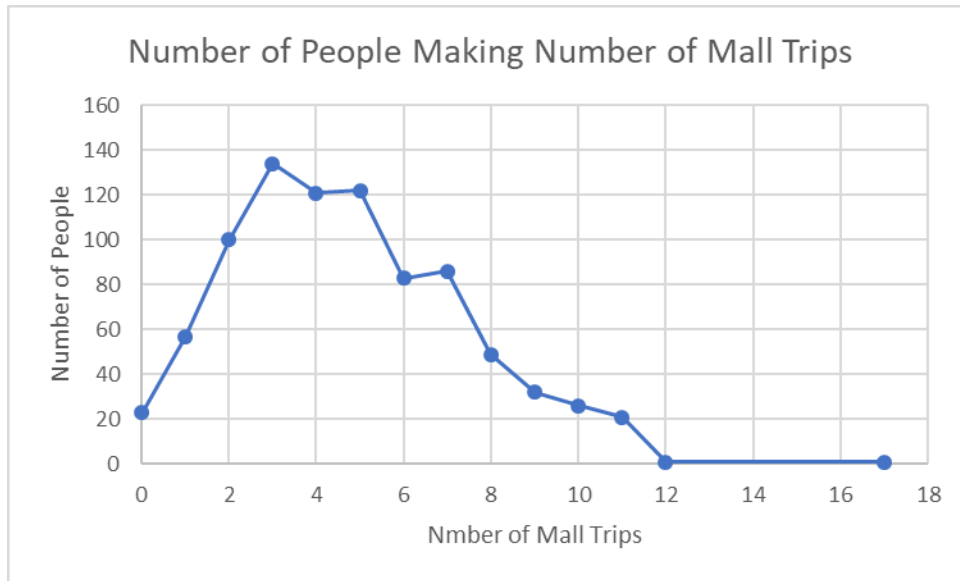


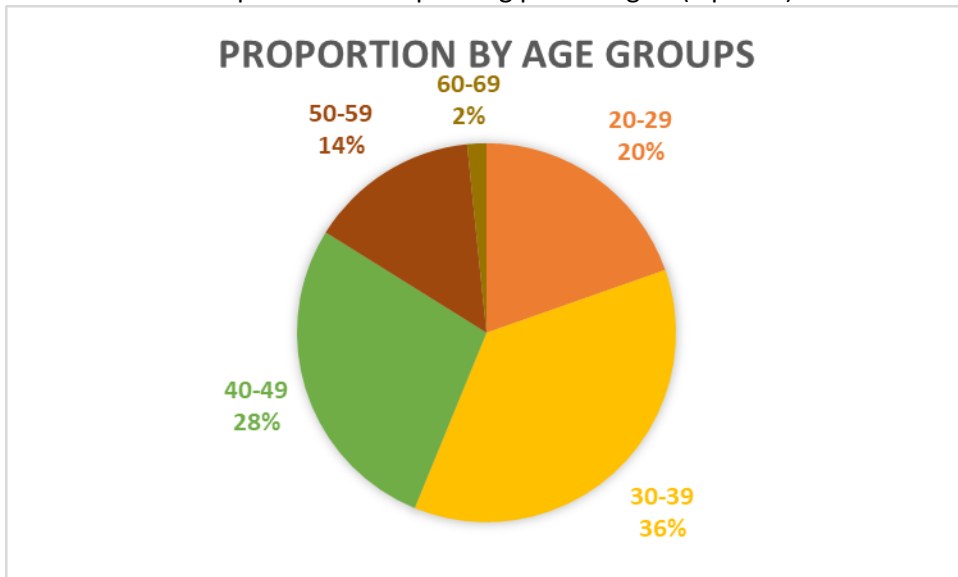
**Instructions:** Show all work. Use exact answers unless specifically asked to round. Be sure to complete all parts of each problem. Explain thoroughly using complete sentences. If you use your calculator to perform statistical tasks, say which command/operations you are using and what you entered into your calculator, and what you got back to show work. If you do not show work and the answer is incorrect, no credit will be awarded. After completing the questions, you will fill in the answers in a Blackboard “quiz”, and you will be given a place to upload your work in case partial credit is possible. These questions will be auto-graded by the computer so you will see your initial results immediately. Comment in the gradebook for the problems you’d like to have reviewed for partial credit.

1. On Sheet 1 of the data file **112exam2data.xlsx**, there is data on Pay Type and Gender. A two-way table summarizing the data is shown next to the raw data. Use that information to answer the following questions. (5 points each)
  - a. How many women are salaried?
  
  
  
  
  
  
  
  
  
  
  - b. What is the proportion of the data that are women?
  
  
  
  
  
  
  
  
  
  
  - c. What is the proportion of the data that are salaried?
  
  
  
  
  
  
  
  
  
  
  - d. What is the proportion of the data that are salaried women (both woman and salaried)?
  
