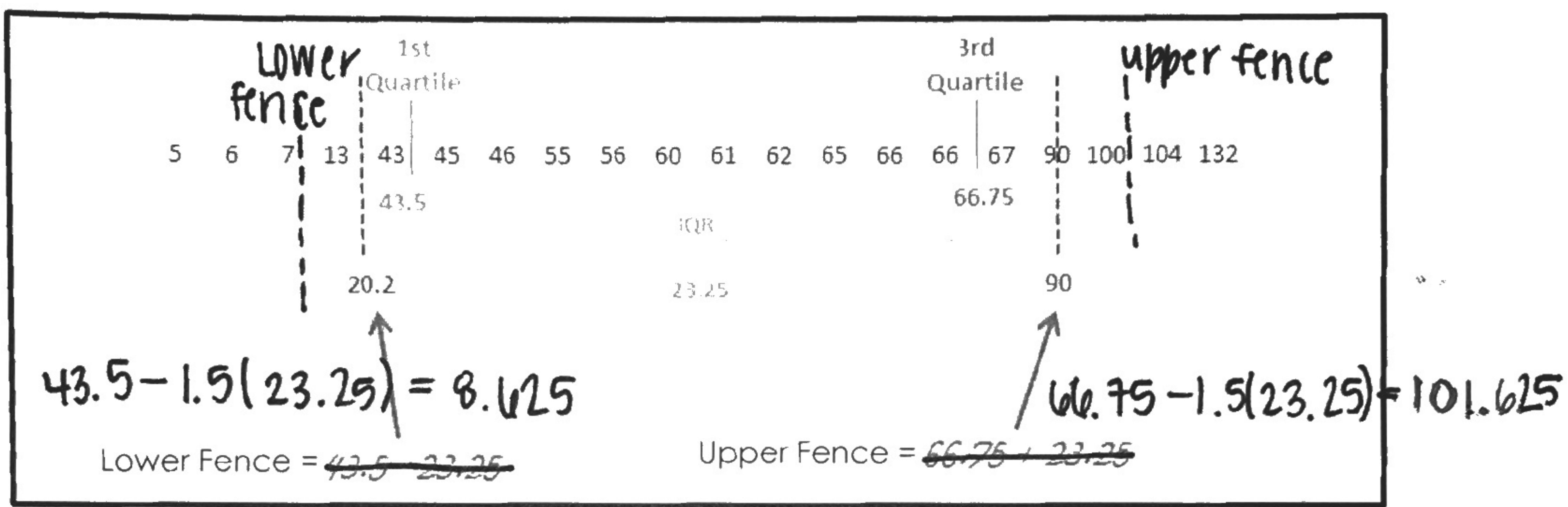
CCGPS Coordinate Algebra Unit 4 – Describing Data
Box and Whisker Plots – Notes Day 2

Outliers

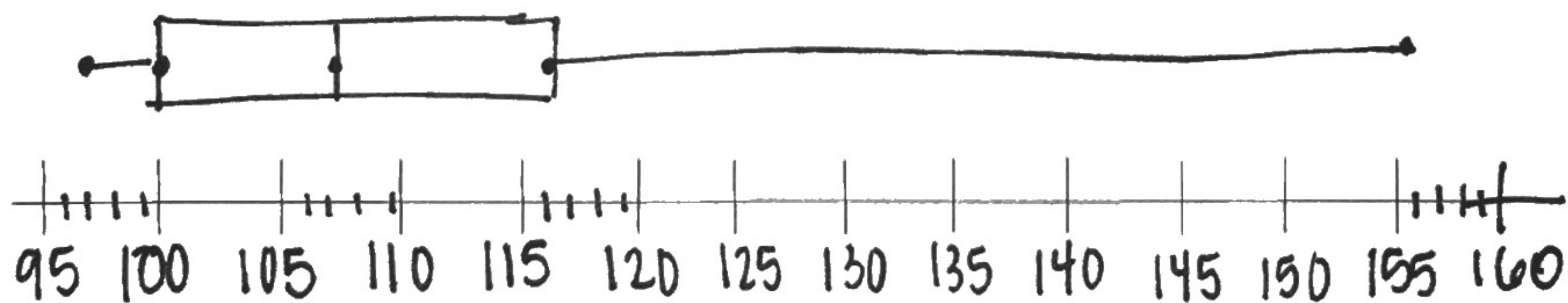
An **outlier** is a data value whose distance from the upper or lower quartile is more than 1.5 times the interquartile range.

