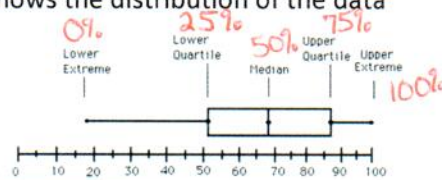
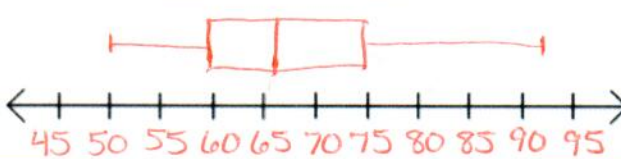


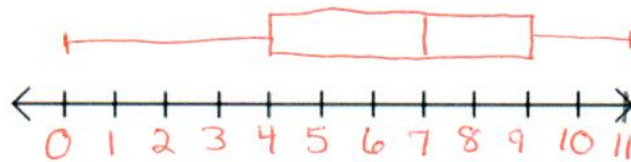
Main Ideas/Questions	Notes/Examples
<h3>Box and Whisker Plot</h3>	<p>A graphic format used to display the median, quartiles, and extremes of a data set on a number line that shows the distribution of the data</p> 
<h3>Five-Number Summary</h3>	<p>The values used to create the box and whisker plot:</p> <ul style="list-style-type: none"> • <u>Minimum value</u>: the smallest value in the data set • <u>Lower Quartile (Q_1)</u>: median of the lower half of the data set • <u>Median</u>: the value in the middle when the data is ordered from least to greatest • <u>Upper Quartile (Q_3)</u>: median of the upper half of the data set • <u>Maximum Value</u>: the largest value in the data set
<h3>Quartiles</h3>	<ul style="list-style-type: none"> • Q_1 - lower quartile is the left edge of the box • Q_3 - upper quartile is the right edge of the box
<h3>Interquartile Range</h3>	<ul style="list-style-type: none"> • upper quartile - lower quartile OR $Q_3 - Q_1$ • Q_1 to Q_3 (box) represents 50% of the data set
<h3>Drawing Box and Whisker Plots</h3>	<p>1. The resting heart rates, in beats per minute (bpm), of a group of people are given below. Find the five-number summary, draw the box and whisker plot, and then answer the questions that follow.</p> <div style="display: flex; justify-content: space-between;"> <div style="width: 60%;"> <p>{55, 72, 64, 58, 50, 62, 70, 84, 92, 76, 68, 60}</p> <p>50, 55, 58, 60, 62, 64, 68, 70, 72, 76, 84, 92</p>  </div> <div style="width: 35%;"> <p>Minimum: <u>50</u></p> <p>Lower Quartile: <u>59</u> $\frac{58+60}{2}$</p> <p>Median: <u>66</u> $\frac{64+68}{2}$</p> <p>Upper Quartile: <u>74</u> $\frac{72+76}{2}$</p> <p>Maximum: <u>92</u></p> </div> </div> <p>a) What is the range? $\text{max} - \text{min}$ $92 - 50 = \boxed{42}$</p> <p>b) What is the interquartile range? $Q_3 - Q_1$ $74 - 59 = \boxed{15}$</p> <p>c) What percent has a resting heart rate less than 66 bpm? $\boxed{50\%}$</p> <p>d) What percent have a resting heart rate of no more than 74 bpm? $\boxed{75\%}$</p> <p>e) What percent have a resting heart rate between 50 and 59 bpm? $25\% - 0\% = \boxed{25\%}$</p> <p>f) What percent has a resting heart rate between 66 and 92 bpm? $100\% - 50\% = \boxed{50\%}$</p>

Drawing Box and Whisker Plots (continued)

Directions: Draw the box and whisker plot and give the five-number summary for each data set.

2. Number of games won by the Detroit Lions in their last 10 seasons: 0, 2, 4, 6, 7, 7, 7, 9, 10, 11

{9, 7, 11, 7, 4, 10, 6, 2, 0, 7}

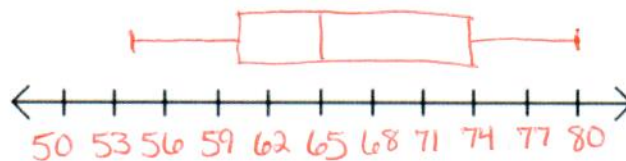


Minimum: 0
 Lower Quartile: 4
 Median: 7
 Upper Quartile: 9
 Maximum: 11

3. The speed of 9 cars on the highway:

{62, 77, 80, 54, 65, 67, 58, 63, 70}

54, 58, 62, 63, 65, 67, 70, 77, 80

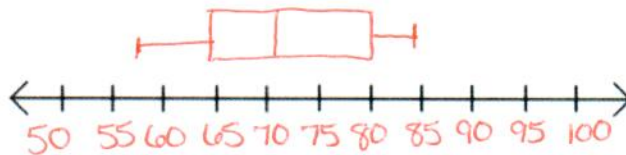


Minimum: 54
 Lower Quartile: 60
 $\frac{58+62}{2}$ Median: 65
 Upper Quartile: 73.5
 $\frac{70+77}{2}$ Maximum: 80

