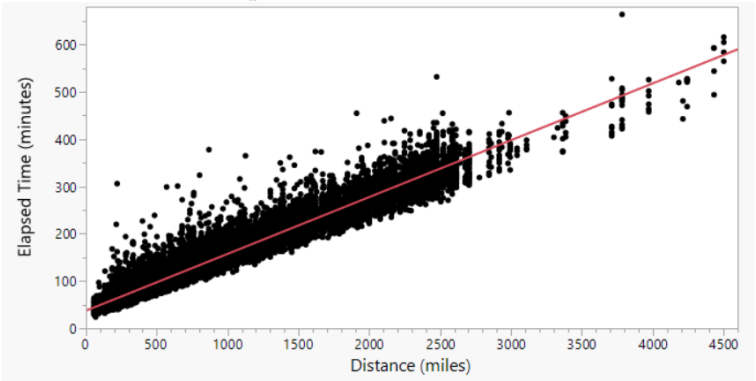
Group Member Names: _____

If you have group members who collaborated but were not logged into the Zoom session, please note in the submission comments how they collaborated on the learning activity.

A major airline wishes to determine if it can predict the elapsed time of a flight delay in minutes, $y$, using the distance of the flight to the destination in miles, $x$. Simple linear regression was performed in JMP for a large sample of 29,009 delayed flights gathered during the previous year. (See the JMP dataset `Airline Delays.jmp`.) Use the output below to answer the questions in this Learning Activity.

**Scatter Plot of Elapsed Time vs. Distance**




**Summary of Fit**

| | |
|---|---|
| RSquare | 0.940049 |
| RSquare Adj | 0.940047 |
| Root Mean Square Error | 18.71175 |
| Mean of Response | 139.3205 |
| Observations (or Sum Wgts) | 29009 |

**Lack Of Fit**

**Analysis of Variance**

| Source | DF | Sum of Squares | Mean Square | F Ratio |
|---|---|---|---|---|
| Model | 1 | 159251715 | 159251715 | 454836.3 |
| Error | 29007 | 10156214 | 350.12976 | Prob > F |
| C. Total | 29008 | 169407929 | | <.0001* |

**Parameter Estimates**

| Term | Estimate | Std Error | t Ratio | Prob>\|t\| |
|---|---|---|---|---|
| Intercept | 37.457047 | 0.186769 | 200.55 | <.0001* |
| Distance | 0.1201603 | 0.000178 | 674.42 | <.0001* |

1. Write the equation for the **least squares regression line** in terms of $x$ and $\hat{y}$, where $x$ = distance of the flight (in miles) and $\hat{y}$ = estimated elapsed time of the delay (in minutes).

2. Interpret the **slope** of the estimated regression equation in context of the problem.

3. Is there a valid interpretation of the $y$-**intercept** in context of the problem? If so, interpret the $y$-intercept. If not, explain why.

4. Interpret the **standard error** of prediction found by your regression analysis. Include units.