Lower Fence: $Q_1 - (1.5)(IQR)$

Upper Fence: $Q_3 + (1.5)(IQR)$



Example 1: Make a box-and-whisker plot for the following data (snowfall, in inches, of the top ten snowiest ties in the U.S. in a recent year): 100, 129, 105, 97, 112, 103, 156, 110, 117, 98



a) Five number summary:

Min: 97 Q1: 100 Med: 107.5 Q3: 117 Max: 156

b) Determine if there are any outliers in the snowfall data set. Explain how you know.

$Q1 - 1.5(IQR) = 100 - 1.5(17) = 100 - 25.5 = 74.5$

$Q3 + 1.5(IQR) = 117 + 1.5(17) = 117 + 25.5 = 142.5$

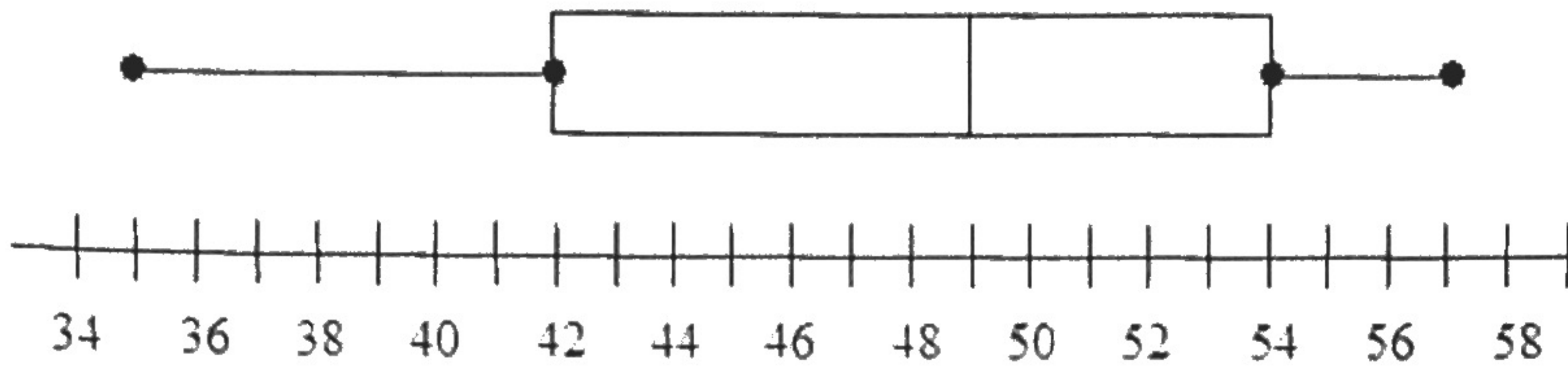
156 is an outlier!

Name key

Date _____

Period _____

Box and Whisker Plot Homework #2



(1) For the box-and-whisker plot above, find the following values:

