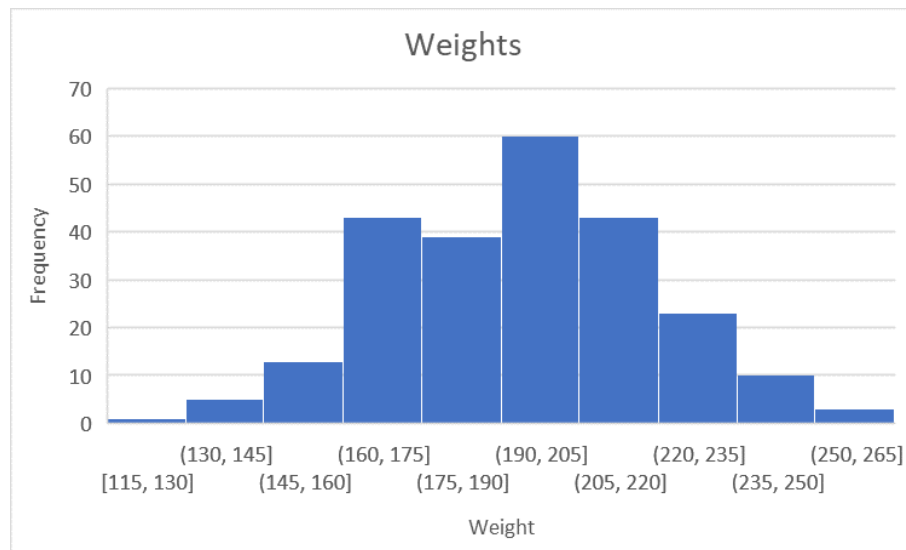**Instructions**: This portion of the exam is based on the questions below using the Excel file **154exam2data.xlsx** and the questions below. The answers to these questions will be entered into the Canvas Exam #1 Part 1 as numerical, true/false, multiple choice or multiple answer type questions. This portion of the exam must be submitted electronically in Canvas and the computer will autograde the solutions.

After completing this exam, also submit you work and answers for Part 2 in the Part 2 submission folder. The second portion of the exam will be for written questions and submitted other types of Excel-related work such as graphs. The second part of the exam will be graded by hand. Both parts of the exam must be completed.

1. Using the data on Sheet 7, Calculate a complete set of descriptive statistics for car value. Report the following below.
    a. **Mean and standard deviati**on. (6 points)

    b. **Five-number summary**. (10 points)

    c. **Range and mode**. (4 points)

2. **What does the $\times$ in a boxplot represent?** (3 points)

3. On Sheet 8, the number of accidents reported on the job and their likelihood is listed. Find the weighted average of this data, treating the category greater than or equal to 9 as just 9. **Report below the value you find. What is the average number of accidents reported?** (6 points)

4. The standard deviation of Income is \$43,631 for a sample of 723 incomes. **Find the standard error if $SE = \frac{SD}{\sqrt{n}}$.** (5 points)

5. The formula for the standard error for a proportion is $SE = \sqrt{\frac{p(1-p)}{n}}$. If 945 people have tried the lasagna in a sample of 1344, **what is the standard error for the proportion found?** (5 points)

6. The formula for the standard score is $Z = \frac{x-\mu}{\sigma}$. The mean height of women is 64" with a standard deviation of 3.1", and the mean height of men is 70" with a standard deviation of 3.5". Richard is 6'2" and Pamela is 5'11". **Which of them is taller for their gender? Explain.** (8 points)

7. A sample of 240 people is taken and their weights measured. A histogram of the data is shown below. Based on the graph, describe the shape of the distribution, and state the modal class. (6 points)

Weights

Frequency

[115, 130] (130, 145] (145, 160] (160, 175] (175, 190] (190, 205] (205, 220] (220, 235] (235, 250] (250, 265]

Weight

8. A 1/8 scale model of a house made of a revolutionary plastic uses 0.55 cubic meters of the new material. How much of the new material is needed for the full-size structure if the plastic is used for all of the same elements as in the model? (6 points)

9. A table of unit conversions is shown below. Use it to perform the following unit conversions. (4 points each)

Temperature
SI unit : kelvin (K)

0 K = -273.15°C
    = -459.67°F
K = °C + 273.15

Length
SI unit : meter (m)

1 km = 0.62137 mi
1 mi = 5280 ft
    = 1.6093 km
1 m = 1.0936 yd
1 in = 2.54 cm (exactly)
1 cm = 0.3937 in

$$°C = \frac{5}{9}(°F - 32°)$$

$$°F = \frac{9}{5}°C + 32°$$

a. Convert 792 miles to kilometers

b. Convert 279 miles to inches

c. Convert 56°C to degrees Fahrenheit

10. The standard score for Aleyah's temperature test is $z = -3.1$. If the mean of the test is $97.4°F$ and has a standard deviation of $0.5°F$. The observation value can be found by rearranging the standard score equation to be $x = \mu + z\sigma$. What is Aleyah's temperature according to the test? (5 points)

11. A probability distribution is shown below. Use it to answer the questions that follow. (3 points each)

x	0	1	2	3	4	5	6	7
$p(x)$	4%	11%	31%	8%	19%	11%	9%	7%

    a. $P(x = 4)$

    b. $P(x < 3)$

    c. $P(x \geq 6)$

    d. $P(2 < x < 5)$

    e. $P(x > 7)$

    f. $P(x \leq 2 \; OR \; x \geq 7)$