The State Fair of Texas hosts the largest car auto show in the Southwest! You will get to explore the automobiles in order to choose the car that best suits you.

During this Cars, Crafts, & Commerce Quest, you will:
★ Collect gas mileage data from automobiles at the Fair
★ Write function rules to determine how much gas the autos use, and graph your results
★ Write function rules to determine the cost of driving each auto, and identify the variables
★ Use the data you collect to decide on the best car for your future needs
★ Design a triptych artwork based on the vehicles you viewed
★ Write an essay that compares and contrasts the best and worst vehicles for you

Learning Standards
★ Art TEKS: Art 1: 1A, 1B, 2F; Art 2: 1A, 2B, 2D
★ Career Development TEKS: PS1G, PS1H, PS5C

Before You Go - 15 min prep time, 30 teaching time
Beforehand, prepare students to be able to execute the following skills:
★ Create a table from data collected.
★ Identify the independent and dependent variables.
★ Graph a line from a table.
★ Write a function rule.
In addition, review with them the following terms:
★ Make/model of car
★ Miles per gallon, or MPG
  o Miles per gallon changes depending on whether you’re driving in the city or on the highway.
  o Why is that, exactly? Discuss.
  o Average MPG, and even city/highway mpg, can be a big priority when choosing a vehicle! When it’s time to purchase, consider where you may be living/driving.
The objective of your visit is to collect gas mileage data from 3 different automobiles at the State Fair of Texas, so you can make an informed decision about vehicles later in your project.

○ THE PLACES YOU’LL GO: Walk around the Esplanade area and pick 3 different types of autos you think you would like to own.
  - 1 that gets bad gas mileage (less than 20 MPG)
  - 1 that has moderate gas mileage (between 20 and 40 MPG)
  - 1 that has great gas mileage (over 40 MPG)
  - Record the gas mileage for each auto on your phone, a notebook, or use this table:

<table>
<thead>
<tr>
<th>Make and model of car</th>
<th>Tank size</th>
<th>MPG (city)</th>
<th>MPG (highway)</th>
<th>Average MPG</th>
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</thead>
<tbody>
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</table>

Optional Materials to Bring
- Pen or Pencil
- Sketchbook
- Notebook or Paper
- Smartphone or Tablet
After the Fair - 50 min project
When you return to class following your State Fair visit, you will write a function rule for each type of auto to show the number of miles each car can travel depending on the gallons of gas.

★Make a table for the number of miles per gallon that each car can travel for a domain of 0-20, similar to the following example. You will have 3 tables.

<table>
<thead>
<tr>
<th>Car #1</th>
<th>Gallons of Gas</th>
<th>Miles Traveled</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>0</td>
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<td></td>
<td>1</td>
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<td>2</td>
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</tbody>
</table>

★Graph the data from the tables on one graph using a different color to represent each auto.

★How many gallons of gasoline do you need to travel 100 miles for each auto?
★Identify the independent variable and dependent variables.
★Determine the current price of gas per gallon.
★Write a function rule that relates the cost of driving each auto to the cost of gas and the expected miles per gallon (rate of change will be the gas price/\text{mpg}).
★Complete the following table for the cost to drive each auto.

<table>
<thead>
<tr>
<th>Distance in Miles</th>
<th>Cost of driving (Auto #1)</th>
<th>Cost of driving (Auto #2)</th>
<th>Cost of driving (Auto #3)</th>
</tr>
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<tbody>
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<td>50</td>
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<td>100</td>
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<td>200</td>
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</table>

★Graph the data from the tables on one graph using a different color to represent each auto.
**ART PORTION**

For your art portion, create a triptych of the 3 cars that you chose, in the style of Zentangles.

- A triptych simply means a series of three artworks that have a relationship to one another.
  - In this case, the 3 artworks are the autos you chose to focus on from the Fair.
  - They can be the same size, or different sizes – it makes no difference.

- **Zentangle** is a form of art that is akin to doodling and is meant to be very relaxing – almost free from thought.
  - There are no rules to the forms that you create in your Zentangles.
  - The only rule is that you use clean, crisp lines.
  - Ideally, you should use a fine-point permanent marker.
  - Check out the link below to see some fantastic examples.

  - [https://www.zentangle.com/zentangle-method](https://www.zentangle.com/zentangle-method)
  - If you get stuck thinking of a pattern, simply Google Zentangles, and thousands of ideas will be at your fingertips!

- When you finish your triptychs, display your class “auto show” for the school to view!

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**ENGLISH PORTION**

Using the information that you gathered about the three different types of automobiles at the Fair, compare and contrast the best and worst cars for you.

- Using your computer or tablet, write a one and a half page essay on the differences between the two car choices.

  - The essay must:
    1. Have an introduction, body, and conclusion
    2. Support your arguments with evidence (data, observations, etc.)
    3. Show the advantages and disadvantages of both car choices
    4. Be double spaced
    5. Use Times New Roman, 12-point font