Maximum: **57**

Minimum: **35**

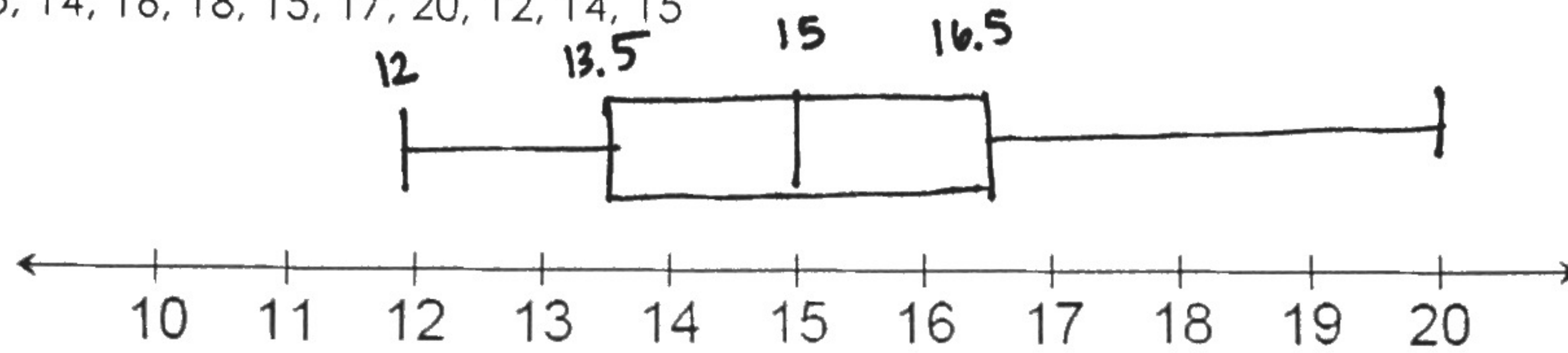
Upper Quartile: **54**

Median: **49**

Lower Quartile: **42**

(2) Construct a box-and-whisker plot for the following numbers:

16, 12, 13, 14, 16, 18, 15, 17, 20, 12, 14, 15

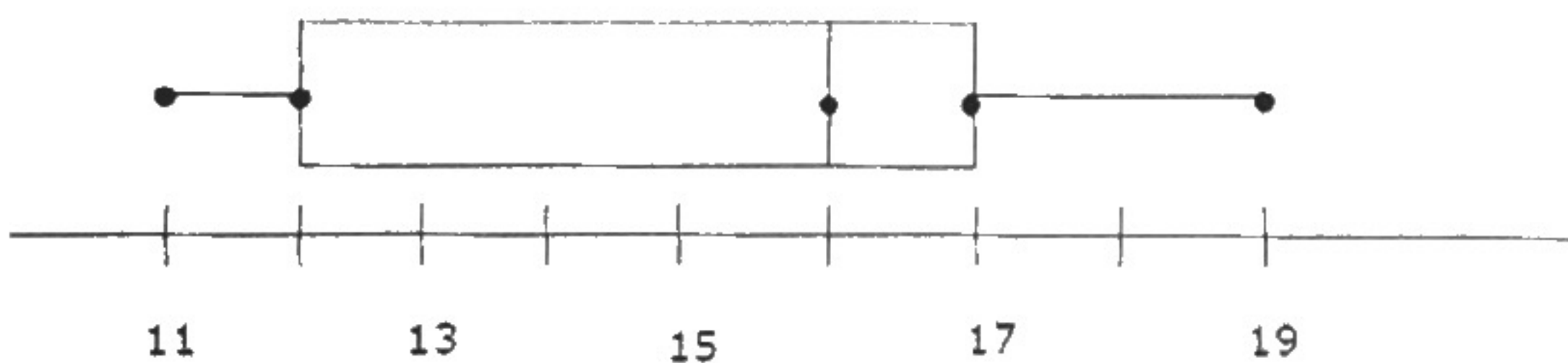


(3) What is the interquartile range? What does this mean?

