

## Project: Diamond Prices

Complete each section. When you are ready, save your file as a PDF document and submit it in your classroom.

### Step 1: Understanding the Model

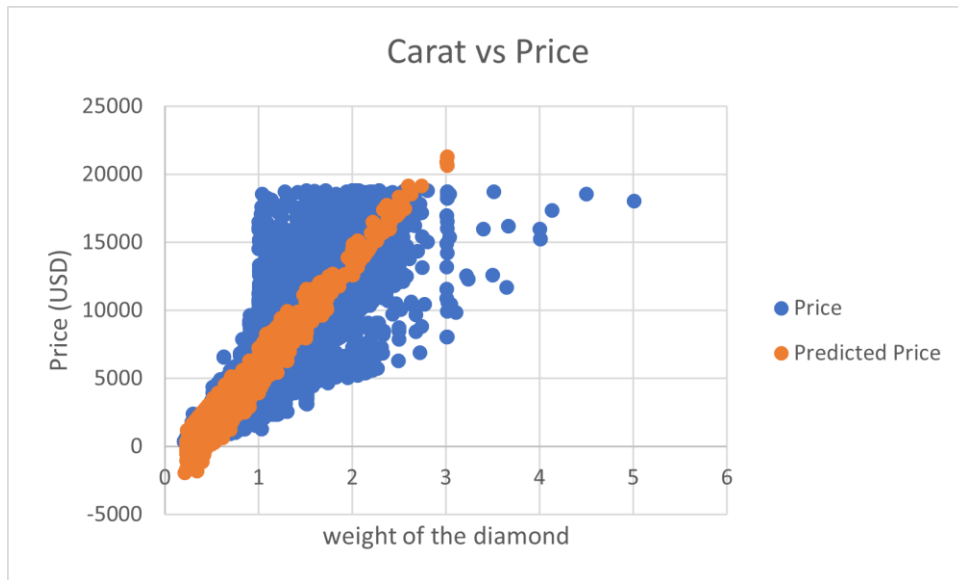
*Answer the following questions:*

1. According to the model, if a diamond is 1 carat heavier than another with the same cut, how much more should I expect to pay? Why?
  - $\text{Price} = [-5,269 + (8,413 \times \text{Carat} + 1) + (158.1 \times \text{Cut}) + (45 \times \text{Clarity})] - [-5,269 + 8,413 \times 2.5 + (158.1 \times 3) + (454 \times 5)]$
  - Price = \$8413
2. If you were interested in a 1.5 carat diamond with a **Very Good** cut (represented by a 3 in the model) and a **VS2** clarity rating (represented by a 5 in the model), how much would the model predict you should pay for it?
  - $\text{Price} = -5,269 + (8,413 \times \text{Carat}) + (158.1 \times \text{Cut}) + (45 \times \text{Clarity})$
  - So now we will plug in values for different variables.
  - $\text{Price} = -5,269 + (8,413 \times 1.5) + (158.1 \times 3) + (45 \times 5)$
  - Price = \$10,094.5

### Step 2: Visualize the Data

Make sure to plot and include the visualizations in this report. For example, you can create graphs in Excel and copy and paste the graphs into this Word document.

1. Plot 1 - Plot the data for the diamonds in the database, with carat on the x-axis and price on the y-axis.
2. Plot 2 - Plot the data for the diamonds for which you are predicting prices with carat on the x-axis and predicted price on the y-axis.
  - **Note:** You can also plot both sets of data on the same chart in different colors.
3. What strikes you about this comparison? After seeing this plot, do you feel confident in the model's ability to predict prices?



The predicted prices are more compact than the actual data is. This is because the weight of the diamond. For instance this formula might look very different depending on Clarity and Cut.

## Step 3: Make a Recommendation

*Answer the following questions:*

1. What price do you recommend the jewelry company to bid? Please explain how you arrived at that number.

I recommend a bid of \$8,213,465.869. I arrived at this number by using a formula from the regression model provided that was based on previous diamonds and applied it to the new diamonds that were up for bid. I then factored in the margin the investors were looking for which was 70% so I multiply the predicted amount 11733522.67 by 0.70 to get the final predicted bid of \$8,213,465.869