  
  
  
  
  
  
  
  
  
  - e. What is the proportion of the data that are either salaried or women?
  
  
  
  
  
  
  
  
  
  
  - f. What is the proportion of the data that are salaried given that they are women?
  
  
  
  
  
  
  
  
  
  
  - g. Are the variables Pay Type and Gender independent?

2. A line graph shows the number of people in a sample of 856 that visited the mall the corresponding number of times. Based on the graph, how many mall trips to the largest number of people make? (5 points)

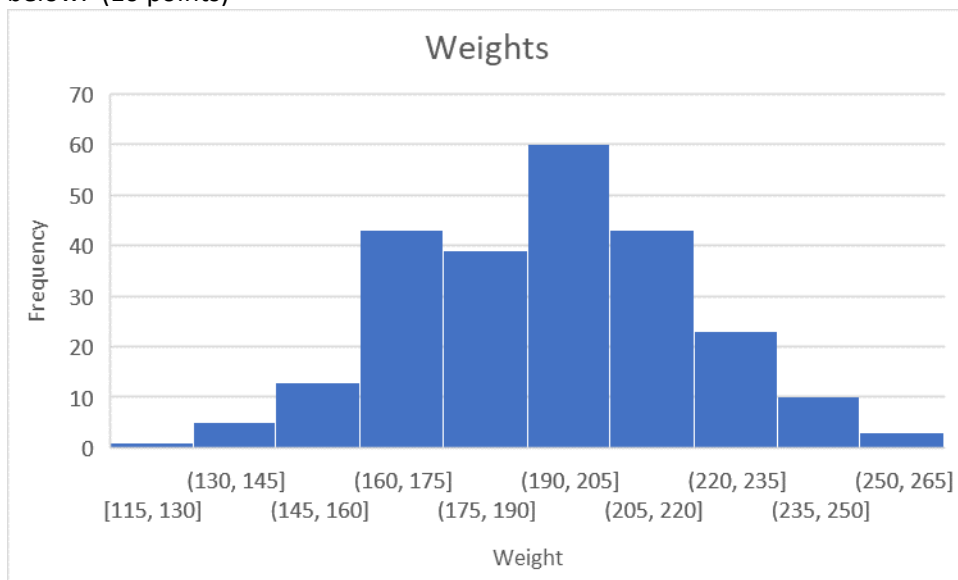


3. A pie chart of Age Groups appears below. Which age group is the smallest and which the largest in this data set? Report the corresponding percentages. (5 points)



4. Using the data on Sheet 5, Calculate a complete set of descriptive statistics for car value. Report the following below. (5 points each)
- Mean.
  - Standard deviation.
  - Minimum
  - First Quartile.
  - Median.
  - Third Quartile.
  - Maximum.
  - Range
  - Mode.
5. 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 5'2" and Pamela is 4'11". Which of them is shorter for their gender? (10 points)

6. A sample of 240 people is taken and their weights measured. A histogram of the data is shown below. (10 points)



- a. Based on the graph, describe the shape of the distribution.
  
- b. State the modal class.

7. A probability distribution is shown below. Use it to answer the questions that follow. (5 points each)

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

- a.  $P(x = 3)$
  
  - b.  $P(x < 2)$
  
  - c.  $P(x \geq 5)$
  
  - d.  $P(3 < x < 6)$
  
  - e.  $P(x < 0)$
  
  - f.  $P(x \leq 1 \text{ OR } x \geq 6)$
8. Using the data on Sheet 7, a scatterplot and regression line was created. Use this information to answer the following: (5 points each)
- a. Report the regression equation.
  
  
  
  
  
  
  
  
  
  
  - b. Report the correlation value
  
  
  
  
  
  
  
  
  
  
  - c. Report the coefficient of determination.
  
  
  
  
  
  
  
  
  
  
  - d. Is the correlation positive or negative?

- e. Is the correlation strong, moderate or weak?
  
- f. Does the relationship in the scatterplot appear to be linear or nonlinear?
  
- g. If a student earns an 88 on their midterm exam, what is their expected score on the final exam?

9. What values are used to create a boxplot? (5 points)

10. Categorize the following variables. Check the appropriate boxes. (30 points)

Variable	Qualitative	Quantitative	Discrete	Continuous	Nominal	Ordinal	Interval	Ratio
Brand of PC								
Zip Code								
Letter Grade								
Temperature								
# of TV owned								
Amount of Tax Paid								

11. For each of the scenarios below, indicate which one is a classical/theoretical probability, an experimental/observational probability, or a subjective/personal probability. (15 points)

- a. A coin is tossed 100,000 times and the outcomes are counted.
  
- b. A deck of tarot cards contains a total of 78 cards with 22 called the Major Arcana and 56 Minor Arcana. The probability that the first card drawn from a well-shuffled deck is determined to be  $\frac{22}{78}$ .
  
- c. You leave the house in the morning without an umbrella certain that there will be no rain today.