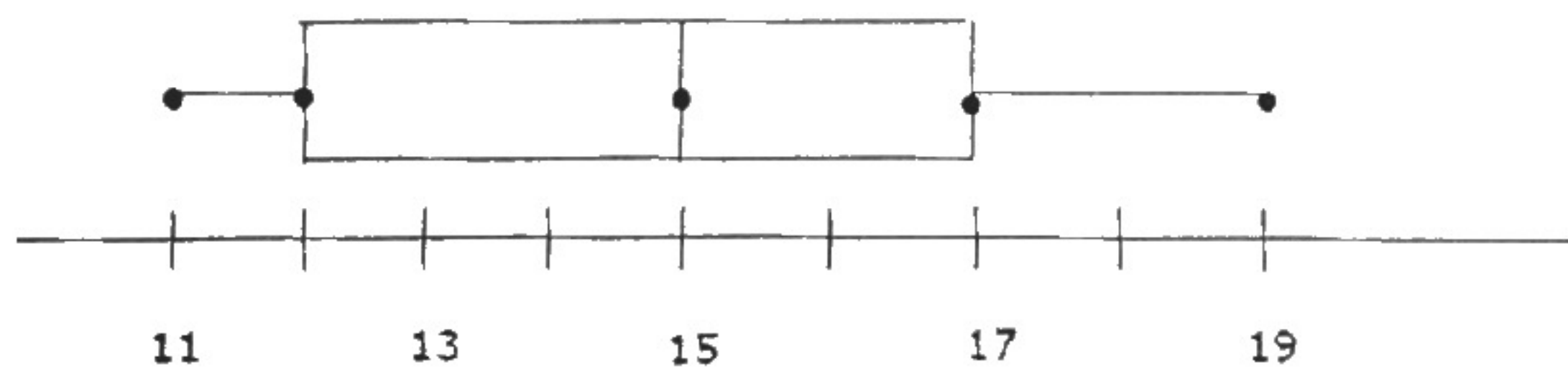
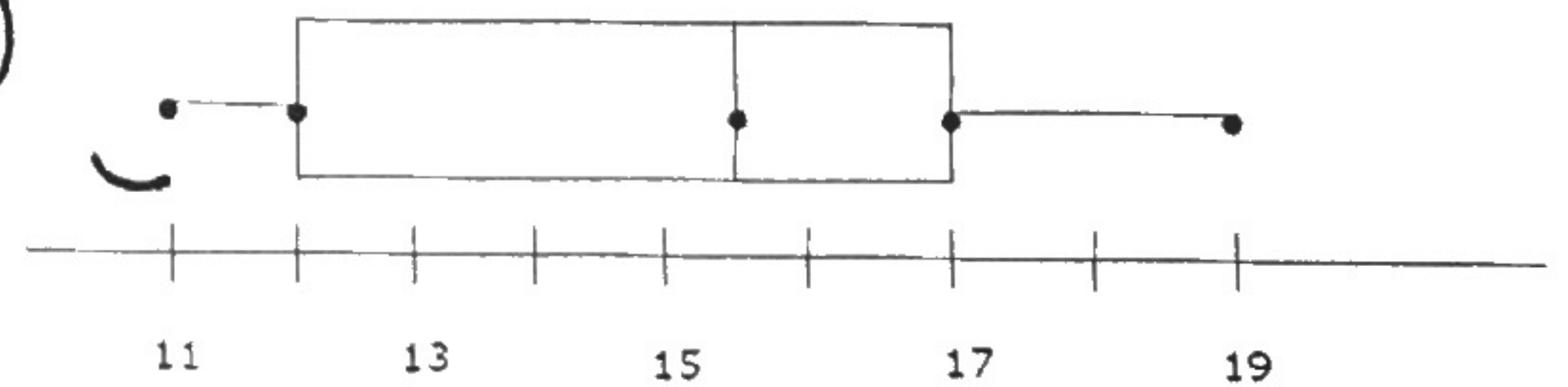
$16.5 - 13.5 = 3$ the data is fairly close together

(4) Which box and whisker plot represents the following data?

