Name Key Core _____ Date _____

Finding the Interquartile Range (IQR)

IQR indicates how spread out the data is (specifically the middle 50% of the data)

Determine the Interquartile Range (IQR) of the data set: **9, 8, 6, 5, 3, 8, 5, 9, 11**

Median

#, #, #, #, #, #, #, #, #, (#), #, #, #, #, #, #, #, #, #

Step 1: Arrange the numbers in order and find the median. This splits the data in half.

3, 5, 5, 6, (8), 8, 9, 9, 11

Q1 Median Q3

#, #, #, #, (#), #, #, #, #, (#), #, #, #, #, (#), #, #, #, #

Step 2: Cut the data into quarters by finding Q1 and Q3. This is done by finding the median of the first half, then the median of the second half.

Q1: 5 Q3: 9

3, 5, 5, 6, (8), 8, 9, 9, 11

(5) (9)

See... now your data is split into quarters. There are EQUAL amounts of numbers between sections.

Q1 Median Q3

#, #, #, #, (#), #, #, #, #, (#), #, #, #, #, (#), #, #, #, #

25% 25% 25% 25%

Step 3: Find the difference between Q3 and Q1 (Q3 minus Q1). *It's just like finding the range, but this time you are using the Q3 and Q1, instead of the minimum and maximum.*

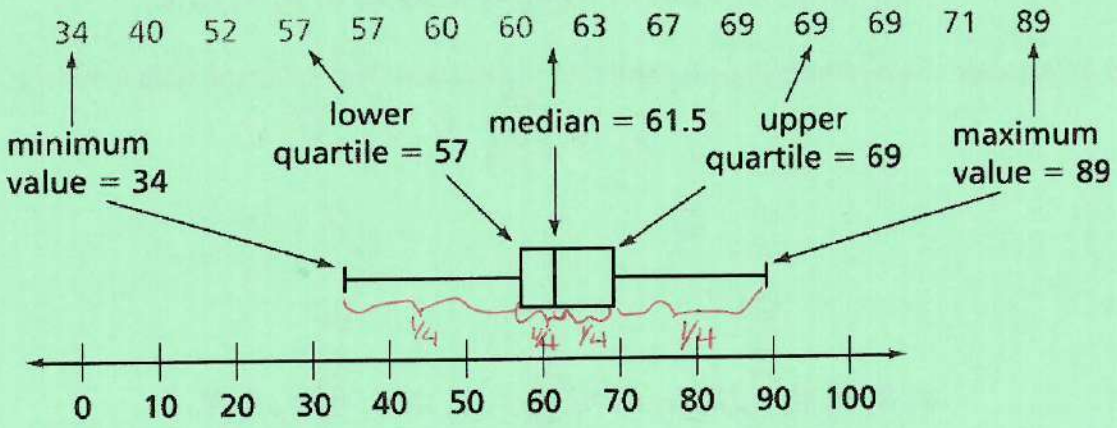
Q3 – Q1 = Interquartile Range

IQR =

9 − 5 = 4

A **box-and-whisker plot,** or *box plot*, uses five statistical measures: the minimum data value, the lower quartile, the median, the upper quartile, and the maximum data value. These values separate a set of data into four groups with the same number of data values in each group.

The example below shows how these five statistics form a box plot.



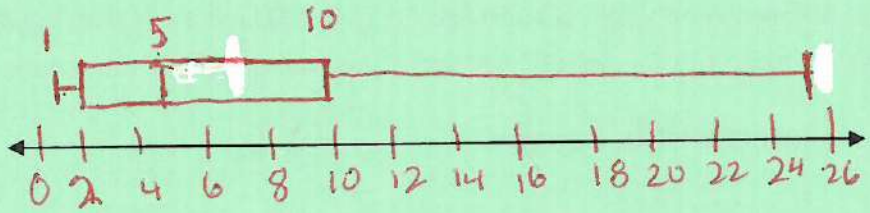
Determine the IQR of this data set:

1, 2, 2, 4, 6, 9, 11, 25

2 (Q1) 5 (median) 10 (Q3)

IQR 10 - 2 = 8

Now draw a Box Plot for the data. Label each part (min, max, Q1, median, Q2).



Lesson 4.5T ~ IQR and Box-and-Whisker Plots

Name_____ Core_____ Date_____

1. Follow these steps to find the IQR and make the Box Plot for the following data set.

15, 19, 20, 22, 25, 28, 30

a. Find the middle number. Draw a line through this number. Median = 22

b. Find the middle number of the lower half of the data. Circle it. Q1 = 19

c. Find the middle number of the upper half of the data. Circle it. Q3 = 28

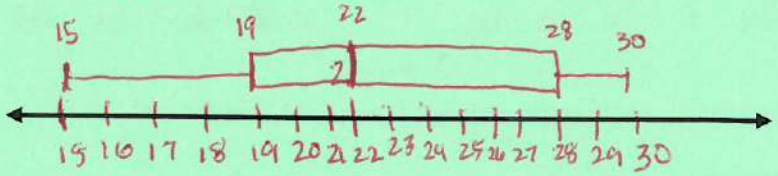
d. Minimum = 15 Maximum = 30

IQR = 9

e. Write the five numbers above in the following order, **then draw the box plot**:

Minimum ~ Q1 ~ Median ~ Q3 ~ Maximum

15 ~ 19 ~ 22 ~ 28 ~ 30



Find IQR each data set. If necessary, put the numbers in order first. Show work.