4. The high temperature in the last 15 days:

{58, 67, 80, 72, 69, 59, 59, 75, 83, 84, 84, 76, 64, 64, 71}

58, 59, 59, 64, 64, 67, 69, 71, 72, 75, 76, 80, 83, 84, 84



Minimum: 58
 Lower Quartile: 64
 Median: 71
 Upper Quartile: 80
 Maximum: 84

Analyzing Box and Whisker Plots

5. The box and whisker plot below shows the test scores for a group of 24 students.



a) What is the median score?

80

b) What percent of the students scored between 70 and 85?

$75\% - 25\% = 50\%$

c) How many students scored between 45 and 85?

$75\% - 0\% = 75\%$

$75\% \text{ of } 24 = 24 \times 0.75 = 18$

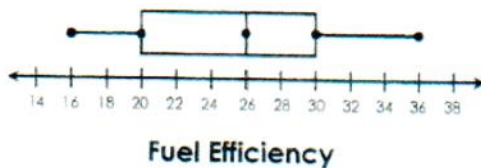
d) If Kate got an 87, how did she do compared to the class?

Kate did better than 75% of her class.

Kate is in the top 25% of her class ($100\% - 75\% = 25\%$)

Analyzing Box and Whisker Plots (continued)

6. The fuel efficiency, in miles per gallon (mpg), of a group of cars is shown below.



a) What is the interquartile range?

$$Q_3 - Q_1 \\ 30 - 20 = \boxed{10}$$

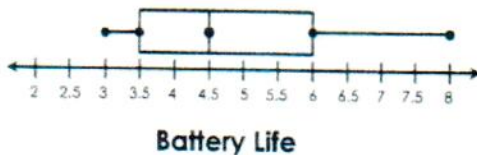
b) What percent of the cars have a fuel efficiency greater than 20 mpg?

$$100\% - 25\% = \boxed{75\%}$$

c) What percent of the cars have a fuel efficiency less than 26 mpg?

$$50\% - 0\% = \boxed{50\%}$$

7. The battery life, in hours, of a group of 16 laptops is shown below.



a) Identify the lower and upper quartiles.

$$Q_1 = 3.5 \quad Q_3 = 6$$

b) What percent of the laptops have a battery life of at least 6 hours?

$$100\% - 75\% = \boxed{25\%}$$

c) How many laptops have a battery life less than 4.5 hours?

$$50\% \text{ of } 16 = 16 \times 0.5 = \boxed{8}$$

8. Fifty golfers are competing in a golf tournament. The scores in the first round are shown below.



a) Identify the minimum and the maximum values.

$$\text{min} = 68 \quad \text{max} = 79$$

b) What percent of the golfers had a score greater than 70?

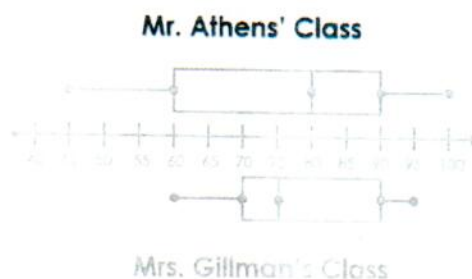
$$100\% - 25\% = \boxed{75\%}$$

c) In order to advance to the next round, golfers cannot score above 72. How many are not moving on?

$$100\% - 75\% = 25\% \\ 25\% \text{ of } 50 = 50 \times 0.25 = 12.5 = \boxed{12}$$

Comparing Box and Whisker Plots

9. Mr. Athens and Mrs. Gillman gave the same test to their math classes. The scores of each class are shown below.



a) What is the difference in the median score?

$$80 - 75 = \boxed{5}$$

b) Which class has the greater range of scores? $100 - 45 = 55$ (Athens) **
 $95 - 60 = 35$ (Gillman)

c) Which class do you feel did better overall? Explain.

Mrs. Gillman's class had a higher overall passing rate.