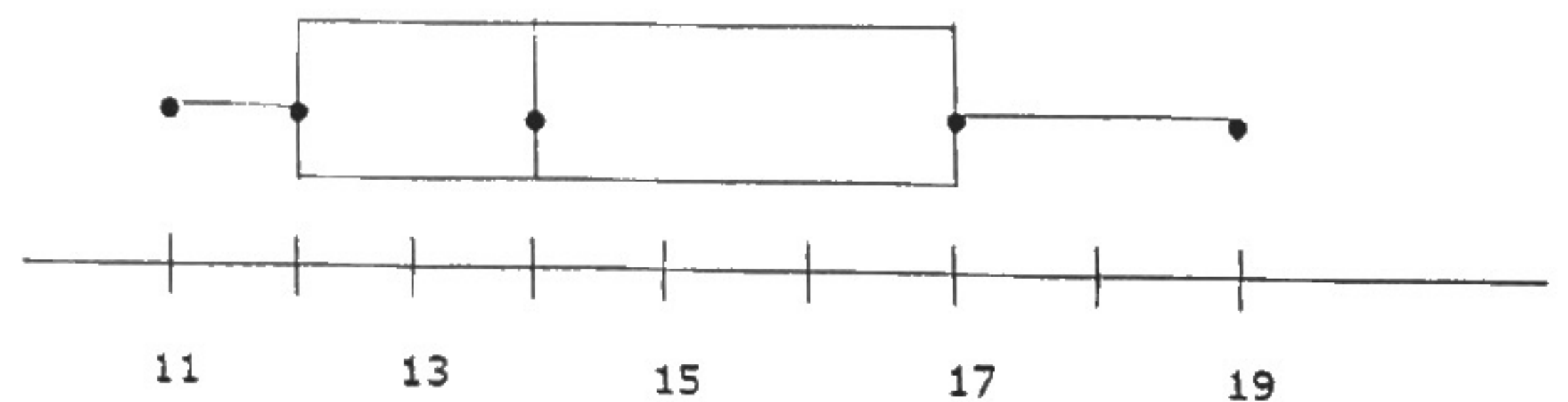
17, 13, 19, 17, 11, 17, 14, 11, 19, 12



c.



d.



min = 11

Q3 = 17

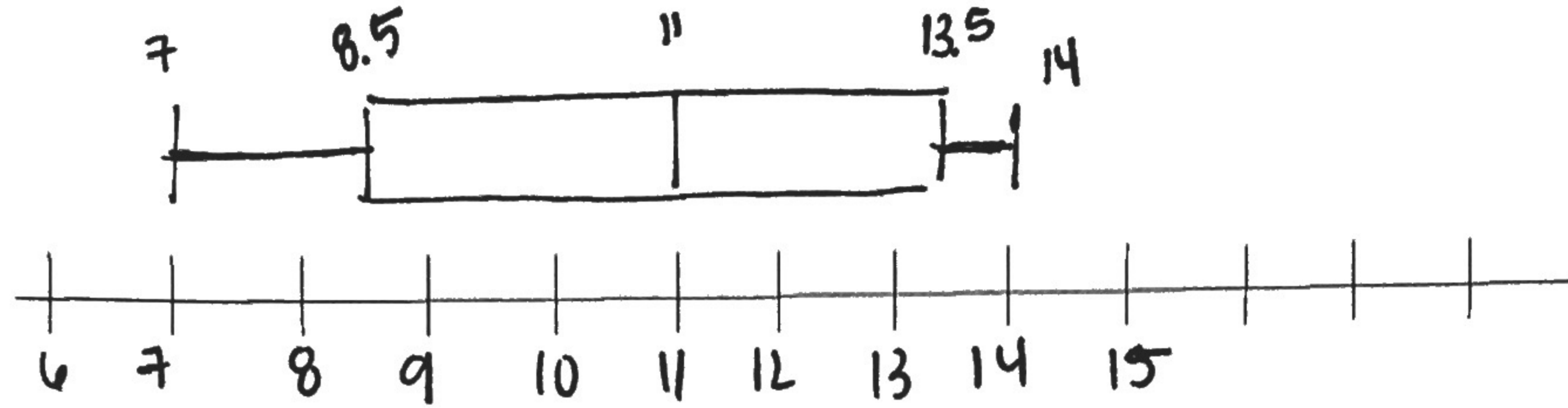
Q1 = 12

max = 19

med = 15.5

(5) The lengths (in inches) of the fish caught on a fishing trip are 9, 10, 12, 8, 13, 10, 12, 14, 7, 14, 8, and 14.