2. 32, 39, 41, 45, 48, 50

48 − 39 = 9

Q1 39 Median 43 Q3 48 **IQR** 9

3. 65, 68, 72, 72, 77, 81, 82, 92, 98

87 − 70

Q1 70 Median 77 Q3 87 **IQR** 17

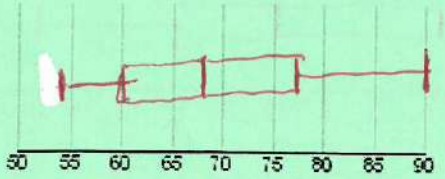
4. 45, 59, 43, 49, 55, 45, 64, 47 → 43, 45, 45, 47, 49, 55, 59, 64

57 − 45 = 12

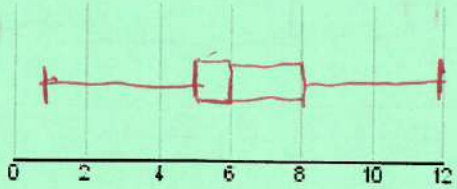
Q1 45 Median 48 Q3 57 **IQR** 12

Create a box-and-whisker plot for each five-number summary below.

5. Minimum: 54 **Maximum:** 90
Q1: 60 **Median:** 68 **Q3:** 77



6. Minimum: 1 **Maximum:** 12
Q1: 5 **Median:** 6 **Q3:** 8

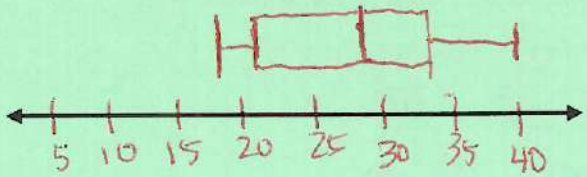


Create a box-and-whisker plot for each set of data. Show work.

7. 18, 21, 21, 26, 30, 31, 35, 40

median 28
Q1 21 Q3 33

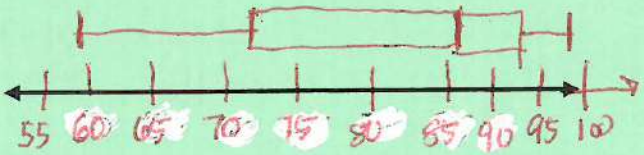
Box-and-whisker plot:



8. 76, 68, 86, 95, 59, 86, 79, 98, 91

59, 68, 76, 79, 86, 86, 91, 95, 98
median 86
Q1 72 Q3 93

Box-and-whisker plot:



Choose an appropriate scale and label the axes

The box-and-whisker plot below shows the ages of registered drivers in a city.

9. What is the median driver's age?

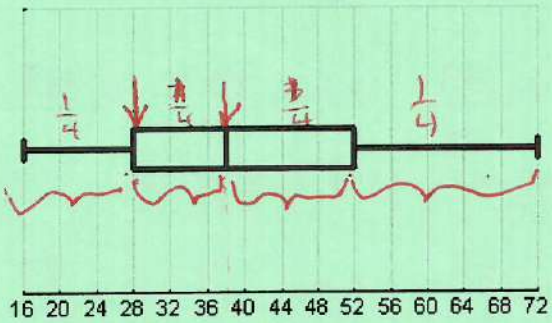
38

10. What percent of drivers in this town are over 28 years old?

$\frac{3}{4}$

11. What is the IQR of this data set?

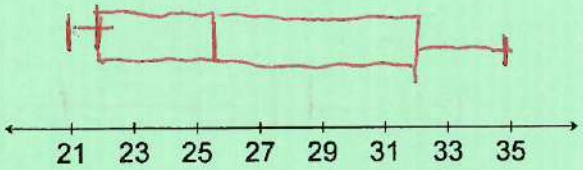
IQR = 52 - 28 = 24



Find Q1, Median, Q3, and the IQR for each data set. Then draw a box plot.

12. 21, 22, 25, 26, 30, 32, 35

Q1 = 22 median = 26 Q3 = 32
IQR = 32 - 22 = 10



13. 2, 3, 4, 5, 10, 13, 13, 15, 20

Q1 = 3.5 Q3 = 14
median 10
IQR = 14 - 3.5 = 10.5