

Instructions: This portion of the exam is based on the questions below using the Excel file **154final_data.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.

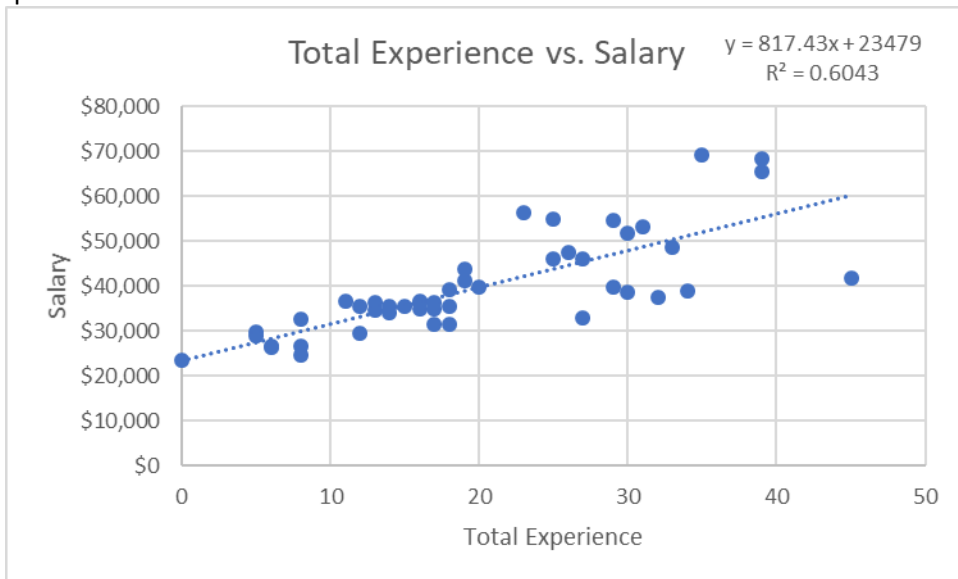
After completing this exam, also submit your work and answers for Part 2 in the Part 2 submission folder. The second portion of the exam will be for written questions and submitted other types of Excel-related work such as graphs. The second part of the exam will be graded by hand. Both parts of the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

1. Using the data on Sheet 9, complete the following: (b-f: 4 points each)
Make a scatterplot of the midterm and final exam score data with midterms on the horizontal axis and final exams on the vertical axis. Add a descriptive title and axis labels. Be sure to adjust the axes to eliminate as much unnecessary white space as possible. Add a linear trendline, find the regression equation and R^2 .
 - a. **Report the regression equation.**
 - b. **Report the correlation value and the coefficient of determination.**
 - c. **Is the correlation positive or negative?**
 - d. **Is the correlation strong, moderate or weak?**
 - e. **Does the relationship in the scatterplot appear to be linear or nonlinear?**

2. Using the data on Sheet 10, Calculate a complete set of descriptive statistics for years of education. Report the following below.
 - a. **Mean and standard deviation.** (6 points)

- b. **Five-number summary.** (6 points)
- c. **Range and mode.** (4 points)
3. Using the same data on Sheet 10, make a histogram of education. Label your graph appropriately with axis labels and a descriptive title. **Describe the shape of the graph: is it symmetric, left skewed, right skewed or some other shape?** (5 points)
4. The standard deviation of the speed of 68 vehicles on a certain highway is 10.3 mph. **Find the standard error if $SE = \frac{SD}{\sqrt{n}}$.** (5 points)
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 6'4" and Pamela is 5'10". **Which of them is taller for their gender? Explain.** (8 points)
6. Using the data on Sheet 10, **find the 20th percentile of education from the data.** (5 points)

7. Using an amortization table or a built-in financial formula in Excel, **find the amount in a savings account** if it collects 1.75% interest, compounded daily, for 18 years, if a \$20 deposit is made every week. (6 points)
8. Using the data on Sheet 11, make a summary table of the smoking data and make a pie graph of it, and label it appropriately. **What percent of the sample consider themselves smokers?** (6 points)
9. Employees are surveyed and a scatterplot of the relationship between total experience (work experience plus education) is plotted against salary. A linear regression line is found, and the equation and coefficient of determination is on the graph. Use this graph to answer the questions that follow.



- a. State the slope of the regression line. (5 points)
- b. State the y-intercept. (5 points)

c. If a new employee has a total of 7 years of experience credits (three years on the job plus a 4-year degree), what kind of salary can they expect according to the regression equation? (5 points)

d. What is the R^2 value? (5 points)

10. What values are used to create a boxplot? (4 points)

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

Length	Temperature
<i>SI unit : meter (m)</i>	<i>SI unit : kelvin (K)</i>
1 km = 0.62137 mi	0 K = -273.15°C
1 mi = 5280 ft	= -459.67°F
= 1.6093 km	K = °C + 273.15
1 m = 1.0936 yd	$^{\circ}\text{C} = \frac{5}{9} (^{\circ}\text{F} - 32^{\circ})$
1 in = 2.54 cm (exactly)	$^{\circ}\text{F} = \frac{9}{5} ^{\circ}\text{C} + 32^{\circ}$
1 cm = 0.3937 in	

a. Convert 729 kilometers to miles

b. Convert -4°F to degrees Celsius

12. Shown below is a pivot table of Gender, and whether or not the person lives alone. Use the table to answer the questions that follow. (5 points each)

		Column Labels		
Row Labels	No	Yes	Grand Total	
Female	332	66	398	
Male	379	79	458	
Grand Total	711	145	856	

- a. If a person is randomly selected from the data, what is the probability that the person is male?

- b. What is the probability that the person does not live alone?

- c. What is the probability that the person does not live alone and is a man?

- d. What is the probability that the person does not live alone or is a man?

- e. What is the probability that the person does not live alone given that they are male?

13. Using the screenshot of an Excel sheet below to write a formula that will evaluate the expression $\frac{A+C^2}{D-\sqrt{B}}$ using the cell references where the values are in the sheet. **What is the value you obtain?** (8 points)

	A	B	C	D	Formula
3					
4		13	16	13	8
5					