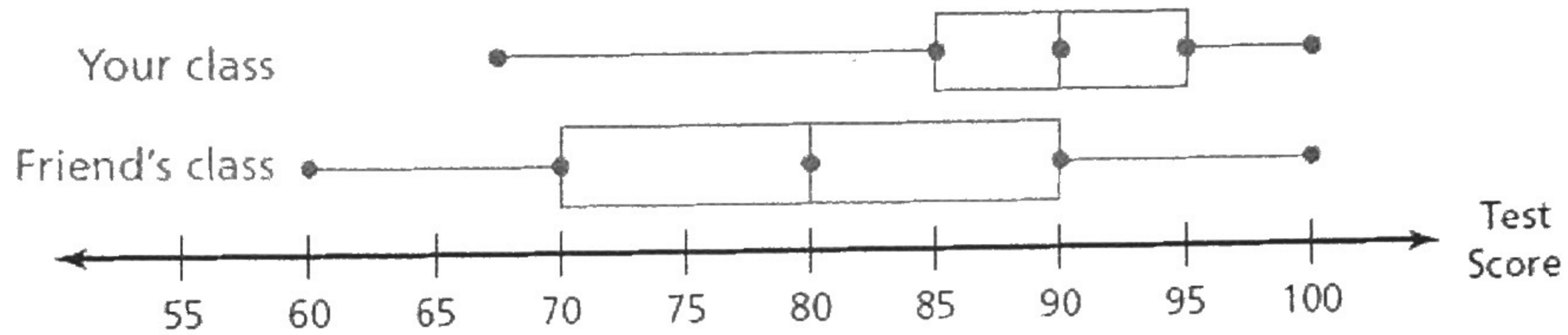
a) Make a box-and-whisker plot for the data on the number line below.



b) What is the range of the data?

c) What is the interquartile range?

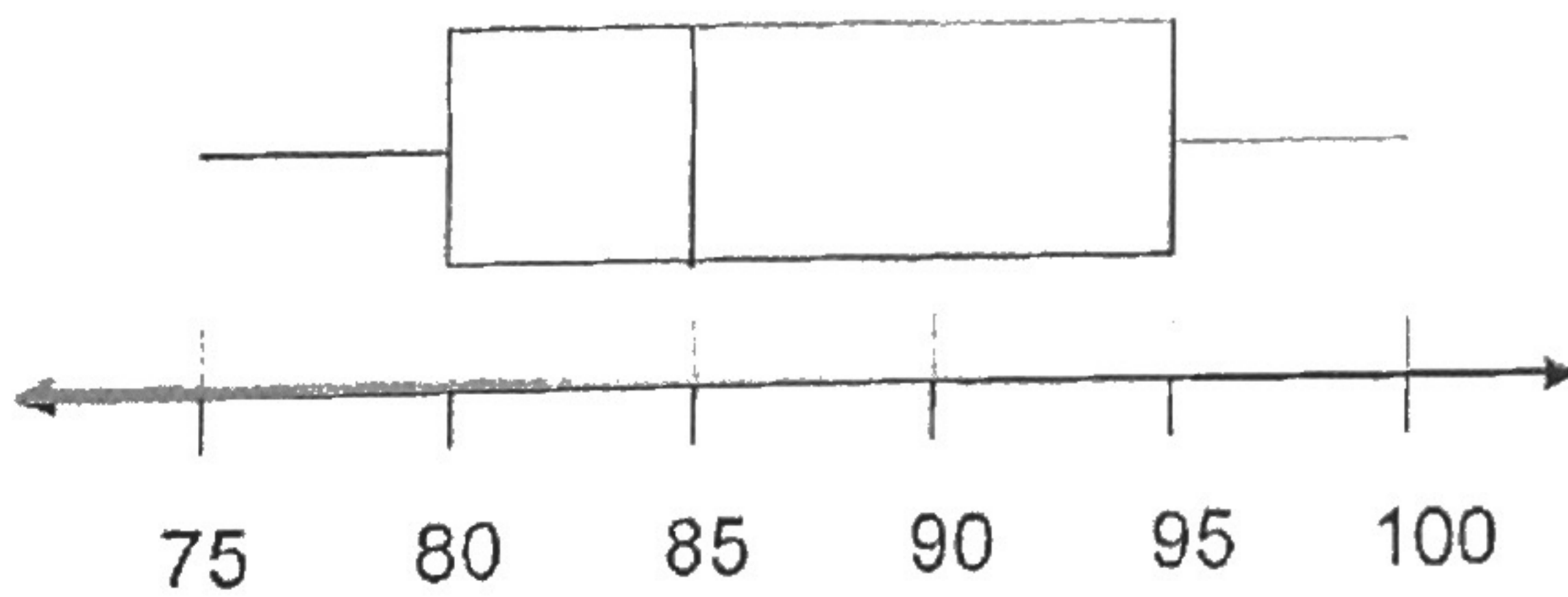
(6) Which statement is true about the double box-and-whisker plot?



- A) Half of the test scores in your class are between 85 and 100.
- B) 25% of the test scores in your friend's class are 80 or above.
- C) The medians are the same for both classes.
- D) The test scores in your friend's class are more spread out than the test scores in your class. ✓

(7)

Quiz Scores (as percents)



- a) What percent of the class scored an 80% or better? **75%**
- b) What percent of the class scored below 85%? **50%**
- c) What percent of the class scored between 85% and 95%? **25%**
- d) What percent of the class scored below 95%? **75%**
- e) What is the lower quartile? **80**
- f) What is the median? **85**
- g) What is the interquartile range? **95 - 80 = 15**

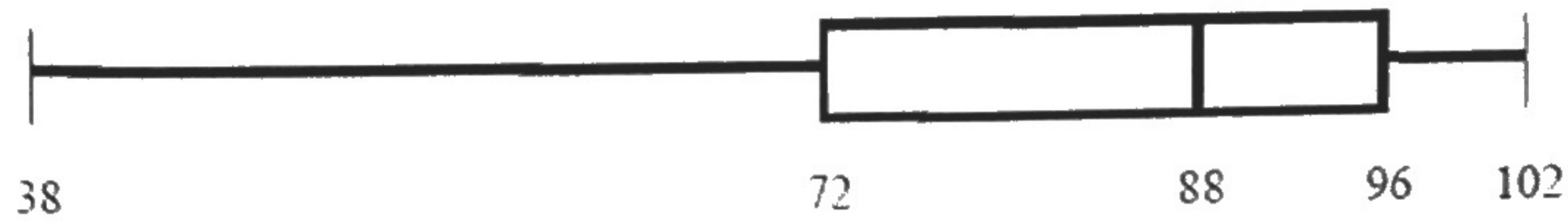
Name _____

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8) Refer to the box & whisker plot below which shows the test results of a math class.

Test Scores (as %) for 6th Period



- a) What was the highest score on the test? **102**
- b) What was the median score on the test? **88**
- c) What percent of the class scored above a 72? **75%**
- d) What percent of the class scored between 88 & 96? **25%**
- e) Do you think that this test was too hard for the students? Explain.
No - 75% of data was above a 72.

9) Refer to the box & whisker graph below that shows how much time was spent per night on homework for sophomore class at a certain high school during September.

Average Minutes Per Night Spent On Homework



- a) What percent of the sophomores spend more than 60 minutes on homework per night?
25%
- b) Are there any sophomores who do not do homework?
Yes
- c) What percent of the sophomores spend less than 20 minutes per night on homework?
25%

10) Suppose that one family kept track of how many DVDs they rented each month for a two year period. The numbers for each month are shown in the table below.

| | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|----|---|---|---|---|----|---|---|---|---|---|---|----|
| J | F | M | A | M | J | J | A | S | O | N | D | J | F | M | A | M | J | J | A | S | O | N | D |
| 3 | 5 | 2 | 8 | 1 | 5 | 0 | 3 | 6 | 4 | 9 | 15 | 3 | 6 | 4 | 1 | 10 | 3 | 8 | 7 | 2 | 9 | 0 | 11 |

a) Find the five number summary for this data set.

- Minimum: **0** Lower Quartile (Q1): **2.5**
- Median: **4.5** Upper Quartile (Q3): **8** Maximum: **15**

b) Make a box & whisker graph representing this data.

